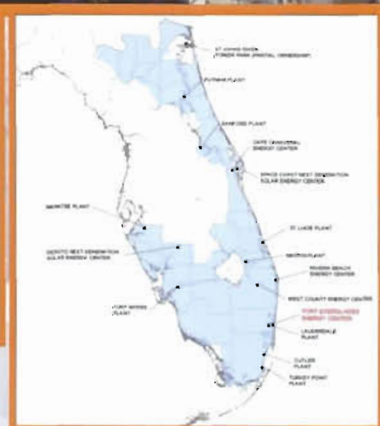
Project No: 0110036-010-AC

Leigh Ann ; David Read / module AB040

Port Everglades

Next Generation Clean Energy Center



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DIVISION OF AIR
RESOURCE MANAGEMENT

APPLICATION FOR AIR CONSTRUCTION PERMIT

FPL

JANUARY 2012

FPL

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JAN 24 2012

DIVISION OF AIR
RESOURCE MANAGEMENT

January 23, 2012

Jeffery Koerner, P.E., Program Administrator
Office of Permitting and Compliance
Department of Environmental Protection
111 South Magnolia St.
Tallahassee, FL 32399

Re: FPL Port Everglades Next Generation Clean Energy Center Project
Air Construction Permit Application

Dear Mr. Koerner:

Please find enclosed the Air Construction Permit Application prepared by Golder Associates for Florida Power & Light Company's (FPL) Port Everglades Next Generation Clean Energy Center Project (PEEC or Project) in Broward County. The enclosed Application is being filed for the purpose of establishing federally enforceable emissions limitations that ensure the Project will not result in a significant net increase in emissions of regulated air pollutants in accordance with the Department's federally approved minor source air construction permit program under Florida's federally approved State Implementation Plan. For GHG emissions, FPL is separately filing a Prevention of Significant Deterioration (PSD) application with the U.S. Environmental Protection Agency (EPA) Region IV, as instructed on the Department's website. In addition, FPL is separately filing an application for site certification of the Project pursuant to the Florida Electrical Power Plant Siting Act.

If you have any comments or questions regarding the attached, please feel free to contact me at (561) 691-7518 or Andy Flajole at (561) 691-2766. You may also contact Mr. Ken Kosky of Golder Associates at (352) 336-5600 for technical questions.

Sincerely,
Florida Power & Light Company

Barbara P. Linkiewicz

Barbara P. Linkiewicz
Director of Environmental Licensing

cc: Dianne Hughes, Siting Liaison, FDEP Southeast District
Ken Kosky, Golder Associates
Michael S. Tammaro, Esq., FPL
Luna Phillips, Esq., Gunster
Cindy Mulkey, FDEP Siting Office

APPLICATION FOR AIR CONSTRUCTION PERMIT / GREENHOUSE GAS PREVENTION OF SIGNIFICANT DETERIORATION PERMIT

For

FPL PORT EVERGLADES NEXT GENERATION CLEAN ENERGY CENTER

Submitted by:

Florida Power & Light Company
700 Universe Boulevard
Juno Beach, Florida 33408

January 2012

113-87618

Department of
Environmental Protection

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JAN 24 2012
DIVISION OF AIR
RESOURCE MANAGEMENT

Division of Air Resource Management

APPLICATION FOR AIR PERMIT - LONG FORM

I. APPLICATION INFORMATION

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

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

Air Operation Permit – Use this form to apply for:

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

To ensure accuracy, please see form instructions.

Identification of Facility

1. Facility Owner/Company Name: **Florida Power & Light Company**	
2. Site Name: **Port Everglades Plant**	
3. Facility Identification Number: **0110036**	
4. Facility Location... Street Address or Other Locator: **8100 Eisenhower Boulevard** City: **Fort Lauderdale** County: **Broward** Zip Code: **33316**	
5. Relocatable Facility? ☐ Yes ☒ No	6. Existing Title V Permitted Facility? ☒ Yes ☐ No

Application Contact

1. Application Contact Name: **Barbara Linkiewicz, Director of Environmental Licensing**
2. Application Contact Mailing Address... Organization/Firm: **Florida Power & Light Company** Street Address: **700 Universe Blvd. JES/JB** City: **Juno Beach** State: **Florida** Zip Code: **33408**
3. Application Contact Telephone Numbers... Telephone: **(561) 691-7518** ext. Fax: **(561) 691-7070**
4. Application Contact E-mail Address: **Barbara.P.Linkiewicz@FPL.com**

Application Processing Information (DEP Use)

1. Date of Receipt of Application: 1-24-12	3. PSD Number (if applicable):
2. Project Number(s): 0110036-010-AC	4. Siting Number (if applicable):

APPLICATION INFORMATION

Purpose of Application

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

Air Construction Permit

☒ Air construction permit.

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

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

Air Operation Permit

☐ Initial Title V air operation permit.

☐ Title V air operation permit revision.

☐ Title V air operation permit renewal.

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

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

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

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

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

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

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

Application Comment

Application for an air construction permit to modernize the existing Port Everglades Plant Units 1 through 4 to a 3-on-1 combined-cycle facility. The attached Air Report provides detailed information regarding the proposed project. The combustion turbines (CTs) being considered for this application include the Mitsubishi Power Systems (MPS) "J" CTs and the Siemens Power Generation, Inc. "H" CTs.

The Project will be subject to PSD review by EPA for Greenhouse Gas (GHG) emissions only. The maximum potential emissions estimated for all other regulated pollutants are less than the PSD significant emission rates and are not subject to PSD review by FDEP.

APPLICATION INFORMATION

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Processing Fee
1A - 1C	Three MPS 501J CTs/HRSGs	AC1A	
	- OR -		
1A - 1C	Three Siemens H CTs/HRSGs	AC1A	
	- AND -		
2	Auxiliary Boiler	AC1A	
3	Fuel Gas Heater	AC1A	
4	Emergency Diesel Generators	AC1A	
5	Compressor Station	AC1A	
6	Fire Pump Engine	AC1A	
7	Temporary Construction Boilers	AC1A	

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 : **Randall R. LaBauve, Vice President**
2.	Owner/Authorized Representative Mailing Address... Organization/Firm: **Florida Power & Light Company** Street Address: **700 Universe Blvd. JES/JB** City: **Juno Beach** State: **FL** Zip Code: **33408**
3.	Owner/Authorized Representative Telephone Numbers... Telephone: **(561) 691-7001** ext. Fax: **(561) 691-7070**
4.	Owner/Authorized Representative E-mail Address: **Randall.R.LaBauve@FPL.com**
5.	Owner/Authorized Representative Statement: *I, the undersigned, am the owner or authorized representative of the corporation, partnership, or other legal entity submitting this air permit application. To the best of my knowledge, the statements made in this application are true, accurate and complete, and any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department.* Signature Date 1/17/12

APPLICATION INFORMATION

Application Responsible Official Certification

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

1. Application Responsible Official Name:

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

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

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

5. Application Responsible Official E-mail Address:

6. Application Responsible Official Certification:

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

Signature ____________________ Date ____________________

APPLICATION INFORMATION

Professional Engineer Certification

1.	Professional Engineer Name: **Ken 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. Fax: **(352) 336-6603**
4.	Professional Engineer E-mail Address: **kkosky@golder.com**
5.	Professional Engineer Statement: *I, the undersigned, hereby certify, except as particularly noted herein*, that:* *(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and* *(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.* *(3) If the purpose of this application is to obtain a Title V air operation permit (check here ☐, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.* *(4) If the purpose of this application is to obtain an air construction permit (check here ☒, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here ☐, if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.* *(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here ☐, if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.* Signature ______ Date 1/20/12 (seal)

* Attach any exception to certification statement.

**Board of Professional Engineers Certificate of Authorization #00001670.

STATE OF FLORIDA

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates... Zone **17** East (km) **587.38** North (km) **2885.25**		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) **26/05/08** Longitude (DD/MM/SS) **80/07/31**	
3. Governmental Facility Code: **O**	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: **Rudy Sanchez, Regional Plant General Manager**
2. Facility Contact Mailing Address... Organization/Firm: **Florida Power & Light Company** Street Address: **8100 Eisenhower Boulevard** City: **Fort Lauderdale** State: **FL** Zip Code: **33316**
3. Facility Contact Telephone Numbers: Telephone: **(954) 527-3601** ext. Fax: **(954) 527-3636**
4. Facility Contact E-mail Address: **rudy.sanchez@fpl.com**

Facility Primary Responsible Official

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

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

Facility Regulatory Classifications

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

1. ☐ Small Business Stationary Source	☐ Unknown
2. ☐ Synthetic Non-Title V Source	
3. ☒ Title V Source	
4. ☐ Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5. ☐ Synthetic Minor Source of Air Pollutants, Other than HAPs	
6. ☐ Major Source of Hazardous Air Pollutants (HAPs)	
7. ☐ Synthetic Minor Source of HAPs	
8. ☒ One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9. ☐ One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10. ☐ One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11. ☐ Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	
12. Facility Regulatory Classifications Comment: **The Port Everglades Plant remains a major source of HAPs due to the combined emissions of PEEC and the 12 existing gas turbines. The proposed project is subject to PSD review by EPA for Greenhouse Gas emissions only.**	

List of Pollutants Emitted by Facility

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

B. EMISSIONS CAPS

Facility-Wide or Multi-Unit Emissions Caps

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

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

C. FACILITY ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

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

Additional Requirements for Air Construction Permit Applications

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

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for FESOP Applications

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

Additional Requirements for Title V Air Operation Permit Applications

1. List of Insignificant Activities: (Required for initial/renewal applications only) ☐ Attached, Document ID:__________ ☐ Not Applicable (revision application)
2. Identification of Applicable Requirements: (Required for initial/renewal applications, and for revision applications if this information would be changed as a result of the revision being sought) ☐ Attached, Document ID:__________ ☐ Not Applicable (revision application with no change in applicable requirements)
3. Compliance Report and Plan: (Required for all initial/revision/renewal applications) ☐ Attached, Document ID:__________ Note: A compliance plan must be submitted for each emissions unit that is not in compliance with all applicable requirements at the time of application and/or at any time during application processing. The department must be notified of any changes in compliance status during application processing.
4. List of Equipment/Activities Regulated under Title VI: (If applicable, required for initial/renewal applications only) ☐ Attached, Document ID:__________ ☐ Equipment/Activities Onsite but Not Required to be Individually Listed ☐ Not Applicable
5. Verification of Risk Management Plan Submission to EPA: (If applicable, required for initial/renewal applications only) ☐ Attached, Document ID:__________ ☐ Not Applicable
6. Requested Changes to Current Title V Air Operation Permit: ☐ Attached, Document ID:__________ ☐ Not Applicable

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

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

1. Acid Rain Program Forms:

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

   ☐ Attached, Document ID:__________ ☒ Previously Submitted, Date: **4/15/08**

   ☐ 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: **5/27/08**

   ☐ Not Applicable (not a CAIR source)

Additional Requirements Comment

FPL will provide the appropriate acid rain and CAIR forms to change the existing plant to the 3-on-1 combined cycle unit.

III. EMISSIONS UNIT INFORMATION

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

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

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

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

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

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

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

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

Emissions Unit Description and Status

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

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

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

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

2. Description of Emissions Unit Addressed in this Section:
   Three Mitsubishi Power Systems (MPS) 501G CT/HRSGs or Siemens H CTs or equivalent

3. Emissions Unit Identification Number: **5A, 5B, 5C**

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:
C	**2013**	**2016**	**49**

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

   ☒ Acid Rain Unit

   ☐ CAIR Unit

9. Package Unit:
   Manufacturer: **Mitsubishi Power Systems (MPS) or Siemons or equivalent** Model Number: **MPS "J" or Siemens "H" CTs or equivalent**

10. Generator Nameplate Rating: MW

11. Emissions Unit Comment:
    Combined cycle unit will have a nominal capacity of 1,250 MW consisting of 3 CT/HRSG trains.

Emissions Unit Control Equipment/Method: Control 1 of 2

1. Control Equipment/Method Description: **Natural Gas: Combined Cycle - SCR**
2. Control Device or Method Code: **139**

Emissions Unit Control Equipment/Method: Control 2 of 2

1. Control Equipment/Method Description: **Distillate Fuel Oil:**   **Water Injection**   **Combined Cycle - SCR**
2. Control Device or Method Code: **25, 28**

Emissions Unit Control Equipment/Method: Control ____ of ____

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

Emissions Unit Control Equipment/Method: Control ____ of ____

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

B. EMISSIONS UNIT CAPACITY INFORMATION
(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate:	
2. Maximum Production Rate:	
3. Maximum Heat Input Rate: million Btu/hr	
4. Maximum Incineration Rate: pounds/hr tons/day	
5. Requested Maximum Operating Schedule: **24** hours/day **52** weeks/year	**7** days/week **8,760** hours/year
6. Operating Capacity/Schedule Comment: **See Tables A-1-501J and B-1-SH for maximum heat input when firing natural gas; and Tables A-7-501J and B-7-SH for maximum heat input when firing ultra low sulfur light oil.**	

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:		2. Emission Point Type Code: **1**
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: **Exhausts through the HRSG stack.**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: **V**	6. Stack Height: **149** feet	7. Exit Diameter: 22 feet
8. Exit Temperature: **See Air Report**°F	9. Actual Volumetric Flow Rate: **See Air Report** acfm	10. Water Vapor: %
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: **See Tables 2-1A, 2-2A, 2-1B, and 2-2B for the stack parameters associated with each CT when firing natural gas and ultra low sulfur light oil.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 2

1. Segment Description (Process/Fuel Type): **Distillate (No. 2) Fuel Oil [Ultra Low Sulfur (0.0015%) Light Oil]**		
2. Source Classification Code (SCC): **20100101**	3. SCC Units: **1,000 Gallons Used**	
4. Maximum Hourly Rate: **19.3**	5. Maximum Annual Rate: **17,618**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **0.0015**	8. Maximum % Ash:	9. Million Btu per SCC Unit: **131**
10. Segment Comment: **Million British thermal units (Btu) per SCC unit = 130.5 (rounded to 131). Based on 7.1 pounds per gallon (lb/gal); LHV = 18,387 Btu/lb ISO conditions. Max hourly rate based on 35°F, max annual rate based on 75°F and 1,000 hours per year (hr/yr) operation. Based on Siemens H Units per CT. See Air Permit Application Report for further details on MPS J and Siemens H models.**		

Segment Description and Rate: Segment 2 of 2

1. Segment Description (Process/Fuel Type): **Natural Gas**		
2. Source Classification Code (SCC): **20100201**	3. SCC Units: **Million cubic feet**	
4. Maximum Hourly Rate: **2.98**	5. Maximum Annual Rate: **24,232**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit: **918**
10. Segment Comment: **Based on 918 Btu/cf (LHV). Max hourly rate based on 35oF. Max annual rate based on 75oF and 8,760 hr/yr operation. Based on MPS Units. Maximum sulfur content 2 grains/100 scf See Air Permit Application Report.**		

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
PM			EL
PM10			EL
SO2			EL
NOX	25, 28, 139		EL
CO			EL
VOC			EL

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: **Particulate Matter Total - PM**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **See Air Report** lb/hour **See Air Report** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **See Air Report** Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Air Report, Appendix C for baseline emissions. Tables 2-1A, 2-2A, and 2-3A for MPS 501J; Tables 2-1B, 2-2B, and 2-3B for Siemens H; and Appendices A and B.**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **See Air Report; Table 4-1**	4. Equivalent Allowable Emissions: **See Air Report** lb/hour **See Air Report** tons/year
5. Method of Compliance: **See Air Report, Table 4-1**	
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):	

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: **Particulate Matter - PM10**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **See Air Report** lb/hour **See Air Report** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **See Air Report** Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Air Report, Appendix C for baseline emissions. Tables 2-1A, 2-2A, and 2-3A for MPS 501J; Tables 2-1B, 2-2B, and 2-3B for Siemens H; and Appendices A and B.**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **See Air Report; Table 4-1**	4. Equivalent Allowable Emissions: **See Air Report** lb/hour **See Air Report** tons/year
5. Method of Compliance: **See Air Report, Table 4-1**	
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):	

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: **Sulfur Dioxide - SO2**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **See Air Report** lb/hour **See Air Report** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **See Air Report** Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Air Report, Appendix C for baseline emissions. Tables 2-1A, 2-2A, and 2-3A for MPS 501J; Tables 2-1B, 2-2B, and 2-3B for Siemens H; and Appendices A and B.**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **See Air Report; Table 4-1**	4. Equivalent Allowable Emissions: **See Air Report** lb/hour **See Air Report** tons/year
5. Method of Compliance: **See Air Report, Table 4-1**	
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):	

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: **Nitrogen Oxides - NOX**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **See Air Report** lb/hour **See Air Report** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **See Air Report** Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Air Report, Appendix C for baseline emissions. Tables 2-1A, 2-2A, and 2-3A for MPS 501J; Tables 2-1B, 2-2B, and 2-3B for Siemens H; and Appendices A and B.**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **See Air Report; Table 4-1**	4. Equivalent Allowable Emissions: **See Air Report** lb/hour **See Air Report** tons/year
5. Method of Compliance: **See Air Report, Table 4-1**	
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):	

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.

<u>Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions</u>

1. Pollutant Emitted: **Carbon Monoxide - CO**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **See Air Report** lb/hour **See Air Report** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **See Air Report** Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Air Report, Appendix C for baseline emissions. Tables 2-1A, 2-2A, and 2-3A for MPS 501J; Tables 2-1B, 2-2B, and 2-3B for Siemens H; and Appendices A and B.**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **See Air Report; Table 4-1**	4. Equivalent Allowable Emissions: **See Air Report** lb/hour **See Air Report** tons/year
5. Method of Compliance: **See Air Report, Table 4-1**	
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):	

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.

<u>Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions</u>

1. Pollutant Emitted: **Volatile Organic Compounds - VOC**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **See Air Report** lb/hour **See Air Report** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **See Air Report** Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Air Report, Appendix C for baseline emissions. Tables 2-1A, 2-2A, and 2-3A for MPS 501J; Tables 2-1B, 2-2B, and 2-3B for Siemens H; and Appendices A and B.**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **See Air Report; Table 4-1**	4. Equivalent Allowable Emissions: **See Air Report** lb/hour **See Air Report** tons/year
5. Method of Compliance: **See Air Report, Table 4-1**	
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):	

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: **VE20**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: **20** % Exceptional Conditions: **100** % Maximum Period of Excess Opacity Allowed: **60** min/hour	
4. Method of Compliance: **EPA Method 9**	
5. Visible Emissions Comment: **FDEP Rule 62-296.320(4)(b)1, F.A.C. requires 20 percent opacity. Excess emissions provided by Rule 62-210.700(1).**	

Visible Emissions Limitation: Visible Emissions Limitation 2 of 2

1. Visible Emissions Subtype: **VE10**	2. Basis for Allowable Opacity: ☐ Rule ☒ Other
3. Allowable Opacity: Normal Conditions: **10** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **EPA Method 9**	
5. Visible Emissions Comment: **Proposed as emission limit for PM/PM_{10}.**	

H. CONTINUOUS MONITOR INFORMATION

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

Continuous Monitoring System: Continuous Monitor 1 of 2

1. Parameter Code: **EM**	2. Pollutant(s): **NOX**
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	 Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **CEM required pursuant to 40 CFR 75. NO_x monitoring includes diluent monitor (O_2 or CO_2).**	

Continuous Monitoring System: Continuous Monitor 2 of 2

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☒ Other
4. Monitor Information... Manufacturer: Model Number:	 Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

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

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

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

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

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

6. Compliance Demonstration Reports/Records:
   ☐ Attached, Document ID: __________
   Test Date(s)/Pollutant(s) Tested: ____________________

   ☐ Previously Submitted, Date: ________
   Test Date(s)/Pollutant(s) Tested: ____________________

   ☐ To be Submitted, Date (if known): __________
   Test Date(s)/Pollutant(s) Tested: ____________________

   ☒ Not Applicable

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

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

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications

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

Additional Requirements for Title V Air Operation Permit Applications

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

Additional Requirements Comment

III. EMISSIONS UNIT INFORMATION

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

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

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

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

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

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

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

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

Emissions Unit Description and Status

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

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

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

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

2. Description of Emissions Unit Addressed in this Section:
   Auxiliary Boiler

3. Emissions Unit Identification Number: **2**

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:
C	**2013**	**2015–2016**	**49**

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

   ☐ Acid Rain Unit

   ☐ CAIR Unit

9. Package Unit:
   Manufacturer: **Nebraska Boiler or equivalent** Model Number:

10. Generator Nameplate Rating: MW

11. Emissions Unit Comment:

Emissions Unit Control Equipment/Method: Control 1 of 1

1. Control Equipment/Method Description: **Low NOX burners**	
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 Control Equipment/Method: Control ____ of ____

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

B. EMISSIONS UNIT CAPACITY INFORMATION
(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate:			
2. Maximum Production Rate:			
3. Maximum Heat Input Rate: **99.77** million Btu/hr			
4. Maximum Incineration Rate:	pounds/hr tons/day		
5. Requested Maximum Operating Schedule:	**24** hours/day **52** weeks/year		**7** days/week **2,000** hours/year
6. Operating Capacity/Schedule Comment:			

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:	2. Emission Point Type Code:	
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:	6. Stack Height: **60** feet	7. Exit Diameter: **2.75** Feet
8. Exit Temperature: **296**°F	9. Actual Volumetric Flow Rate: **29,325** acfm	10. Water Vapor: %
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: **See Table 2-4 in Air Permit Application Report.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): **Natural gas**		
2. Source Classification Code (SCC):	3. SCC Units: **MMscf**	
4. Maximum Hourly Rate: **0.098**	5. Maximum Annual Rate: **195.6**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit: **1,020**
10. Segment Comment: **Maximum annual rate based on 2,000 hr/yr operation.**		

Segment Description and Rate: Segment _____ of _____

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

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM	Fuel Quality		EL
PM10	Fuel Quality		EL
SO2	Fuel Quality		EL
NOX	205		EL
CO	Good Combustion		EL
VOC	Good Combustion		EL

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: **Particulate Matter Total - PM**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.74** lb/hour **0.74** tons/year	4. Synthetically Limited? ☒ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **0.0075 lb/MMBtu** Reference: **Emissions based on AP-42**	7. Emissions Method Code: **3**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years

10. Calculation of Emissions:
0.0075 lb/MMBtu x 99.77 MMBtu/hr = 0.74 lb/hr
0.74 lb/hr x 2,000 hr x ton/2,000 lb = 0.74 TPY

11. Potential, Fugitive, and Actual Emissions Comment:

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **10% Opacity**	4. Equivalent Allowable Emissions: **0.74** lb/hour **0.74** tons/year
5. Method of Compliance: **EPA Method 9**	
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):	

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.

<u>Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions</u>

1. Pollutant Emitted: **Particulate Matter - PM10**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.74** lb/hour **0.74** tons/year	4. Synthetically Limited? ☒ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **0.0075 lb/MMBtu** Reference: **Emissions based on AP-42**	7. Emissions Method Code: **3**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **0.0075 lb/MMBtu x 99.77 MMBtu/hr = 0.74 lb/hr** **0.74 lb/hr x 2,000 hr x ton/2,000 lb = 0.74 TPY**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **10% Opacity**	4. Equivalent Allowable Emissions: **0.70** lb/hour **0.17** tons/year
5. Method of Compliance: **EPA Method 9**	
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):	

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: **Sulfur Dioxide - SO2**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.56** lb/hour **0.56** tons/year	4. Synthetically Limited? ☒ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **2 grains S/100 scf gas** Reference: **Emissions based on AP-42**	7. Emissions Method Code: **3**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years

10. Calculation of Emissions:
2 grains S/100 scf x 64/32 (MW SO2/S) x 1 lb/7,000 gr x 97,814 scf/hr x 1/100 scf = 0.56 lb/hr
0.56 lb/hr x 2,000 hr/2,000 lb = 0.56 TPY

11. Potential, Fugitive, and Actual Emissions Comment:

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **2 grains S/100 scf gas**	4. Equivalent Allowable Emissions: **0.56** lb/hour **0.56** tons/year
5. Method of Compliance: **Fuel Sampling and Analysis**	
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):	

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: **Nitrogen Oxides - NOX**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **4.99** lb/hour **4.99** tons/year	4. Synthetically Limited? ☒ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **0.050 lb/MMBtu** Reference: **Emissions based on AP-42**	7. Emissions Method Code: **3**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years

10. Calculation of Emissions:
0.050 lb/MMBtu x 99.77 MMBtu/hr = 4.99 lb/hr
4.99 lb/hr x 2,000 hr x ton/2,000 lb = 4.99 TPY

11. Potential, Fugitive, and Actual Emissions Comment:

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.050 lb/MMBtu**	4. Equivalent Allowable Emissions: **4.99** lb/hour **4.99** tons/year
5. Method of Compliance: **EPA Method 7e**	
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):	

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: **Carbon Monoxide - CO**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **7.98** lb/hour **7.98** tons/year	4. Synthetically Limited? ☒ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **0.080 lb/MMBtu** Reference: **Emissions based on AP-42**	7. Emissions Method Code: **3**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **0.08 lb/MMBtu x 99.77 MMBtu/hr = 7.98 lb/hr** **7.98 lb/hr x 2,000 hr x ton/2,000 lb = 7.98 TPY**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.080 lb/MMBtu**	4. Equivalent Allowable Emissions: **7.98** lb/hour **7.98** tons/year
5. Method of Compliance: **EPA Method 10**	
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):	

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: **Volatile Organic Compounds - VOC**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.54** lb/hour **0.54** tons/year	4. Synthetically Limited? ☒ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **0.0054 lb/MMBtu** Reference: **Emissions based on AP-42**	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **0.0054 lb/MMBtu x 99.77 MMBtu/hr = 0.54 lb/hr** **0.54 lb/hr x 2,000 hr x ton/2,000 lb = 0.54 TPY**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.005 lb/MMBtu**	4. Equivalent Allowable Emissions: **0.54** lb/hour **0.54** tons/year
5. Method of Compliance: **EPA Method 25A; Initial only**	
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):	

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: **VE20**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: **20** % Exceptional Conditions: **100** % Maximum Period of Excess Opacity Allowed: **60** min/hour	
4. Method of Compliance: **EPA Method 9**	
5. Visible Emissions Comment: **FDEP Rule 62-296.320(4)(b)1, F.A.C., requires 20% opacity. Excess emissions provided by Rule 62-210.700(1), F.A.C.**	

Visible Emissions Limitation: Visible Emissions Limitation 2 of 2

1. Visible Emissions Subtype: **VE10**	2. Basis for Allowable Opacity: ☐ Rule ☒ Other
3. Allowable Opacity: Normal Conditions: **10** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **EPA Method 9**	
5. Visible Emissions Comment: **Proposed as emission limit for PM/PM_{10}.**	

H. CONTINUOUS MONITOR INFORMATION

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

Continuous Monitoring System: Continuous Monitor _____ of _____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

Continuous Monitoring System: Continuous Monitor _____ of _____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

EMISSIONS UNIT INFORMATION
Section [2]
Auxiliary Boiler

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

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

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

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

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

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

6. Compliance Demonstration Reports/Records:
☐ Attached, Document ID: ________
Test Date(s)/Pollutant(s) Tested: ________

☐ Previously Submitted, Date: ________
Test Date(s)/Pollutant(s) Tested: ________

☐ To be Submitted, Date (if known): ________
Test Date(s)/Pollutant(s) Tested: ________

☒ Not Applicable

Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute:
☒ Attached, Document ID: **See Air Report** ☐ Not Applicable

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications

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

Additional Requirements for Title V Air Operation Permit Applications

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

Additional Requirements Comment

III. EMISSIONS UNIT INFORMATION

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

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

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

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

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

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

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

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

Emissions Unit Description and Status

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

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

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

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

2. Description of Emissions Unit Addressed in this Section:
   Natural Gas Fuel Heater(s)

3. Emissions Unit Identification Number: **3**

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:
C	**2013**	**2016**	**49**

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

   ☐ Acid Rain Unit

   ☐ CAIR Unit

9. Package Unit:
   Manufacturer: **Hanover Compression Company or equivalent** Model Number:

10. Generator Nameplate Rating: MW

11. Emissions Unit Comment:
    See Air Permit application report.

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 Control Equipment/Method: Control ____ of ____

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

Emissions Unit Control Equipment/Method: Control ____ of ____

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

B. EMISSIONS UNIT CAPACITY INFORMATION
(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate:		
2. Maximum Production Rate:		
3. Maximum Heat Input Rate: **9.9** million Btu/hr		
4. Maximum Incineration Rate:	pounds/hr tons/day	
5. Requested Maximum Operating Schedule:	**24** hours/day **52** weeks/year	**7** days/week **8,760** hours/year
6. Operating Capacity/Schedule Comment:		

EMISSIONS UNIT INFORMATION
Section [3]
Fuel Gas Heater

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:	2. Emission Point Type Code: **1**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: **V**	6. Stack Height: **30** feet	7. Exit Diameter: **1** Feet
8. Exit Temperature: **500**°F	9. Actual Volumetric Flow Rate: **4,950** acfm	10. Water Vapor: %
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: **See Table 2-6 in Air Permit Application Report.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): **Natural gas**		
2. Source Classification Code (SCC):	3. SCC Units: **1,000,000 SCF**	
4. Maximum Hourly Rate: **0.01**	5. Maximum Annual Rate: **85.0**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit: **1,020**
10. Segment Comment: **Maximum annual rate based on 8,760 hr/yr operation.**		

Segment Description and Rate: Segment _____ of _____

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

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
CO			EL
PM/PM10	Fuel Quality		EL
NOX			EL
SO2	Fuel Quality		EL
VOC			EL

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: **Carbon Monoxide - CO**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.82** lb/hour **3.57** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **0.082 lb/MMBtu** Reference: **Emissions based on AP-42**	7. Emissions Method Code: **3**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **0.082 lb/MMBtu x 9.9 MMBtu/hr = 0.82 lb/hr** **0.82 lb/hr x 8,760 hr x ton/2,000 lb = 3.57 TPY**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.082 lb/MMBtu**	4. Equivalent Allowable Emissions: **0.82** lb/hour **3.57** tons/year
5. Method of Compliance: **Manufacturer Certification**	
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):	

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.

<u>Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions</u>

1. Pollutant Emitted: **Nitrogen Oxides - NOX**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.97** lb/hour **4.25** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **0.098 lb/MMBtu** Reference: **Emissions based on AP-42**	7. Emissions Method Code: **3**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years

10. Calculation of Emissions:
0.098 lb/MMBtu x 9.9 MMBtu/hr = 0.97 lb/hr
0.97 lb/hr x 8,760 hr x ton/2,000 lb = 4.25 TPY

11. Potential, Fugitive, and Actual Emissions Comment:

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.098 lb/MMBtu**	4. Equivalent Allowable Emissions: **0.97** lb/hour **4.25** tons/year
5. Method of Compliance: **Manufacturer Certification**	
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):	

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.

<u>Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions</u>

1. Pollutant Emitted: **Sulfur Dioxide - SO2**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.055** lb/hour **0.24** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **2 grains S/100 scf gas** Reference: **Emissions based on AP-42**	7. Emissions Method Code: **2**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **2 grains S/100 scf x 64/32 (MW SO2/S) x 1 lb/7,000 gr x 9,706 scf/hr x 1/100 scf = 0.055 lb/hr** **0.055 lb/hr x 8,760 hr x ton/2,000 lb = 0.24 TPY**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **2 grains S/100 scf**	4. Equivalent Allowable Emissions: **0.055** lb/hour **0.24** tons/year
5. Method of Compliance: **Fuel vendor information**	
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):	

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: **Particulate Matter - PM/PM10**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.074** lb/hour **0.32** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **0.0075 lb/MMBtu** Reference: **Emissions based on AP-42**	7. Emissions Method Code: **2**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **0.0075 lb/MMBtu x 9.9 MMBtu/hr = 0.074 lb/hr** **0.074 lb/hr x 8,760 hr x ton/2,000 lb = 0.32 TPY**	
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: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **10% opacity**	4. Equivalent Allowable Emissions: **0.074** lb/hour **0.32** tons/year
5. Method of Compliance: **EPA Method 9**	
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):	

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: **Volatile Organic Compounds - VOC**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.053** lb/hour **0.23** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **0.0054 lb/MMBtu** Reference: **Emissions based on AP-42**	7. Emissions Method Code: **3**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **0.0054 lb/MMBtu x 9.9 MMBtu/hr = 0.053 lb/hr** **0.053 lb/hr x 8,760 hr x ton/2,000 lb = 0.23 TPY**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.0054 lb/MMBtu**	4. Equivalent Allowable Emissions: **0.053** lb/hour **0.23** tons/year
5. Method of Compliance: **Natural gas**	
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):	

G. VISIBLE EMISSIONS INFORMATION

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

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: **VE10**	2. Basis for Allowable Opacity: ☐ Rule ☒ Other
3. Allowable Opacity: Normal Conditions: **10** % Exceptional Conditions: **100** % Maximum Period of Excess Opacity Allowed: **60** min/hour	
4. Method of Compliance: **EPA Method 9**	
5. Visible Emissions Comment: **Excess emissions provided by Rule 62-210.700.**	

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: ☐ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

H. CONTINUOUS MONITOR INFORMATION

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

Continuous Monitoring System: Continuous Monitor ____ of ____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

Continuous Monitoring System: Continuous Monitor ____ of ____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

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

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

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

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

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

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

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

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications

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

Additional Requirements for Title V Air Operation Permit Applications

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

Additional Requirements Comment

III. EMISSIONS UNIT INFORMATION

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

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

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

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

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

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

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one) ☒ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent). ☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions. ☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.			
2. Description of Emissions Unit Addressed in this Section: **Emergency generators (2) to supply power in the event power is not available.**			
3. Emissions Unit Identification Number: **4**			
4. Emissions Unit Status Code: **C**	5. Commence Construction Date: **2013**	6. Initial Startup Date: **2016**	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: **Caterpillar or equivalent** Model Number: **3516BTA or equivalent**			
10. Generator Nameplate Rating: **2.25** MW			
11. Emissions Unit Comment: **Two 2,250-kW emergency generators, each with rating of 3,200 hp. Information based on Caterpillar, 2,250 kW Diesel Generator Set.**			

Emissions Unit Control Equipment/Method: Control 1 of 1

1. Control Equipment/Method Description: **Good combustion practices - No. 2 fuel oil-fired.**	
2. Control Device or Method Code: **N/A**	

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 Control Equipment/Method: Control ____ of ____

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

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate:		
2. Maximum Production Rate:		
3. Maximum Heat Input Rate: **21.01** million Btu/hr		
4. Maximum Incineration Rate:	pounds/hr tons/day	
5. Requested Maximum Operating Schedule:	**24** hours/day **52** weeks/year	**7** days/week **100** hours/year
6. Operating Capacity/Schedule Comment: **The emergency generators will normally be operated 1 to 2 hours per month for testing and maintenance. The emergency generators will meet the requirements of 40 CFR 60 Subpart IIII.**		

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:	2. Emission Point Type Code: **1**
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:	
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:	

5. Discharge Type Code: **V**	6. Stack Height: **30** feet	7. Exit Diameter: **1.0** Feet
8. Exit Temperature: **916**°F	9. Actual Volumetric Flow Rate: **17,463** acfm	10. Water Vapor: %

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: **See Table 2-5 in Air Permit Application Report.**	

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): **Diesel fuel combustion**		
2. Source Classification Code (SCC):	3. SCC Units: **1,000 gallons**	
4. Maximum Hourly Rate: **0.153**	5. Maximum Annual Rate: **15.3**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **0.0015**	8. Maximum % Ash:	9. Million Btu per SCC Unit: **137.7**
10. Segment Comment: **Maximum annual rate based on 100 hr/yr operation.**		

Segment Description and Rate: Segment _____ of _____

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

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
CO			EL
PM/PM10			EL
NOX			EL
SO2	Fuel Quality		EL
VOC			EL

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: **Carbon Monoxide - CO**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **60.0** lb/hour **3.0** tons/year	4. Synthetically Limited? ☒ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **8.5 grams per horsepower-hour (g/hp-hr)** Reference: **Manufacturer certification**	7. Emissions Method Code: **2**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **8.5 g/hp-hr x 3,200 hp x 1 lb/453.6 g = 60 lb/hr** **60 lb/hr x 100 hr x ton/2,000 lb = 3.0 TPY**	
11. Potential, Fugitive, and Actual Emissions Comment: **Emissions are for one generator.**	

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: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **8.5 g/hp-hr**	4. Equivalent Allowable Emissions: **60.0** lb/hour **3.0** tons/year
5. Method of Compliance: **Manufacturer certification of Subpart IIII standards.**	
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):	

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: **Nitrogen Oxides - NOX**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **48.7** lb/hour **2.4** tons/year	4. Synthetically Limited? ☒ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **6.9 g/hp-hr** Reference: **Manufacturer certification**	7. Emissions Method Code: **2**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years

10. Calculation of Emissions:

6.9 g/hp-hr x 3,200 hp x 1 lb/453.6 g = 48.7 lb/hr
48.7 lb/hr x 100 hr x ton/2,000 lb = 2.4 TPY

11. Potential, Fugitive, and Actual Emissions Comment:

Emissions are for one generator.

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: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **6.9 g/hp-hr**	4. Equivalent Allowable Emissions: **48.7** lb/hour **2.4** tons/year
5. Method of Compliance: **Manufacturer certification of Subpart IIII standards.**	
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):	

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.

<u>Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions</u>

1. Pollutant Emitted: **Sulfur Dioxide - SO2**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.032** lb/hour **0.0016** tons/year	4. Synthetically Limited? ☒ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **0.0015% S fuel oil** Reference: **FPL, 2011**	7. Emissions Method Code: **2**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years

10. Calculation of Emissions:
0.0015% S x 64/32 (MW SO2/S) x 7.06 lb/gal x 152.6 gal/hr = 0.032 lb/hr
0.032 lb/hr x 100 hr x ton/2,000 lb = 0.0016 TPY

11. Potential, Fugitive, and Actual Emissions Comment:
Emissions are for one generator.

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: **0.0015% S fuel oil**	4. Equivalent Allowable Emissions: **0.032** lb/hour **0.0016** tons/year
5. Method of Compliance: **Fuel vendor information**	
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):	

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: **Particulate Matter - PM/PM10**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **2.8** lb/hour **0.14** tons/year	4. Synthetically Limited? ☒ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **0.4 g/hp-hr** Reference: **Manufacturer certification**	7. Emissions Method Code: **2**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **0.4 g/hp-hr x 3,200 hp x 1 lb/453.6 g = 2.8 lb/hr** **2.8 lb/hr x 100 hr x ton/2,000 lb = 1.4 TPY**	
11. Potential, Fugitive, and Actual Emissions Comment: **Emissions are for one generator.**	

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: **0.4 g/hp-hr**	4. Equivalent Allowable Emissions: **2.8** lb/hour **0.14** tons/year
5. Method of Compliance: **Manufacturer certification of Subpart IIII Standards.**	
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):	

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: **Volatile Organic Compounds - VOC**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **7.1** lb/hour **0.35** tons/year	4. Synthetically Limited? ☒ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **1.0 g/hp-hr** Reference: **Manufacturer certification**	7. Emissions Method Code: **2**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years

10. Calculation of Emissions:
1.0 g/hp-hr x 3,200 hp x 1 lb/453.6 g = 7.1 lb/hr
7.1 lb/hr x 100 hr x ton/2,000 lb = 0.35 TPY

11. Potential, Fugitive, and Actual Emissions Comment:
Emissions are for one generator.

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: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **1.0 g/hp-hr**	4. Equivalent Allowable Emissions: **7.1** lb/hour **0.35** tons/year
5. Method of Compliance: **Manufacturer certification of Subpart IIII Standards.**	
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):	

G. VISIBLE EMISSIONS INFORMATION

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

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: **VE20**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: **20** % Exceptional Conditions: **100** % Maximum Period of Excess Opacity Allowed: **60** min/hour	
4. Method of Compliance: **EPA Method 9**	
5. Visible Emissions Comment: **FDEP Rule 62-296.320(4)(b)1, F.A.C. requires 20 percent opacity. Excess emissions provided by Rule 62-210.700.**	

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: ☐ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

H. CONTINUOUS MONITOR INFORMATION

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

Continuous Monitoring System: Continuous Monitor _____ of _____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

Continuous Monitoring System: Continuous Monitor _____ of _____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

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

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

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

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

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

6. Compliance Demonstration Reports/Records:
   ☐ Attached, Document ID: ________
   Test Date(s)/Pollutant(s) Tested: ________

   ☐ Previously Submitted, Date: ________
   Test Date(s)/Pollutant(s) Tested: ________

   ☐ To be Submitted, Date (if known): ________
   Test Date(s)/Pollutant(s) Tested: ________

   ☒ Not Applicable

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute:
   ☒ Attached, Document ID: **See Air Report** ☐ Not Applicable

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications

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

Additional Requirements for Title V Air Operation Permit Applications

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

Additional Requirements Comment

III. EMISSIONS UNIT INFORMATION

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

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

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

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

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

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

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)
   - ☒ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).
   - ☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.
   - ☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
   Compressor Engines

3. Emissions Unit Identification Number: **5**

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:
C	**2013**	**2016**	**49**

8. Federal Program Applicability: (Check all that apply)
   - ☐ Acid Rain Unit
   - ☐ CAIR Unit

9. Package Unit:
   Manufacturer: **Solar Turbines or equivalent** Model Number: **Centaur 50 or equivalent**

10. Generator Nameplate Rating: MW

11. Emissions Unit Comment:
    Includes 3 natural gas-fired units, each rated at 5,514 hp at 75oF. Only 2 units will operate at any time. Based on emissions from a Solar Turbines Centaur 50.

Emissions Unit Control Equipment/Method: Control 1 of 1

1. Control Equipment/Method Description: **Dry Low-NOX Combustion**
2. Control Device or Method Code: **025**

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 Control Equipment/Method: Control ____ of ____

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

B. EMISSIONS UNIT CAPACITY INFORMATION
(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate:	
2. Maximum Production Rate:	
3. Maximum Heat Input Rate: **54.0** million Btu/hr	
4. Maximum Incineration Rate: pounds/hr tons/day	
5. Requested Maximum Operating Schedule: **24** hours/day **52** weeks/year	**7** days/week **8,760** hours/year
6. Operating Capacity/Schedule Comment: **Maximum heat input based on 75°F (HHV).**	

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:	2. Emission Point Type Code: **1**
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:	
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:	

5. Discharge Type Code: **V**	6. Stack Height: **20.7** feet	7. Exit Diameter: **3.5** Feet
8. Exit Temperature: **969**°F	9. Actual Volumetric Flow Rate: **86,579** acfm	10. Water Vapor: %

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:
See Table 2-8 in the Air Permit Application Report; operating conditions based on 75°F.

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): **Natural gas**		
2. Source Classification Code (SCC):	3. SCC Units: **MMscf**	
4. Maximum Hourly Rate: **0.0562**	5. Maximum Annual Rate: **454.4**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit: **1,041**
10. Segment Comment: **Fuel rates presented per unit. Maximum hourly and annual fuel rates based on 35°F and 75°F, respectively. Maximum annual rate based on 8,760 hr/yr operation.**		

Segment Description and Rate: Segment _____ of _____

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

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
CO			EL
PM/PM10			EL
NOX			EL
SO2			EL
VOC			EL

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.

<u>Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions</u>

1. Pollutant Emitted: **Carbon Monoxide - CO**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **3.22** lb/hour **12.8** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **25 ppmvd @ 15% O2** Reference: **Manufacturer's specifications**	7. Emissions Method Code: **2**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Air Report; Table 2-8**	
11. Potential, Fugitive, and Actual Emissions Comment: **Emissions presented per unit. Maximum hourly and annual emissions based on 35°F and 75°F, respectively.**	

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: **25 ppmvd @ 15% O2**	4. Equivalent Allowable Emissions: **3.22** lb/hour **12.8** tons/year
5. Method of Compliance: **Manufacturer's certification**	
6. Allowable Emissions Comment (Description of Operating Method): **Emissions presented per unit. Maximum hourly and annual emissions based on 35°F and 75°F, respectively.**	

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, 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.

<u>Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions</u>

1. Pollutant Emitted: **Nitrogen Oxides - NOX**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **3.17** lb/hour **12.6** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **15 ppmvd @ 15% O2** Reference: **Manufacturer's specifications**	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Air Report; Table 2-8**	
11. Potential, Fugitive, and Actual Emissions Comment: ***Emissions presented per unit.*** **Maximum hourly and annual emissions based on 35°F and 75°F, respectively.**	

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: **15 ppmvd @ 15% O2**	4. Equivalent Allowable Emissions: **3.17** lb/hour **12.6** tons/year
5. Method of Compliance: **Manufacturer's certification**	
6. Allowable Emissions Comment (Description of Operating Method): **Emissions presented per unit. Maximum hourly and annual emissions based on 35°F and 75°F, respectively.**	

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, 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: **Sulfur Dioxide - SO2**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.32** lb/hour **1.30** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **2 grains S/100 scf** Reference: **FPL, 2011**	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Air Report, Table 2-8.**	
11. Potential, Fugitive, and Actual Emissions Comment: **Emissions presented per unit. Maximum hourly and annual emissions based on 35°F and 75°F, respectively.**	

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: **2 grains S/100 scf**	4. Equivalent Allowable Emissions: **0.32** lb/hour **1.30** tons/year
5. Method of Compliance: **Fuel vendor information**	
6. Allowable Emissions Comment (Description of Operating Method): **Emissions presented per unit. Maximum hourly and annual emissions based on 35°F and 75°F, respectively.**	

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, 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: **Particulate Matter - PM/PM10**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.37** lb/hour **1.5** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **0.0063 lb/MMBtu** Reference: **Emissions based on AP-42**	7. Emissions Method Code: **3**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Air Report; Table 2-8**	
11. Potential, Fugitive, and Actual Emissions Comment: **Emissions presented per unit. Maximum hourly and annual emissions based on 35°F and 75°F, respectively.**	

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: **0.37** lb/hour **1.5** tons/year
5. Method of Compliance: **EPA Method 9**	
6. Allowable Emissions Comment (Description of Operating Method): **Emissions presented per unit. Maximum hourly and annual emissions based on 35°F and 75°F, respectively.**	

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, 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: **Volatile Organic Compounds - VOC**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.92** lb/hour **3.6** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **12.5 ppmvd @ 15% O2** Reference: **Manufacturer's specifications**	7. Emissions Method Code: **2**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years

10. Calculation of Emissions:
See Air Report; Table 2-8; VOC emissions are assumed to be 50 percent of unburned hydrocarbon emissions.

11. Potential, Fugitive, and Actual Emissions Comment:
Emissions presented per unit. Maximum hourly and annual emissions based on 35°F and 75°F, respectively.

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: **12.5 ppmvd @ 15% O2**	4. Equivalent Allowable Emissions: **0.92** lb/hour **3.6** tons/year
5. Method of Compliance: **Manufacturer's certification**	
6. Allowable Emissions Comment (Description of Operating Method): **Emissions presented per unit. Maximum hourly and annual emissions based on 35°F and 75°F, respectively.**	

Allowable Emissions Allowable Emissions _____ of _____

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

Allowable Emissions Allowable Emissions _____ of _____

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

G. VISIBLE EMISSIONS INFORMATION

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

Visible Emissions Limitation: Visible Emissions Limitation 1 of 2

1. Visible Emissions Subtype: **VE20**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: **20** % Exceptional Conditions: **100** % Maximum Period of Excess Opacity Allowed: **60** min/hour	
4. Method of Compliance: **EPA Method 9**	
5. Visible Emissions Comment: **FDEP Rule 62-296.320(4)(b)1, F.A.C. requires 20 percent opacity. Excess emissions provided by Rule 62-210.700.**	

Visible Emissions Limitation: Visible Emissions Limitation 2 of 2

1. Visible Emissions Subtype: **VE10**	2. Basis for Allowable Opacity: ☐ Rule ☒ Other
3. Allowable Opacity: Normal Conditions: **10** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **EPA Method 9**	
5. Visible Emissions Comment: **Proposed for PM/PM_{10} emissions.**	

H. CONTINUOUS MONITOR INFORMATION

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

Continuous Monitoring System: Continuous Monitor ____ of ____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

Continuous Monitoring System: Continuous Monitor ____ of ____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1.	Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☒ Attached, Document ID: **See Air Report** ☐ Previously Submitted, Date ______
2.	Fuel Analysis or Specification: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☒ Attached, Document ID: **See Air Report** ☐ Previously Submitted, Date ______
3.	Detailed Description of Control Equipment: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☒ Attached, Document ID: **See Air Report** ☐ Previously Submitted, Date ______
4.	Procedures for Startup and Shutdown: (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☐ Attached, Document ID: ______ ☐ Previously Submitted, Date ______ ☒ Not Applicable (construction application)
5.	Operation and Maintenance Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☐ Attached, Document ID: ______ ☐ Previously Submitted, Date ______ ☒ Not Applicable
6.	Compliance Demonstration Reports/Records: ☐ Attached, Document ID: ______ Test Date(s)/Pollutant(s) Tested: ______ ☐ Previously Submitted, Date: ______ Test Date(s)/Pollutant(s) Tested: ______ ☐ To be Submitted, Date (if known): ______ Test Date(s)/Pollutant(s) Tested: ______ ☒ Not Applicable Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.
7.	Other Information Required by Rule or Statute: ☒ Attached, Document ID: **See Air Report** ☒ Not Applicable

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications

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

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

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

Additional Requirements Comment

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 [6]
Diesel Fire Pump Engine

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:

   Diesel fire pump engine for emergency usage.

3. Emissions Unit Identification Number: **6**

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:
C	**2013**	**2016**	**49**

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

   ☐ Acid Rain Unit

   ☐ CAIR Unit

9. Package Unit:
   Manufacturer: **TBD** Model Number: **TBD**

10. Generator Nameplate Rating: MW

11. Emissions Unit Comment:
   One diesel fire pump engine rated at 300 hp. Manufacturer and model number to be determined (TBD).

Emissions Unit Control Equipment/Method: Control 1 of 1

1. Control Equipment/Method Description: **Good combustion practices - No. 2 fuel oil-fired.**
2. Control Device or Method Code: **N/A**

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 Control Equipment/Method: Control ____ of ____

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

B. EMISSIONS UNIT CAPACITY INFORMATION
(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate:	
2. Maximum Production Rate:	
3. Maximum Heat Input Rate: **2.32** million Btu/hr	
4. Maximum Incineration Rate: pounds/hr tons/day	
5. Requested Maximum Operating Schedule: **24** hours/day **52** weeks/year	 **7** days/week **100** hours/year
6. Operating Capacity/Schedule Comment: **The diesel fire pump engine will normally be operated 1 to 2 hours per month for testing and maintenance. The fire pump engine will meet the requirements of 40 CFR 60 Subpart IIII.**	

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:	2. Emission Point Type Code: **1**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: **V**	6. Stack Height: **17** feet	7. Exit Diameter: **0.79** Feet
8. Exit Temperature: **744**°F	9. Actual Volumetric Flow Rate: **1,750** acfm	10. Water Vapor: %
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: **See Table 2-7 in Air Permit Application Report.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): **Diesel fuel combustion**		
2. Source Classification Code (SCC):	3. SCC Units: **1,000 gallons**	
4. Maximum Hourly Rate: **0.017**	5. Maximum Annual Rate: **1.69**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **0.0015**	8. Maximum % Ash:	9. Million Btu per SCC Unit: **137.7**
10. Segment Comment: **Maximum annual rate based on 80 hr/yr operation.**		

Segment Description and Rate: Segment ____ of ____

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

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
CO			EL
PM/PM10			EL
NOX			EL
SO2	Fuel Quality		EL
VOC			EL

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: **Carbon Monoxide - CO**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **1.7** lb/hour **0.09** tons/year	4. Synthetically Limited? ☒ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **2.6 grams per horsepower-hour (g/hp-hr)** Reference: **Manufacturer certification**	7. Emissions Method Code: **2**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years

10. Calculation of Emissions:

2.6 g/hp-hr x 300 hp x 1 lb/453.6 g = 1.7 lb/hr
1.7 lb/hr x 100 hr/2,000 lb = 0.09 TPY

11. Potential, Fugitive, and Actual Emissions Comment:
Emissions are for one engine.

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: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **2.6 g/hp-hr**	4. Equivalent Allowable Emissions: **1.7** lb/hour **0.09** tons/year
5. Method of Compliance: **Manufacturer certification of Subpart IIII standards.**	
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):	

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: **Nitrogen Oxides - NOX**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **4.5** lb/hour **0.23** tons/year	4. Synthetically Limited? ☒ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **6.8 g/hp-hr** Reference: **Manufacturer certification**	7. Emissions Method Code: **2**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years

10. Calculation of Emissions:
6.8 g/hp-hr x 300 hp x 1 lb/453.6 g = 4.5 lb/hr
4.5 lb/hr x 100 hr x ton/2,000 lb = 0.23 TPY

11. Potential, Fugitive, and Actual Emissions Comment:
Emissions are for one engine.

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: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **6.8 g/hp-hr**	4. Equivalent Allowable Emissions: **4.5** lb/hour **0.23** tons/year
5. Method of Compliance: **Manufacturer certification of Subpart IIII standards.**	
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):	

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.

<u>Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions</u>

1. Pollutant Emitted: **Sulfur Dioxide - SO2**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.0036** lb/hour **0.00018** tons/year	4. Synthetically Limited? ☒ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **0.0015% S fuel oil** Reference: **FPL, 2011**	7. Emissions Method Code: **2**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years

10. Calculation of Emissions:
0.0015% S x 64/32 (MW SO2/S) x 7.06 lb/gal x 16.9 gal/hr = 0.0036 lb/hr
0.0036 lb/hr x 100 hr x ton/2,000 lb = 0.00018 TPY

11. Potential, Fugitive, and Actual Emissions Comment:
Emissions are for one engine.

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: **0.0015% S fuel oil**	4. Equivalent Allowable Emissions: **0.0036** lb/hour **0.00018** tons/year
5. Method of Compliance: **Fuel vendor information**	
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):	

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: **Particulate Matter - PM/PM10**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.26** lb/hour **0.013** tons/year	4. Synthetically Limited? ☒ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **0.4 g/hp-hr** Reference: **Manufacturer certification**	7. Emissions Method Code: **2**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **0.4 g/hp-hr x 300 hp x 1 lb/453.6 g = 0.26 lb/hr** **0.26 lb/hr x 100 hr/2,000 lb = 0.013 TPY**	
11. Potential, Fugitive, and Actual Emissions Comment: **Emissions are for one engine.**	

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: **0.4 g/hp-hr**	4. Equivalent Allowable Emissions: **0.26** lb/hour **0.013** tons/year
5. Method of Compliance: **Manufacturer certification of Subpart IIII Standards.**	
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):	

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: **Volatile Organic Compounds - VOC**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.66** lb/hour **0.033** tons/year	4. Synthetically Limited? ☒ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **1.0 g/hp-hr** Reference: **Manufacturer certification**	7. Emissions Method Code: **2**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years

10. Calculation of Emissions:
1.0 g/hp-hr x 300 hp x 1 lb/453.6 g = 0.66 lb/hr
0.66 lb/hr x 100 hr/2,000 lb = 0.033 TPY

11. Potential, Fugitive, and Actual Emissions Comment:
Emissions are for one engine.

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: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **1.0 g/hp-hr**	4. Equivalent Allowable Emissions: **0.66** lb/hour **0.033** tons/year
5. Method of Compliance: **Manufacturer certification of Subpart IIII Standards.**	
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):	

G. VISIBLE EMISSIONS INFORMATION

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

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: **VE20**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: **20** % Exceptional Conditions: **100** % Maximum Period of Excess Opacity Allowed: **60** min/hour	
4. Method of Compliance: **EPA Method 9**	
5. Visible Emissions Comment: **FDEP Rule 62-296.320(4)(b)1, F.A.C. requires 20 percent opacity. Excess emissions provided by Rule 62-210.700.**	

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: ☐ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

H. CONTINUOUS MONITOR INFORMATION

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

Continuous Monitoring System: Continuous Monitor _____ of _____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

Continuous Monitoring System: Continuous Monitor _____ of _____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

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

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

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

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

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

6. Compliance Demonstration Reports/Records:
☐ Attached, Document ID: ________
Test Date(s)/Pollutant(s) Tested: ________

☐ Previously Submitted, Date: ________
Test Date(s)/Pollutant(s) Tested: ________

☐ To be Submitted, Date (if known): ________
Test Date(s)/Pollutant(s) Tested: ________

☒ Not Applicable

Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute:
☒ Attached, Document ID: **See Air Report** ☐ Not Applicable

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications

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

Additional Requirements for Title V Air Operation Permit Applications

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

Additional Requirements Comment

III. EMISSIONS UNIT INFORMATION

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

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

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

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

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

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

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

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

Emissions Unit Description and Status

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

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

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

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

2. Description of Emissions Unit Addressed in this Section:

   Temporary Construction Boilers (to be used during construction period only).

3. Emissions Unit Identification Number: **7**

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:
C		**2015**	**49**

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

   ☐ Acid Rain Unit

   ☐ CAIR Unit

9. Package Unit:
   Manufacturer: **Nebraska Boiler or equivalent** Model Number:

10. Generator Nameplate Rating: MW

11. Emissions Unit Comment:
    These temporary emission units will only be used during the project construction period. Once the PEEC commences commercial operation, these units will no longer be operated.

Emissions Unit Control Equipment/Method: Control 1 of 1

1. Control Equipment/Method Description: **Low NOX burners**	
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 Control Equipment/Method: Control ____ of ____

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

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate:			
2. Maximum Production Rate:			
3. Maximum Heat Input Rate: **150** million Btu/hr **(up to)**			
4. Maximum Incineration Rate:	pounds/hr tons/day		
5. Requested Maximum Operating Schedule:	**24** hours/day **52** weeks/year		**7** days/week **1,500** hours/year
6. Operating Capacity/Schedule Comment: **These temporary emission units will only be used during the project construction period. Once the PEEC commences commercial operation, these units will no longer be operated.**			

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:	2. Emission Point Type Code:	
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:	6. Stack Height: feet	7. Exit Diameter: Feet
8. Exit Temperature: °F	9. Actual Volumetric Flow Rate: acfm	10. Water Vapor: %
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 parameter may vary based on availability from vendors.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 2

1. Segment Description (Process/Fuel Type): **Natural gas**		
2. Source Classification Code (SCC):	3. SCC Units: **MMscf**	
4. Maximum Hourly Rate: **0.147**	5. Maximum Annual Rate: **220.6**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **2 grains/100 scf**	8. Maximum % Ash:	9. Million Btu per SCC Unit: **1,020**
10. Segment Comment: **Maximum hourly and annual rates for each boiler. Maximum annual rate based on 1,500 hr/yr operation.**		

Segment Description and Rate: Segment 2 of 2

1. Segment Description (Process/Fuel Type): **Ultra low sulfur**		
2. Source Classification Code (SCC):	3. SCC Units: **1,000 gallons**	
4. Maximum Hourly Rate: **1.110**	5. Maximum Annual Rate: **1,665.4**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **0.0015**	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment: **Maximum hourly and annual rates for each boiler. Maximum annual rate based on 1,500 hr/yr operation.**		

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
PM	**Fuel Quality**		**NS**
PM10	**Fuel Quality**		**NS**
SO2	**Fuel Quality**		**EL**
NOX	**205**		**EL**
CO	**Good Combustion**		**NS**
VOC	**Good Combustion**		**NS**

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.

<u>Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions</u>

1. Pollutant Emitted: **Particulate Matter Total - PM**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **1.12** lb/hour **2.7** tons/year	4. Synthetically Limited? ☒ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference: **Emissions based on AP-42**	7. Emissions Method Code: **3**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Attachment F1 for calculations.**	
11. Potential, Fugitive, and Actual Emissions Comment: **For each boiler.**	

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: **1.12** lb/hour **2.7** tons/year
5. Method of Compliance: **EPA Method 9**	
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):	

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.

<u>Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions</u>

1. Pollutant Emitted: **Particulate Matter - PM10**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **1.12** lb/hour **2.7** tons/year	4. Synthetically Limited? ☒ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference: **Emissions based on AP-42**	7. Emissions Method Code: **3**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Attachment F1 for calculations.**	
11. Potential, Fugitive, and Actual Emissions Comment: **For each boiler.**	

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: **1.12** lb/hour **2.7** tons/year
5. Method of Compliance: **EPA Method 9**	
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):	

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: **Sulfur Dioxide - SO2**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.84** lb/hour **0.6** tons/year	4. Synthetically Limited? ☒ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference: **Emissions based on AP-42**	7. Emissions Method Code: **3**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Attachment F1 for calculations.**	
11. Potential, Fugitive, and Actual Emissions Comment: **For each boiler.**	

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: **2 grains S/100 scf gas**	4. Equivalent Allowable Emissions: **0.84** lb/hour **0.6** tons/year
5. Method of Compliance: **Fuel Sampling and Analysis**	
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):	

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: **Nitrogen Oxides - NOX**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **20.59** lb/hour **15.4** tons/year	4. Synthetically Limited? ☒ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference: **Emissions based on AP-42**	7. Emissions Method Code: **3**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **For each boiler.**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.050 lb/MMBtu**	4. Equivalent Allowable Emissions: **20.59** lb/hour **15.4** tons/year
5. Method of Compliance: **EPA Method 7e or Vendor Certification**	
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):	

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: **Carbon Monoxide - CO**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **12.35** lb/hour **9.3** tons/year	4. Synthetically Limited? ☒ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference: **Emissions based on AP-42**	7. Emissions Method Code: **3**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Attachment F1**	
11. Potential, Fugitive, and Actual Emissions Comment: **For each boiler.**	

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:	4. Equivalent Allowable Emissions: **12.35** lb/hour **9.3** 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):	

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: **Volatile Organic Compounds - VOC**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.81** lb/hour **0.6** tons/year	4. Synthetically Limited? ☒ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference: **Emissions based on AP-42**	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Attachment F1.**	
11. Potential, Fugitive, and Actual Emissions Comment: **For each boiler.**	

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:	4. Equivalent Allowable Emissions: **0.81** lb/hour **0.6** 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):	

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: **VE20**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: **20** % Exceptional Conditions: **100** % Maximum Period of Excess Opacity Allowed: **60** min/hour	
4. Method of Compliance: **EPA Method 9**	
5. Visible Emissions Comment: **FDEP Rule 62-296.320(4)(b)1, F.A.C., requires 20% opacity. Excess emissions provided by Rule 62-210.700(1), F.A.C.**	

Visible Emissions Limitation: Visible Emissions Limitation 2 of 2

1. Visible Emissions Subtype: **VE10**	2. Basis for Allowable Opacity: ☐ Rule ☒ Other
3. Allowable Opacity: Normal Conditions: **10** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **EPA Method 9**	
5. Visible Emissions Comment: **Proposed as emission limit for PM/PM_{10}.**	

H. CONTINUOUS MONITOR INFORMATION

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

Continuous Monitoring System: Continuous Monitor ____ of ____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

Continuous Monitoring System: Continuous Monitor ____ of ____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

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

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

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

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

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

6. Compliance Demonstration Reports/Records:
   ☐ Attached, Document ID: ________
   Test Date(s)/Pollutant(s) Tested: ________

   ☐ Previously Submitted, Date: ________
   Test Date(s)/Pollutant(s) Tested: ________

   ☐ To be Submitted, Date (if known): ________
   Test Date(s)/Pollutant(s) Tested: ________

   ☒ Not Applicable

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute:
   ☒ Attached, Document ID: **See Air Report** ☐ Not Applicable

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications

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

Additional Requirements for Title V Air Operation Permit Applications

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

Additional Requirements Comment

ATTACHMENT F1
EMISSION CALCULATIONS FOR CONSTRUCTION BOILERS

Pollutant	No. of Units	Maximum Heat Input Rate/Unit (MMBtu/hr)	Hourly Fuel Usage [a] (10^6 scf/hr) (10^3gal/hr)	Annual Operating Hours (hrs/yr)	Annual Fuel Usage [a] (10^6 scf/hr) (10^3gal/hr)	AP-42 Emissions Factor [b]	Emission Rate Hourly (lb/hr/boiler)	Emission Rate Annual (TPY)
Natural Gas Combustion								
PM/PM_{10}	1	150.0	0.147	1,500	220.6	7.6 lb/10^6scf	1.12	0.8
SO_2	1	150.0	0.147	1,500	220.6	2 S gr/100 scf [c]	0.84	0.6
NO_x	1	150.0	0.147	1,500	220.6	140.0 lb/10^6scf	20.59	15.4
CO	1	150.0	0.147	1,500	220.6	84 lb/10^6scf	12.35	9.3
VOC [d]	1	150.0	0.147	1,500	220.6	5.5 lb/10^6scf	0.81	0.6
Ultra Low-Sulfur Diesel Combustion								
PM/PM_{10}	1	150.0	1.110	1,500	1665.4	3.3 lb/10^3gal	3.66	2.7
SO_2	1	150.0	1.110	1,500	1665.4	157 x S lb/10^3gal [e]	0.26	0.2
NO_x	1	150.0	1.110	1,500	1665.4	10.0 lb/10^3gal	11.10	8.3
CO	1	150.0	1.110	1,500	1665.4	5.0 lb/10^3gal	5.55	4.2
VOC [d]	1	150.0	1.110	1,500	1665.4	0.2 lb/10^3gal	0.22	0.2

Footnotes:

[a] Based on natural gas heat content of 1,020 Btu/scf and ultra low-sulfur distillate heat content of 131,500 Btu/gal, respectively.

[b] Propane combustion emission factors are based on Tables 1.4-1 and 1.4-2, AP-42, Section 1.4, July 1998. Ultra low sulfur distillate combustion emission factors are based on Tables 1.3-1, 1.3-2, and 1.3-3, AP-42, Section 1.3, September, 1998.

[c] "S" is sulfur content in natural gas. A sulfur content of 2.0 gr/100 scf is used in the calculation; in AP.42, default sulfur content is 0.2 gr/100scf

[d] Non-methane total organic compounds.

[e] "S" is weight percent of sulfur in oil. A sulfur content of 0.0015% by weight used in the calculation.

AIR CONSTRUCTION PERMIT APPLICATION REPORT

AIR CONSTRUCTION
PERMIT APPLICATION
FOR THE
FPL PORT EVERGLADES
NEXT GENERATION CLEAN ENERGY CENTER
BROWARD COUNTY, FLORIDA

Prepared For:

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January 2012

113-87618

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

(Cont'd)

LIST OF TABLES

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ACRONYMS

°C	degrees Celsius
°F	degrees Fahrenheit
$\mu g/m^3$	micrograms per cubic meter
AAQS	Ambient Air Quality Standards
AERMOD	American Meteorological Society and U.S. Environmental Protection Agency Regulatory Model
AOR	Annual Operating Report
AQRV	air quality related value
BACT	Best Available Control Technology
BPIP	Building Profile Impact Program
Btu/lb	British thermal unit per pound
Btu/kWh	British thermal unit per kilowatt hour
Btu/scf	British thermal unit per standard cubic foot
CAA	Clean Air Act
CCEC	Cape Canaveral Energy Center
CEM	continuous emissions monitoring
cf/yr	cubic foot per year
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CT	combustion turbine
DLE	dry low emissions
DLN	dry low NO_x
EPA	U.S. Environmental Protection Agency
F.A.C.	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FGT	Florida Gas Transmission Company, LLC
FIU	Florida International University
FPL	Florida Power & Light
ft	foot
FR	Federal Register
FFFSGU	fossil fuel fired steam generating unit
g/bhp-hr	grams per brake horsepower-hour
g/s	grams per second
GEP	Good Engineering Practice
gr/100 scf	grains per 100 standard cubic feet

GHG	greenhouse gas
HAP	hazardous air pollutant
HFCs	hydrofluorocarbons
HHV	higher heating value
hp	horsepower
hr/yr	hours per year
HRSG	heat recovery steam generator
HSH	highest, second highest
Hz	hertz
I	Interstate highway
ICW	Intracoastal Waterway
km	kilometer
kW	kilowatt
lb/hr	pound per hour
lb/MMBtu	pound per million British thermal units
lb/MW-hr	pound per megawatt-hour
LHV	lower heating value
m	meter
MACT	Maximum Available Control Technology
MMBtu/hr	million British thermal units per hour
MMcf/hr	million cubic feet per hour
MPS	Mitsubishi Power Systems
MW	megawatt
NAD83	North American Datum 83
NESHAP	National Emission Standards for Hazardous Air Pollutants
NP	National Park
N_2O	nitrous oxide
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NP	National Park
NSPS	New Source Performance Standards
NSR	New Source Review
NWA	National Wilderness Area
NWS	National Weather Service
O_2	oxygen
PFCs	perfluorocarbons
PM	particulate matter
$PM_{2.5}$	particulate matter less than 2.5 microns
PM_{10}	particulate matter less than 10 microns

ppb	parts per billion
ppbvd	parts per billion by volume dry
ppm	parts per million
ppmvd	parts per million by volume dry
PSD	Prevention of Significant Deterioration
PEEC	Port Everglades Next Generation Clean Energy Center
psia	pound per square inch absolute
psig	pound per square inch gauge
QA/QC	quality assurance/quality control
RICE	reciprocating internal combustion engines
SAM	sulfuric acid mist
scf/yr	standard cubic foot per year
SCR	selective catalytic reduction
SCRAM	Support Center for Regulatory Air Models
SER	significant emissions rate
SF_6	sulfur hexafluoride
SO_2	sulfur dioxide
S.R.	State Road
ST	steam turbine
TPY	tons per year
TSP	total suspended particulate
TTN	Technology Transfer Network
ULSD	ultra low sulfur distillate "light oil"
USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator
VOC	volatile organic compound
WCEC	West County Energy Center

1.0 INTRODUCTION

Florida Power & Light Company's (FPL's) existing Port Everglades Plant consists of two nominal 200 megawatt (MW) fossil fuel-fired steam generating units (FFFSGU) (Units 1 and 2), two nominal 400 MW FFFSGU (Units 3 and 4), and 12 simple cycle natural gas turbines (GT1 - GT12). Units 1 and 2 began operation in 1960 and 1961, respectively. The commercial in service dates for Units 3 and 4 were 1964 and 1965, respectively. All four units have remained in service since these dates. Units 1 through 4 are authorized to operate pursuant to Florida Department of Environmental Protection (FDEP) Final Title V Permit No. 0110036-009-AV on natural gas, No. 6 fuel oil, No. 2 fuel oil, propane, and on-specification used oil from FPL operations.

Units 1 and 2 have a permitted maximum heat input of 2,300 million British thermal units per hour (MMBtu/hr) on oil and 2,400 MMBtu/hr on natural gas. Units 3 and 4 have a permitted maximum heat input of 4,000 MMBtu/hr on oil and 4,180 MMBtu/hr on natural gas. The air emissions from each unit are exhausted through four separate approximately 340 foot (ft) stacks. The 12 simple cycle natural gas turbines have a nominal capacity of 500 MW with a heat input of 8,424 MMBtu/hr and are capable of firing natural gas and/or No. 2 fuel oil. The general location of the existing Plant is shown in Figure 1-1.

FPL proposes to modernize the existing Port Everglades Plant Units 1 through 4 into a highly efficient, lower emission next generation clean energy center using the latest combined cycle technology (the Project). This Air Construction Permit Application/Greenhouse Gas (GHG) Prevention of Significant Deterioration (PSD) Application consists of the retirement and replacement of the existing Units 1 through 4 with one nominal 1,250 MW "3-on-1" combined cycle unit. The "3-on-1" unit will consist of three nominal 250 MW advanced combustion turbines (CTs) and three heat recovery steam generators (HRSGs), which will utilize the waste heat from the CTs to produce steam to be utilized in a single nominal 500 MW steam turbine generator. The "3-on-1" unit is referred to as the Port Everglades Next Generation Clean Energy Center (PEEC). The 12 existing natural gas turbines are not a part of PEEC. PEEC will be located within the existing FPL property boundaries.

Dismantlement of the existing generation units will be required prior to the construction of PEEC. Therefore, there will be no overlap of operation between the existing units and PEEC, which is anticipated to commence commercial operation in June 2016.

There will be significant benefits associated with PEEC. The Project will result in increased power generation without using additional land and water sources. PEEC will be more energy efficient than the existing units and will provide cleaner energy to FPL's customers. PEEC will use approximately 35 percent less fuel than the existing units, for an equivalent amount of electricity production.

In addition, regulated air emissions with the Project will be approximately 90 percent lower than the existing emissions for Units 1 through 4, resulting in significant air quality benefits. There will also be significant reductions in FPL's system wide carbon dioxide (CO_2) emissions from 2016 through 2047 with the Project. CO_2 emissions on a system wide basis will be lower with PEEC – a cumulative reduction of approximately 22 million tons of CO_2 emissions from 2016 through 2047 as a direct result of the Project.

PEEC will improve air quality not only in the vicinity of the facility but also in areas further away from the facility, such as the Everglades National Park (NP). The maximum total air quality impacts for PEEC are predicted to be well below and in compliance with the AAQS. For pollutants such as sulfur dioxide (SO_2) and nitrogen dioxide (NO_2), PEEC's total air quality impacts are predicted to be approximately 40 percent or more lower than those predicted for Units 1 through 4.

The CTs being evaluated for PEEC include the Mitsubishi Power Systems (MPS) "J" CTs and Siemens Power Generation, Inc. (Siemens) "H" CTs, or their equivalents. The information presented in this application envelopes the performance and emissions for both types of CTs.

Each CT will utilize inlet air cooling and may consist of evaporative cooling or an alternative system. Evaporative cooling systems achieve adiabatic cooling using water in the form of water evaporated from a treated paper material. The evaporated water extracts the latent heat of vaporization from the inlet air stream when the water droplet is converted to water vapor. Heat is removed at a rate of 1,075 British thermal units per pound (Btu/lb) of water. The result is a cooler, denser air stream. This allows additional power to be produced. The CTs will use natural gas as the primary fuel with ultra low sulfur distillate (ULSD) "light oil" used as a backup fuel for up to the equivalent of 1,000 hours per year (hr/yr) per CT at baseload conditions.

Natural gas for PEEC will be transported to the facility via pipeline. No onsite storage will be provided for natural gas. Natural gas compressors will be installed to raise the natural gas pressure to the appropriate level for the CTs. ULSD oil will be delivered to the facility by truck or pipeline and will be stored in a new fuel oil storage tank.

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 Port Everglades 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 PEEC 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. Florida has deferred review and approval of projects undergoing PSD review for GHGs to EPA Region IV.

There will be significant reductions in regulated air emissions for PEEC except for GHGs. The net changes in air emissions, as presented in Section 2.0, will not exceed the PSD SERs for any of the criteria pollutants subject to PSD review, except for GHGs. Therefore, pursuant to FDEP Rule 62-212.400, F.A.C., PSD review is applicable for GHG by EPA but not for any of the other regulated air pollutants for the Project.

This Air Construction Permit Application Report is divided into six major sections. This Application is being filed for the purpose of establishing federally enforceable emission limitations that ensure the Project will not result in a significant net increase in emissions of any regulated air pollutant, in accordance with FDEP's federally approved major source air construction permit program under Florida's federally required State Implementation Plan:

- Section 2.0 presents a description of PEEC, including air emissions and stack parameters.
- Section 3.0 provides a review of the regulatory analysis conducted, including PSD and nonattainment requirements, applicable to PEEC.
- Section 4.0 includes the control technology review including a Best Available Control Technology (BACT) analysis for GHG.
- Section 5.0 discusses the ambient air monitoring analysis.
- Section 6.0 presents a summary of the air modeling approach and results used in assessing compliance of the existing Units 1 through 4 and PEEC with ambient air quality standards (AAQS).

2.0 PROJECT DESCRIPTION

2.1 Facility Description

The existing FPL Port Everglades Plant is located within the City of Hollywood, in Broward County, Florida. The existing plant is situated within approximately 92.5 acres of land owned by FPL. The FPL owned property is also in the midport section within the jurisdictional area of Port Everglades. The facility is surrounded by other Port Everglades facilities and associated industrial activities, such as oil storage, cruise ship docking, and light commercial use. The facility has convenient access to State Road (S.R.) 84 and Interstate (I)-595 and is locally accessible by Eller Drive to the south. Roadways that surround the facility include SE 14th Avenue to the east, Eisenhower Drive to the west, and SE 26th Street to the north. The Port entrance channel and the Intracoastal Waterway (ICW) are approximately 0.5 mile to the east of the FPL property.

Figure 2-1 presents the plot plan for PEEC.

2.2 Proposed Combustion Turbines

PEEC will be configured as a 3-on-1 combined cycle unit. The CTs (any of the models under consideration or equivalent) will use dry low-NO_x (DLN) combustion technology when firing natural gas and water injection when firing ULSD oil to minimize formation of nitrogen oxides (NO_x). Selective catalytic reduction (SCR) will be installed in each HRSG to further reduce emissions of NO_x. Natural gas will be used as the primary fuel and ULSD oil will be used as a backup fuel. Light oil usage will be based on the equivalent of 1,000 hr/yr per CT at full load.

The generating capacity of a combined cycle plant is affected by ambient temperature, with increased temperature resulting in less efficient electric production. Greater overall fuel consumption will occur at lower ambient temperatures. For the purpose of calculating maximum hourly fuel use quantities representative of a nominal 1,250 MW combined cycle unit, the following specific operating conditions were used for the CTs (see Appendices A and B):

- 35 degrees Fahrenheit (°F) dry bulb turbine inlet temperature,
- 60 percent relative humidity,
- Approximately 20,940 Btu/lb and 920 British thermal units per standard cubic foot (Btu/scf), lower heating value (LHV), of natural gas [approximately 23,300 Btu/lb and 1,020 Btu/scf, higher heating value (HHV)], and

- Approximately 18,400 Btu/lb and 129,900 Btu/ gallon, LHV, for ULSD oil (approximately 19,500 Btu/lb and 137,700 Btu/gallon, HHV).

The maximum heat input for the CTs being considered for PEEC ranges from 2,733 MMBtu/hr, LHV (3,034 MMBtu/hr, HHV), to 2,503 MMBtu/hr, LHV (2,774 MMBtu/hr, HHV), when firing natural gas (100 percent capacity, 35°F). The corresponding maximum fuel usage ranges from about 3.0 million cubic feet per hour (MMcf/hr) to 2.7 MMcf/hr of natural gas for each CT. Maximum potential fuel usage at 75°F turbine inlet temperature ranges from about 6.6×10^{10} cubic feet per year (cf/yr) to 7.3×10^{10} cf/yr of natural gas for PEEC.

ULSD oil use will be based on the equivalent of 1,000 hr/yr per CT at full load. The maximum fuel use is about 19,400 gallons per hour per CT at 35°F turbine inlet with a maximum annual usage rate of 58 million gallons for three CTs each operating for 1,000 hours.

2.3 Proposed Source Emission Units and Stack Parameters

PEEC's air emission units are:

- 3 CT/HRSGs,
- Auxiliary boiler (for the MPS "J" CTs for startup),
- Fuel heater,
- Emergency generators,
- Fire pump engine,
- Fuel oil storage tank, and
- Compressor station.

Each of these emission units is discussed in the following paragraphs.

Performance, estimated maximum hourly emissions, and exhaust information representative of each CT/HRSG option operating at baseload conditions (100 percent load) in combined cycle mode are presented in Tables 2-1 and 2-2 for natural gas and light oil firing, respectively. Tables 2-1 and 2-2 are presented as versions "A" and "B", which are representative of the MPS "J" and Siemens "H" CT models, respectively. The data are presented for a turbine inlet temperature of 75°F. The performance and emissions data for the other operating conditions are given in Appendices A and B for turbine inlet temperatures of 35°F, 59°F, 75°F, and 95°F and various operating load conditions.

Maximum potential annual emissions for the CTs/HRSGs for regulated air pollutants are based on an ambient temperature of 75°F. This turbine inlet temperature is conservative, since the annual average temperature is slightly higher than 75°F. To produce the maximum annual emissions, it is assumed that each CT/HRSG would operate for 8,760 hours. Of the 8,760 operating hours, an average of 7,760 hr/yr are assumed to be natural gas firing. For the remaining average of 1,000 hr/yr, the CTs are assumed to operate on light oil.

Since the ULSD (0.0015 percent) oil has lower fuel sulfur content than that assumed for natural gas (2 gr/100 scf), the maximum annual SO_2 and sulfuric acid mist (SAM) emissions are based on 8,760 hours of operation firing natural gas. Tables 2-3A and 2-3B present the maximum potential annual emissions for the range of operating conditions for each CT being considered for PEEC.

A process flow diagram of the proposed CT/HRSG configuration, operating at baseload conditions with a compressor inlet temperature of 75°F, is presented in Figure 2-2.

During combustion, two primary types of NO_x are formed: fuel NO_x and thermal NO_x. Fuel NO_x emissions are formed through the oxidation of a portion of the nitrogen contained in the fuel. Thermal NO_x emissions are generated through the oxidation of a portion of the nitrogen contained in the combustion air. NO_x formation can be limited by lowering combustion temperatures (through water or steam injection) and/or staging combustion (a reducing atmosphere followed by an oxidizing atmosphere, known as DLN control). Emissions of NO_x for the CTs, equipped with SCR control systems are proposed at concentrations of 2 parts per million by volume dry (ppmvd) conditions, corrected to 15 percent oxygen (O_2) or less when firing natural gas and 8 ppmvd corrected to 15 percent O_2 or less when firing ULSD oil.

Carbon monoxide (CO) is formed by incomplete combustion of fuel. High combustion temperatures, adequate excess air, and good fuel/air mixing during combustion will minimize CO formation. CO formation is limited by ensuring complete efficient combustion of the fuel in the turbines. Recent improvements in CT combustor technology allow for both reduced NO_x emissions and low CO emissions.

The expected CO stack emission rates for the MPS "J" CTs or equivalent when firing natural gas are 9 ppmvd corrected to 15 percent O_2 at baseload operation and 35 ppmvd corrected to 15 percent O_2 with ULSD oil firing. For the Siemens "H" CTs, the expected CO emission rates when firing natural gas are 5 ppmvd corrected to 15 percent O_2 at baseload operation, and 10 ppmvd corrected to 15 percent O_2 with ULSD oil firing.

Similarly, volatile organic compound (VOC) emissions are formed by incomplete combustion of fuel. High combustion temperatures, adequate excess air, and good fuel/air mixing during combustion will minimize VOC formation. VOC formation is limited by ensuring complete efficient combustion of the fuel in the CTs. Recent improvements in CT combustor technology allow for both reduced NO_x emissions and low VOC emissions.

The expected VOC emission rates for the MPS "J" CTs or equivalent at baseload operation when firing natural gas are 1.0 ppmvd corrected to 15 percent O_2 at baseload operation and 10 ppmvd corrected to 15 percent O_2 for ULSD oil firing. For the Siemens "H" CTs or equivalent at baseload operation, the expected VOC emission rates when firing natural gas are 1.0 ppmvd corrected to 15 percent O_2 at baseload operation and 10 ppmvd corrected to 15 percent O_2 for ULSD oil firing.

SO_2 emission rates are controlled and minimized by the very low sulfur content in the fuels, which will be a maximum of 2 gr/100 scf sulfur for natural gas and 0.0015 percent sulfur by weight for ULSD oil.

An auxiliary boiler will be used with the MPS "J" CTs, as necessary, for startup. The combustor requires steam for combustor cooling, which normally comes from the HRSG. The limited use auxiliary boiler will have a maximum heat input of 99.8 MMBtu/hr, HHV, firing natural gas. Table 2-4 presents performance and emissions information for the auxiliary boiler.

PEEC will be equipped with two 2,250 kilowatt (kW) emergency generators firing ULSD oil. These emergency generators will be used when electric power is not available. This primarily would occur during catastrophic events such as hurricanes. Table 2-5 contains emissions and manufacturer's information for the emergency generators proposed for PEEC. Normally these emergency generators would be operated 1 to 2 hours per month for maintenance and reliability testing.

PEEC may include one natural gas fired fuel heater. This heater will utilize a heat transfer fluid for heating the natural gas and be fired with only natural gas. This heater will have a maximum heat input rate of 9.9 MMBtu/hr (HHV) or less and will be used as necessary to heat natural gas above the dew point. Table 2-6 contains performance and emissions information for the fuel heater.

PEEC will be equipped with a 300 horsepower (hp) fire pump engine using ULSD oil. This engine will be used when necessary during catastrophic events such as fires. Table 2-7 presents emissions and manufacturer's information for the fire pump engine proposed for PEEC. Normally, this fire pump engine would be operated only 1 to 2 hours per month for maintenance and reliability testing.

PEEC may include a new natural gas compressor station to increase pressure from the existing Florida Gas Transmission Company, LLC (FGT) pipeline to the CTs. The natural gas compressor station, if installed onsite, would consist of three Solar Centaur 50 compressor sets or equivalent, with each set including a natural gas turbine and natural gas compressor. During normal operation, only two of the three compressor sets will operate at any given time. Table 2-8 presents performance and emissions information for the natural gas compressors.

ULSD oil will be either trucked or barged to the facility and stored in a new fuel oil tank at the facility. This tank is a vertical fixed roof design, with a rated storage capacity of approximately 7 million gallons (165,000 barrels). Appendix A provides performance and emissions information for the fuel oil storage tank.

2.4 Annual Emissions for PEEC Including Emission Reductions from the Existing Units 1 through 4

The maximum annual potential emissions for PEEC include air emissions from the CT/HRSGs, fuel heater, emergency generators, auxiliary boiler, fire pump engine, fuel oil storage tank and natural gas compressor station. Tables 2-9A and 2-9B present the maximum annual potential PEEC emissions with the MPS "J" and Siemens "H" CTs, respectively. These tables address the criteria pollutants, as required, under new source review.

In addition, maximum annual potential hazardous air pollutants (HAPs) emissions are presented in Table 2-10 for both CT models. Additional detail on the HAP emission calculations is also presented in Appendices A and B. The Port Everglades Plant will continue to be a major source of hazardous air pollutant (HAP) emissions due to the combined potential emissions from PEEC and the 12 gas turbines units exceed the major source for HAPs [10 tons per year (TPY) of a single HAP, or 25 TPY for all HAPs].

Annual emissions were based on maximum emissions for baseload operation and ambient temperatures of 75°F. The maximum emissions are based on 7,760 hr/yr firing natural gas and

1,000 hr/yr firing oil. The potential emissions are based on the 75°F turbine inlet temperature at 100 percent load condition, since it represents the annual average temperature.

Tables 2-9A and 2-9B compare the net emission changes due to the Project, reflecting the maximum PEEC emissions as well as the emission reductions from retirement of the existing Units 1 through 4 at the Port Everglades Plant, to the PSD SERs. The PSD SERs are the emission thresholds to determine if PSD review will be required for modifications to major sources. The historical actual emissions for the existing Port Everglades Plant that are presented in these tables were determined pursuant to FDEP PSD Rules, specifically FDEP Rule 62-212.400 (2)(a)1., F.A.C. Five years (2006 through 2010) of historical emission data were evaluated to determine historical actual emissions using the highest 2 year average emissions for each pollutant. Historical actual emissions are based on past Annual Operating Reports (AORs), which are presented in a series of tables in Appendix C for each unit for each year. In Tables 2-9A and 2-9B, the net emission changes (i.e., projected maximum potential emissions minus historical actual emissions) are compared to the PSD SERs. If the PSD SER for a pollutant is not exceeded by this comparison, PSD review is not required for that pollutant.

This Application is being filed for the purpose of establishing federally enforceable emission limitations that ensure PEEC will not result in a significant net increase in emissions of any regulated air pollutant, except for GHG, in accordance with FDEP's federally approved minor source air construction permit program under Florida's federally required State Implementation Plan.

As shown in these tables, there are significant emission reductions for most pollutants. For SO_2, particulate matter (PM), particulate matter less than 10 microns (PM_{10}), and NO_x, annual emissions will be reduced by more than 90 percent with PEEC. Although annual VOC emissions will increase slightly, the change will be less than the PSD SER.

The net emission reductions for SO_2, NO_x, and PM_{10} as a result of the Project are also graphically depicted in Figures 2-3 and 2-4. Figure 2-3 provides a graphical comparison of historical actual annual TPY emissions from the existing Port Everglades Plant Units 1 through 4 with the projected maximum potential emissions resulting from PEEC. As shown in Figure 2-3, PEEC will result in reductions of SO_2, NO_x, and PM_{10} of 9,273 TPY (97.7% reduction), 3,878 TPY (91% reduction) and 358 TPY (59% reduction), respectively.

Figure 2-4 compares the maximum potential emission rates for PEEC with historical actual GHG emission rates based on the amount of energy produced [i.e., a comparison on a pound per megawatt hour (lb/MW-hr) basis]. PEEC will result in over a 50 percent reduction in the rate of GHG emissions with a 943 lb/MW-hr reduction in GHG emissions.

Based on this evaluation, the net emission changes for PEEC are less than the PSD SERs for all pollutants, except GHG. As such, PSD review by EPA is required for GHG but not the other regulated pollutants. Therefore, a BACT evaluation was performed for GHG. In addition, the air emission controls for the other regulated pollutants are presented to demonstrate that these controls are representative of BACT emission limits that have been determined under PSD regulations for other similar combined cycle units [e.g., PSD-FL-396, July 30, 2008, for West County Energy Center (WCEC) Unit 3].

2.5 Annual Emissions for GHGs

On June 3, 2010, EPA promulgated regulations related to Prevention of Significant Deterioration 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: CO_2, methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Each of these GHGs has a specific Global Warming Potential that is calculated as "CO_2 equivalent emissions" or CO_2e that is equivalent to one ton of CO_2.

For PEEC, the GHGs emitted are CO_2, CH_4, and N_2O with one ton of CH_4 equivalent to 21 tons of CO_2e and one ton of N_2O equivalent to 310 tons of CO_2e. Tables 2-9A to 2-9B present the net emission changes resulting from the Project, reflecting the maximum projected PEEC emissions and the resulting changes compared to the existing Units 1 through 4, and the PSD SERs, which are thresholds for PSD review for modifications to major sources.

The CO_2 emission rates shown in the tables for existing Units 1 through 4 were obtained from EPA's Acid Rain database. Since emissions of N_2O and CH_4 were not reported before 2010, these GHGs were calculated based on the actual annual heat input and emission factors from 40 CFR 98, Subpart C. These GHG emissions show the CO_2e rates for these pollutants. PSD review is required for GHG emissions greater than the listed PSD SER of 75,000 tons CO_2e. As shown in Tables 2-9A and 2-9B, the maximum potential emission of GHGs will exceed the historical emissions of Units 1 through 4, primarily due to greater operation.

2.6 Layout, Structures, and Stack Sampling Facilities

A plot plan of PEEC is presented in Figure 2-1 for the 3-on-1 combined cycle configuration. North-south and east-west profiles of the CT/HRSG train are presented in Figures 2-5 and 2-6, respectively. The dimensions of the structures are presented in Section 6.0. Stack sampling facilities will be constructed in accordance with FDEP Rule 62-297.310(6), F.A.C.

2.7 Excess Emissions

Startup and shutdown and fuel changes will require an excess emission allowance greater than the 2 hours provided under the FDEP rules. During cold startup, the operating load of the CTs is limited by the amount of steam that can be accepted by the steam turbine. This will result in excess emissions. The same excess emission allowance is requested for PEEC that was authorized for the WCEC Project and Cape Canaveral Energy Center (CCEC) Project. The combined cycle units associated with these facilities have similar steam turbines that receive steam during startup (i.e., nominal 500 MW). The proposed condition follows:

> "*<u>Excess Emissions Allowed</u>: As specified in this condition, excess emissions resulting from startup, shutdown, fuel switching and documented malfunctions are allowed provided that operators employ the best operational practices to minimize the amount and duration of emissions during such incidents. For each gas turbine/HRSG System, excess emissions of NO_x and CO resulting from startup, shutdown, or malfunction shall be excluded from CEMS data in any 24-hour period ("any 24-hour period" means a calendar day, midnight to midnight) for the following conditions: (These conditions are considered separate events and each event may occur independently within any 24-hour period):*
>
> *a. Steam Turbine Cold Startup: For cold startup of the steam turbine, excluded emissions from any gas turbine/HRSG system shall not exceed eight hours in any 24-hour period. A cold "startup of the steam turbine" is defined as startup of the 3-on-1 combined cycle system following a shutdown of the steam turbine lasting at least 48 hours.*
>
> *{Permitting note: During a cold startup of the steam turbine, each gas turbine/HRSG system is sequentially brought on line at low load to gradually increase the temperature of the steam-electrical turbine and prevent thermal metal fatigue. Note that shutdowns and documented malfunctions are separately regulated in accordance with the requirements of this condition.}*
>
> *b. Gas Turbine/HRSG System Cold Startup. For cold startup of a gas turbine/HRSG system, excluded emissions shall not exceed four hours in any 24-hour period. "Cold startup of a gas turbine/HRSG system" is defined as a startup after the pressure in the high-pressure (HP) steam drum falls below 450 pounds per square inch gauge (psig) for at least a one-hour period.*

c. *Gas Turbine/HRSG System Warm Startup. For warm startup of a gas turbine/HRSG system, excluded emissions shall not exceed two hours in any 24-hour period. "Warm startup of a gas turbine/HRSG system" is defined as a startup after the pressure in the HP steam drum is above 450 psig.*

d. *Shutdown Combined Cycle Operation: For shutdown of the combined cycle operation, excluded emissions from any gas turbine/HRSG system shall not exceed three hours in any 24-hour period.*

e. *Gas Turbine/HRSG System Shutdown. For shutdown of the gas turbine/HRSG operation, excluded emissions from any gas turbine/HRSG system shall not exceed two hours in any 24-hour period.*

f. *For fuel switching, excluded emissions shall not exceed 2 hours in any 24-hour period for each fuel switch and no more than four hours in any 24-hour period for any gas turbine/HRSG system.*

g. *Documented Malfunction. For the gas turbine/HRSG system, excess emissions of NO_x and CO resulting from documented malfunctions shall not exceed two hours in any 24-hour period. A "documented malfunction" means a malfunction that is documented within one working day of detection by contacting the Compliance Authority by telephone, facsimile transmittal, or electronic mail.*

2.8 Proposed Permitted Capacity and Emission Limits

As discussed previously, the MPS "J" CTs, and the Siemens "H" CTs were used to evaluate the air emissions and impacts of the Project. The CT vendor has not been selected. However, FPL desires to obtain guarantees of CT performance that will achieve the gross generation of the MPS "J" CT while achieving emissions within the range of the emissions provided for the MPS "J" and Siemens "H". As a result, FPL requests consideration of the following permit conditions for permitted capacity and emission limits that encompass the CTs being considered. Please note that the Conditions are similar in form to those authorized for the FPL Riviera Beach Energy Center (Permit No. 0990042-006-AC).

Permitted Capacity – Combustion Turbine-Electric Generators (CTG): The maximum heat input rate to each CTG is 2,580 mmBtu per hour when firing natural gas and 2,353 mmBtu per hour when firing distillate fuel oil (based on a compressor inlet air temperature of 59° F, LHV, of each fuel, no evaporative cooling and 100% load). Heat input rates will vary depending upon CTG 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 90 days of final selection of the CT vendor. Operating and emissions data may be adjusted for the CT selected in accordance with the performance curves and/or equations submitted to the Department provided the total emissions from the PEEC Project with the CT selected does not trigger review under the Department's Rule 62-212.400 F.A.C. for any pollutant for which there is an emission limit in Condition 10.

Emissions Standards: Emissions from each CT/HRSG shall not exceed the following standards developed under state implementation plan (SIP) permitting procedures. Compliance with these limits also assures compliance with the emission limitations in 40 CFR 60, Subpart KKKK.

Pollutant	Fuel	Method of Operation	Initial Stacks Tests		CEMS Rolling Average Limit
			ppmvd[a]	lb/hr[b]	ppmvd[a]
CO[d]	Oil	CT Normal Mode	35.0	195.3	35.0, 30 unit operating days[c,d]
	Gas		9.0	56.7	9.0, 30 unit operating days[c,d]
NO_x[c]	Oil		8.0	84.6	8.0, 30 unit operating days[c,d]
	Gas		2.0	20.5	2.0, 30 unit operating days[c,d]
VOC[f]	Oil		10.0	37.0	NA
	Gas		1.0	3.6	
NH_3[g]	Oil/Gas	CT, All Modes	5	NA	NA
SAM/SO_2[h]	Oil/Gas	All Modes	2 gr S/100 SCF of gas, 0.0015% sulfur fuel oil.		
PM/PM_{10}[i]			Visible emissions shall not exceed 10% opacity for each 6-minute block average.		

a. Concentration standards are given in terms of parts per million, by volume, dry at 15 percent oxygen and abbreviated as ppmvd.
b. The mass emission rate standards in pounds per hour (lb/hr) are based on a turbine inlet condition of 59° F, no evaporative cooling, and 100% load, and may be adjusted to actual test conditions in accordance with the performance curves and/or equations filed with the Department.
c. "Unit operating day" means a 24-hour period between 12 midnight and the following midnight during which any fuel is combusted at any time in the unit. It is not necessary for fuel to be combusted continuously for the entire 24-hour period. [40 CFR 60.4420]
d. Compliance with the continuous 30-unit operating days rolling CO standard shall be demonstrated based on data collected by the required CEMS. The initial EPA Method 10 tests associated with the certification of the CEMS instruments shall also be used to demonstrate initial performance guarantees for natural gas and oil.

2.9 Construction Boilers

Temporary construction boilers, rated at up to approximately 150 MMBtu/hr, will be brought onsite for use only during the construction of PEEC. The boilers will provide steam for HRSG cleaning and associated steam blows. Each boiler will be fired with natural gas only and is expected to operate for no more than 1,500 hr/yr. The boilers will be permanently shut down and removed once PEEC commences commercial operation. As these boilers will have no effect on the total Project emissions once commercial operation commences, their emissions are not included in any of the Project emissions summary tables. However, these boilers are fully described as Emission Unit 7 in the attached air application forms. If the PEEC auxiliary boiler is constructed and available for use during the construction period where steam is required, one or both temporary boilers may not be needed.

3.0 AIR QUALITY REVIEW REQUIREMENTS AND APPLICABILITY

The following discussion pertains to federal, state, and local air regulatory requirements and their applicability to PEEC.

3.1 National, State, and Local AAQS

The existing applicable national and Florida local AAQS are presented in Table 3-1. Primary national AAQS were promulgated to protect the public health with an adequate margin of safety and secondary national AAQS were promulgated to protect the public welfare from any known or anticipated adverse effects associated with the presence of pollutants in the ambient air. Areas of the country in compliance with AAQS are designated as attainment areas. New sources to be located or modified sources located in or near these areas may be subject to more stringent air permitting requirements.

3.2 PSD Requirements

3.2.1 General Requirements

Under federally approved Florida PSD review requirements, all major new or modified sources of air pollutants regulated under the Clean Air Act (CAA) must be reviewed and a pre-construction permit issued.

PSD is applicable to a "major facility" and certain "modifications" that occur at a major facility. A major facility is defined as any 1 of 28 named source categories that have the potential to emit 100 TPY or more, or any other stationary facility that has the potential to emit 250 TPY or more, of any pollutant regulated under the CAA. "Potential to emit" means the capability, at maximum design capacity, to emit a pollutant after the application of control equipment. Net emission increases from a modification at a major facility that exceed the PSD SERs are also subject to PSD review.

EPA has promulgated regulations providing that certain increases above an air quality baseline concentration level of SO_2, PM_{10}, and NO_2 concentrations that would constitute significant deterioration. The EPA class designations and allowable PSD increments are presented in Table 3-1. Florida has adopted the EPA class designations and allowable PSD increments for SO_2, PM_{10}, and NO_2.

PSD review is used to determine whether significant air quality deterioration will result from the new or modified facility. Florida's PSD regulations are found in FDEP Rule 62-212.400, F.A.C. Major new facilities and major modifications are required to undergo the following analysis related to PSD for each pollutant emitted in significant amounts (see Table 3-2):

1. Control technology review,
2. Source impact analysis,
3. Air quality analysis (monitoring),
4. Source information, and
5. Additional impact analyses.

In addition to these analyses, a new major facility or major modification made to an existing major facility also must be reviewed with respect to Good Engineering Practice (GEP) stack height regulations. Discussions concerning each of these requirements for a new major facility or major modification are presented in the following sections. <u>It is important to note that the emission reductions available from the retirement of the existing Units 1 through 4 allow PEEC to be a minor modification, exempt from PSD review for all regulated air pollutants except GHG (see Sections 2.4 and 3.5).</u>

<u>3.2.2 Greenhouse Gases</u>

On June 3, 2010, EPA issued a "Tailoring Rule" that "tailors" the applicability provisions of the PSD and Title V programs to enable EPA and state agencies to phase in permitting requirements for GHGs. The first phase of the Tailoring Rule began on January 2, 2011, and continued through June 30, 2011. During this period GHG sources became subject to PSD if the increase in GHG emissions from a project exceeded 75,000 TPY of CO_2e or more and the project was required to undergo PSD review for other air regulated pollutants. The second phase of the Tailoring Rule began on July 1, 2011, and continues thereafter for new major GHG emitting facilities and major modifications. New major sources with the potential to emit 100,000 TPY CO_2e or more of GHG will be considered major sources for PSD permitting purposes and are required to undergo PSD review. Additionally, any physical change or change in the method of operation at a major source resulting in a net GHG emissions increase of 75,000 TPY CO_2e or more will be subject to PSD review.

For PSD purposes, GHGs are a single air pollutant defined as the aggregate group of the following six gases: CO_2, N_2O, CH_4, HFCs, PFCs, and SF_6.

Once major sources become subject to PSD, these sources must meet the various PSD requirements in order to obtain a PSD permit. However, there are no ambient air quality standards or PSD increments for GHGs. Therefore, the requirements for a source impact analysis, air quality analysis (monitoring), and additional impact analyses are not required. PSD review for GHGs principally involves the control technology review that includes a determination of BACT. The EPA published the PSD and Title V permitting guidance for GHGs in March 2011 that provides guidance on BACT analyses for GHG emissions.

3.2.3 Control Technology Review

A new major facility or major modification must perform a control technology review, which requires that all applicable federal and state emission limiting standards be met and that BACT be applied to control emissions from the source (FDEP Rule 62-212.400, F.A.C.). The BACT requirements are applicable to all regulated pollutants for which the increase in emissions from the facility or modification exceeds the SER (see Table 3-2).

BACT is defined in FDEP Rule 62-210.200(40), F.A.C., as:

> (a) *An emission limitation, including a visible emissions standard, based on the maximum degree of reduction of each pollutant emitted, which the Department, on a case-by-case basis, determines is achievable through application of production processes and available methods, systems and techniques (including fuel cleaning or treatment or innovative fuel combustion techniques) for control of each such pollutant taking into account:*
>
> 1. *Energy, environmental and economic impacts, and other costs,*
> 2. *All scientific, engineering, and technical material and other information available to the Department, and*
> 3. *The emission limiting standards or BACT determinations of Florida and any other State.*
>
> (b) *If the Department determines that technological or economic limitations on the application of measurement methodology to a particular part of an emissions unit or facility would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT. Such standard shall, to the degree possible, set forth the emissions reductions achievable by implementation of such design, equipment, work practice or operation.*
>
> (c) *Each BACT determination shall include applicable test methods or shall provide for determining compliance with the standard(s) by means which achieve equivalent results.*

> (d) *In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR Parts 60, 61, and 63.*

The BACT requirements are intended to ensure that the control systems incorporated in the design of a proposed facility reflect the latest in control technologies used in a particular industry and take into consideration existing and future air quality in the vicinity of the proposed facility. BACT must, at a minimum, demonstrate compliance with NSPS for a source (if applicable). An evaluation of the air pollution control techniques and systems, including a cost-benefit analysis of alternative control technologies capable of achieving a higher degree of emission reduction than the proposed control technology, is required. The cost-benefit analysis requires the documentation of the materials, energy, and economic penalties associated with the proposed and alternative control systems, as well as the environmental benefits derived from these systems. A decision on BACT is to be based on sound judgment, balancing environmental benefits with energy, economic, and other impacts (EPA, 1978).

For GHG emissions, control technology review is conducted by EPA under its regulations in 40 CFR 52.21. EPA issued guidance on the determination of BACT for GHGs ("*PSD and Title V Permitting Guidance for Greenhouse Gases*", March 2011). This EPA guidance supplements previous EPA guidance on the determination of BACT that is specific to BACT determinations for GHG emissions.

3.2.4 Source Impact Analysis

A source impact analysis must be performed for a new major facility or major modification to a major source for each pollutant, subject to PSD review, for which net emissions exceed the SER (Table 3-2). The PSD regulations specifically provide for the use of atmospheric dispersion models in performing impact analyses, estimating baseline and future air quality levels, and determining compliance with AAQS and allowable PSD increments. Designated EPA models that are approved by FDEP normally must be used in performing the impact analysis. Specific applications for other than EPA approved models require EPA's consultation and prior approval. Guidance for the use and application of dispersion models is presented in the EPA publication *Guideline on Air Quality Models (Revised)*. The source impact analysis for criteria pollutants to address compliance with AAQS and PSD Class II increments may be limited to the new source if the impacts as a result of the new source are below significant impact levels, as presented in Table 3-1.

The EPA has proposed significant impact levels for Class I areas. Although these levels have not been officially promulgated as part of the federal PSD regulations and may not be binding for states in performing PSD reviews, the levels serve as a guideline in assessing a source's impact in a Class I area. FDEP has accepted the use of these significant impact levels.

Various lengths of meteorological data records can be used for impact analysis. A 5 year period can be used with corresponding evaluation of highest, second highest short term concentrations for comparison to AAQS or PSD increments. The term "highest, second highest" (HSH) refers to the highest of the second highest concentrations at all receptors (i.e., the highest concentration at each receptor is discarded). The second highest concentration is significant because short term AAQS specify that the standard should not be exceeded at any location more than once a year. If fewer than 5 years of meteorological data are used in the modeling analysis, the highest concentration at each receptor normally must be used for comparison to air quality standards.

Because there are no AAQS or PSD increments applicable to GHG emissions, these analyses are not conducted for PSD review for GHG.

3.2.5 Air Quality Monitoring Requirements

In accordance with requirements of FDEP Rule 62-212.400(5)(f), F.A.C., PSD review for a new major facility or major modification must consider an analysis of continuous ambient air quality data in the area affected by the proposed major PSD source or major modification. For a new major facility or major modification, the affected pollutants are those that the facility potentially would emit above the SERs.

Ambient air monitoring for a period of up to 1 year generally is appropriate to satisfy the PSD monitoring requirements. Data for a minimum of 4 months are required. Existing data from the vicinity of the proposed source may be used, if the data meet certain quality assurance requirements; otherwise, additional data may need to be gathered. Guidance in designing a PSD monitoring network is provided in *Ambient Monitoring Guidelines for Prevention of Significant Deterioration* (EPA, 1987a).

The regulations include an exemption that excludes or limits the pollutants for which an air quality analysis must be conducted. This exemption states that a proposed major stationary facility is exempt from the monitoring requirements with respect to a particular pollutant, if the emissions of the pollutant from the facility would cause, in any area, air quality impacts less than the *de minimis* levels presented in Table 3-2 (FDEP Rule 62-212.400-3, F.A.C.). If a facility's predicted impacts are less than the *de minimis* levels, then preconstruction monitoring is not required.

Because there are no ambient monitoring methods applicable to GHG emissions, these analyses are not conducted for PSD review for GHG.

3.2.6 Source Information/GEP Stack Height

Source information must be provided to adequately describe the proposed facility or major modification subject to PSD review.

The 1977 CAA Amendments require that the degree of emission limitation required for control of any pollutant cannot be affected by a stack height that exceeds GEP or any other dispersion technique. On July 8, 1985, EPA promulgated final stack height regulations (EPA, 1985a). Identical regulations have been adopted by FDEP (FDEP Rule 62-210.550, F.A.C.). GEP stack height is defined as the highest of:

1. 65 meters; or
2. A height established by applying the formula:

$$Hg = H + 1.5\,L$$

where:

Hg = GEP stack height,

H = Height of the structure or nearby structure, and

L = Lesser dimension (height or projected width) of nearby structure(s); or

3. A height demonstrated by a fluid model or field study.

"Nearby" is defined as a distance up to 5 times the lesser of the height or width dimensions of a structure or terrain feature, but not greater than 0.8 kilometer (km). Although GEP stack height regulations require that the stack height used in modeling for determining compliance with AAQS and PSD increments not exceed the GEP stack height, the actual stack height may be greater.

The stack height regulations also allow increased GEP stack height beyond that resulting from the above formula in cases where plume impaction occurs. Plume impaction is defined as concentrations measured or predicted to occur when the plume interacts with elevated terrain. Elevated terrain is defined as terrain that exceeds the height calculated by the GEP stack height formula.

3.2.7 Additional Impact Analysis

In addition to air quality impact analyses, Florida PSD regulations require analyses for applicable pollutants of the impairment to visibility and the impacts on soils and vegetation that would occur as a result of a new major facility or major modification subject to PSD review [FDEP Rule 62-212.400(5)(e), F.A.C.]. Impacts as a result of general commercial, residential, industrial, and other growth associated with the source also must be addressed. These analyses are required for each pollutant emitted in significant amounts (see Table 3-2).

Because GHG emissions will not cause visibility impairment or direct impacts to soils and vegetation, these analyses are not conducted for PSD review for GHG.

3.2.8 Air Quality Related Values

An Air Quality Related Value (AQRV) analysis is required for projects for those pollutants undergoing PSD review to assess the potential impact on AQRVs in PSD Class I areas. The nearest Class I areas to PEEC are the Everglades National Park (NP), located about 50 km (30 miles) from PEEC, and the Chassahowitzka National Wilderness Area (NWA), located more than 300 km (180 miles) from PEEC. The U.S. Department of the Interior in 1978 administratively defined AQRVs to be:

> *All those values possessed by an area except those that are not affected by changes in air quality and include all those assets of an area whose vitality, significance, or integrity is dependent in some way upon the air environment. These values include visibility and those scenic, cultural, biological, and recreational resources of an area that are affected by air quality.*
>
> *Important attributes of an area are those values or assets that make an area significant as a national monument, preserve, or primitive area. They are the assets that are to be preserved if the area is to achieve the purposes for which it was set aside (Federal Register, 1978).*

The AQRVs include visibility, freshwater and coastal wetlands, dominant plant communities, unique and rare plant communities, soils and associated periphyton, and the wildlife dependent on these communities for habitat. Rare, endemic, threatened, and endangered species of the NP and bioindicators of air pollution (e.g., lichens) must also be evaluated.

3.3 Nonattainment Rules

FDEP has nonattainment provisions (FDEP Rule 62-212.500, F.A.C.) that apply to all new major facilities or major modifications to major facilities located in a nonattainment area. In addition, for these facilities that are located in an attainment or unclassifiable area, the nonattainment review procedures apply if the source or modification is located within the area of influence of a nonattainment area. PEEC is located in Broward County, which is classified as an attainment area for all criteria pollutants. Therefore, nonattainment New Source Review (NSR) requirements are not applicable.

3.4 Emission Standards

3.4.1 New Source Performance Standards

The NSPS are a set of national emission standards that apply to specific categories of new sources. As stated in the 1977 CAA Amendments, these standards "shall reflect the degree of emission limitation and the percentage reduction achievable through application of the best technological system of continuous emission reduction the Administrator determines has been adequately demonstrated."

PEEC will be subject to one or more NSPS. EPA promulgated new NSPS for Stationary Combustion Turbines that will commence construction after February 18, 2005. Subpart KKKK replaces Subpart GG for CTs. On October 15, 2003, EPA promulgated changes to 40 CFR 60, Subpart Kb that would exempt light oil tanks containing No. 2 light oil by virtue of its vapor pressure (FR Vol. 68, No. 199, Pages 59328-59333).

Combustion Turbine

NO_x and SO_2 emissions from all stationary CTs with a heat input at peak load equal to 10.7 gigajoules per hour (10 MMBtu/hr), based on the lower heating value of the fuel fired, are limited per 40 CFR 60 Subpart KKKK. NO_x emissions for these proposed CTs (i.e., >850 MMBtu/hr) are limited by Subpart KKKK to 15 ppmvd corrected to 15 percent O_2 and 42 ppmvd corrected to 15 percent O_2 for natural gas and oil firing, respectively. SO_2 emissions are limited to using a fuel with a sulfur content of no greater than 0.05 percent and 20 gr/10 scf of sulfur for oil and natural gas firing, respectively. In addition to emission limitations, there are requirements for performance testing and monitoring in 40 CFR 60 Subpart KKKK.

Subpart KKKK is also applicable to the turbines associated with the natural gas compressors. These turbines will fire only natural gas with heat input greater than 50 MMBtu/hr but less than 850 MMBtu/hr. NO_x emissions for these turbines are limited by Subpart KKKK to 25 ppmvd corrected to 15 percent O_2.

There are also applicable notification, reporting, and recordkeeping requirements in the general provisions of 40 CFR 60 Subpart A. These are summarized below:

40 CFR 60.7 Notification and Record Keeping

- *(a)(1) Notification of the date of construction - 30 days after such date.*
- *(a)(3) Notification of actual date of initial startup - within 15 days after such date.*
- *(a)(5) Notification of date which demonstrates CEM - not less than 30 days prior to date*

60.7 (b) Maintain records of all startups, shutdowns, and malfunctions.

- *(c) Excess emissions reports – semi-annually by the 30th day following 6-month period (required even if no excess emissions occur).*
- *(d) Maintain file of all measurements for 2 years.*

60.8 Performance Tests

- *(a) Must be performed within 60 days after achieving maximum production rate, but no later than 180 days after initial startup.*
- *(d) Notification of Performance tests at least 30 days prior to them occurring.*

Other Emission Units

NSPS are also applicable to the auxiliary boiler, fuel heaters, fire pump engine, and emergency generators. The EPA NSPS Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units, applies to the auxiliary boiler and fuel heaters. For the emergency generators and fire pump engine, NSPS Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, is applicable.

3.4.2 National Emission Standards for Hazardous Air Pollutants

EPA has promulgated maximum achievable control technology (MACT) standards under the National Emissions Standards for Hazardous Air Pollutants (NESHAPs) regulations. Maximum annual potential HAPs emissions were presented earlier in Table 2-10 for the MPS "J" CTs and Siemens "H" CTs. Additional detail on the HAP emission calculations is also presented in Appendices A and B.

The Port Everglades Plant remains a major source of HAPs due to the combined emissions of PEEC and the existing 12 gas turbines. Therefore, certain MACT standards under the NESHAP regulations would apply. Under the NESHAPs of 40 CFR Part 63, Subpart YYYY applies to the CTs and Subpart ZZZZ applies to the reciprocating internal combustion engines (RICE).

3.4.3 Florida Rules

FDEP has adopted the EPA NSPS by reference in FDEP Rule 62-204.800(7): Subsection (b)39 for stationary gas turbines and Subsection (b)16 for volatile organic liquid storage vessels. Therefore, the facility is required to meet the same emissions, performance testing, monitoring, reporting, and record keeping as those described in Section 3.4.1. FDEP has authority for implementing NSPS requirements in Florida.

3.4.4 Florida Air Permitting Requirements

The FDEP regulations require any new source to obtain an air permit prior to construction. Major new sources must meet the appropriate PSD and nonattainment requirements as discussed previously. Required permits and approvals for air pollution sources include NSR for nonattainment areas, PSD, NSPS, NESHAP, Permit to Construct, and Permit to Operate. The requirements for construction permits and approvals are contained in FDEP Rules 62-4.030, 62-4.050, 62-4.210, 62-210.300(1), and 62-212.400, F.A.C. Specific emission standards are set forth in Chapter 62-296, F.A.C.

This Application is being filed for the purpose of establishing federally enforceable emission limitations that ensure the Project will not result in a significant net increase in emissions of any regulated air pollutant, in accordance with FDEP's federally approved minor source air construction permit program under Florida's federally approved SIP.

3.4.5 Local Air Regulations

The Pollution Prevention, Remediation and Air Quality Division (PPRAQD) of Broward County is the air compliance authority for the County, implementing FDEP regulations. PPRAQD has been delegated authority to review, process, and take appropriate action (i.e., exempt, issue, or deny) on most FDEP District-Level permits within the County. However, permits for electrical power plants are issued by FDEP, and PPRAQD provides review of the application during FDEP's review period.

3.5 Source Applicability

3.5.1 Area Classification

PEEC is located in Broward County, which has been designated by EPA and FDEP as an attainment area (includes unclassifiable) for all criteria pollutants. Broward County and surrounding counties are designated as PSD Class II areas for SO_2, PM [total suspended particulate (TSP)], and NO_2. The nearest Class I area to PEEC is the Everglades NP, located approximately 50 km (30 miles) from the Site, and Chassahowitzka NWA, located more than 300 km (180 miles) from PEEC.

3.5.2 PSD Review

Pollutant Applicability

Since the existing Units 1 through 4 will be permanently retired, FPL will use emissions reductions from these units to net out of PSD review for all PSD pollutants, except GHG, for PEEC (see Tables 2-9A and 2-9B in Section 2.0 and Table 3-3). The Project is a modification of the existing Units 1 through 4 as a major source of GHGs. While the GHG emission rate for PEEC will be less than half the rate for the existing Units 1 through 4, PPEC will have a net GHG emissions increase above the threshold for modifications. This is primarily due to the lower capacity factor on the existing Port Everglades Units 1 through 4 of about 29 percent compared to the 100 percent capacity assumed for PEEC. As a result, PEEC will exceed the GHG PSD threshold, and PSD review by EPA is required. Section 4.3.1 presents a BACT analysis for GHGs for the PEEC Project. (Note: EPA no longer requires PSD review for HAPs.) The pollutants vinyl chloride, asbestos, and beryllium are no longer evaluated in PSD review because they are addressed through the NESHAP program.

Emission Standards

NO_x and SO_2 emissions from all stationary CTs with a heat input at peak load equal to 10.7 gigajoules per hour (10 MMBtu/hr), based on the lower heating value of the fuel fired, are limited per 40 CFR 60 Subpart KKKK adopted by reference by FDEP in Rule 62-204.800(8)(b)78 F.A.C.. NO_x emissions for these proposed CTs (i.e., >850 MMBtu/hr) are limited by Subpart KKKK to 15 ppmvd corrected to 15 percent O_2 and 42 ppmvd corrected to 15 percent O_2 for natural gas and oil firing, respectively. SO_2 emissions are limited to using a fuel with a sulfur content of no greater than 0.05 percent and 20 gr/100 scf of sulfur for oil and natural gas firing, respectively. These requirements are summarized in Section 4.2. In addition to emission limitations, there are requirements for performance testing and monitoring in 40 CFR 60 Subpart KKKK. There are also applicable notification, reporting, and recordkeeping requirements in the general provisions of 40 CFR 60

Subpart A. The proposed emissions for PEEC will be well below the specified limits (see Section 4.0).

Subpart KKKK is also applicable to the turbines associated with the natural gas compressors. These turbines will fire only natural gas with heat input greater than 50 MMBtu/hr but less than 850 MMBtu/hr and the Subpart KKKK NO_x emissions limit is 25 ppmvd corrected to 15 percent O_2. For PEEC, the proposed NO_x emissions rate of 15 ppmvd corrected to 15 percent O_2 is well below the Subpart KKKK limit.

NSPS are also applicable to the auxiliary boiler, fuel heater, fire pump engine, and emergency generators. The EPA NSPS Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units, applies to the auxiliary boiler and fuel heaters [adopted by FDEP by reference in Rule 62-204.800(8)(b)4 F.A.C.]. For the emergency generators and fire pump engine, NSPS Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, is applicable [adopted by FDEP by reference in Rule 62-204.800(8)(b)79 F.A.C.].

EPA has promulgated MACT standards under the NESHAP regulations and applicability is based on whether a source is major or minor for HAPs. A facility is classified as a major source of HAPs when the maximum potential emissions for all emission units located at the facility exceed 10 TPY of a single HAP and 25 TPY for all HAPs. The Port Everglades Plant will remain a major source of HAPs due to the combined potential emissions of PEEC along with the 12 existing gas turbines..

The NESHAP Subpart YYYY applies to PEEC if the aggregate use of oil by existing and new turbines exceeds 1,000 hours during any calendar year. However, information available from the equipment vendors indicate that PEEC will meet the proposed MACT of 91 parts per billion by volume dry (ppbvd) corrected to 15 percent O_2 for formaldehyde. FDEP adopted this EPA rule by reference in Rule 62-204.800(11)(b)81 F.A.C.

The NESHAP Subpart ZZZZ addressing RICE applies to both major and area sources of HAPs. FDEP adopted this EPA rule by reference in Rule 62-204.800(11)(b)82 F.A.C. The method of compliance under this rule is demonstrating compliance with 40 CFR 60, Subpart IIII, which was previously cited in this section. The emergency generators and fire pump engine will meet the requirements of Subpart III.

Ambient Monitoring

For PEEC, the net emissions changes will be less than the PSD SERs. As a result, an air quality monitoring impact analysis is not required by NSR under FDEP air regulations. As a supplement to the air permit application, air quality monitoring data are provided, which demonstrate that Broward County is in attainment of the AAQS for all criteria pollutants. These data are presented in Section 5.0 of this application.

GEP Stack Height Impact Analysis

The GEP stack height regulations allow any stack to be at least 65 meters (213 ft) high. The HRSG stacks will be 149 ft. These stack heights do not exceed the GEP stack height. However, as discussed in Section 6.0, Air Quality Modeling Approach, since the stack height is less than GEP, building downwash effects must be considered in the modeling analysis. As a result, the potential for downwash of the CT emissions caused by nearby structures is included in the modeling analysis.

In addition, since the stack heights for the other PEEC sources are also less than GEP, building downwash effects were included in the modeling analysis for these sources.

3.5.3 Local Air Regulations

As specified in Subsection 3.4.5, PPRAQD does not have delegated authority to review, process, or take appropriate action over electrical power plant projects; therefore, permitting requirements for PEEC will comply with FDEP permitting requirements.

3.5.4 Other Clean Air Act Requirements

The 1990 CAA Amendments established a program to reduce potential precursors of acidic deposition. The Acid Rain Program was delineated in Title IV of the CAA Amendments and required EPA to develop the program. EPA's final regulations were promulgated on January 11, 1993, and included permit provisions (40 CFR 72), allowance system (Part 73), continuous emission monitoring (CEM) (Part 75), excess emission procedures (Part 77), and appeal procedures (Part 78). FDEP adopted these rules by reference in Rule 62-204.800(16) F.A.C. (permit provisions), Rule 62-204.800(17) F.A.C. (allowance system), Rule 62-204.800(19) F.A.C.[continuous emission monitoring (CEM)], Rule 62-204.800(21) F.A.C. (excess emission procedures), and Rule 62-204.800(22) F.A.C. (appeal procedures).

EPA's Acid Rain Program applies to all existing and new utility units, except those serving a generator less than 25 MW, existing simple cycle CTs, and certain non-utility facilities; units which fall under the program are referred to as affected units. The EPA regulations are applicable to PEEC for the purposes for obtaining a permit and allowances, as well as emission monitoring. New units are required to obtain permits under the program by submitting a complete application 24 months before the date on which the unit commences operation (e.g., first fire).

The permit would require the units to hold SO_2 emission allowances. Emission limitations established in the Acid Rain Program are presumed to be less stringent than BACT for new units. An allowance is a market based financial instrument that is equivalent to 1 ton of SO_2 emissions. Allowances can be sold, purchased, or traded.

CEM for NO_x is required for natural gas-fired and oil-fired affected units. SO_2 monitoring is also required, although use of CEM is optional. When an SO_2 CEM system is selected to monitor SO_2 mass emissions, a flow monitor is also required. Alternately, SO_2 emissions may be determined using procedures established in Appendix D, 40 CFR 75 (FDEP Rule 62-204.800(19)(b)4 F.A.C.; flow proportional oil sampling or manual daily oil sampling). CO_2 emissions must also be determined either through a CEM (e.g., as a diluent for NO_x monitoring) or calculation. Alternate procedures, test methods, and quality assurance/quality control (QA/QC) procedures for CEM are specified (Part 75, Appendices A through I; FDEP Rule 62-204.800(19)(b)1-9 F.A.C.). The acid rain CEM requirements including QA/QC procedures are, in general, more stringent than those specified in the NSPS for Subpart KKKK. New units are required to meet the requirements by not later than 90 days after the unit commences commercial operation.

4.0 CONTROL TECHNOLOGY DESCRIPTION

4.1 Applicability

The PSD regulations require new major stationary sources or major modifications to existing major sources to undergo a control technology review for each pollutant that may potentially be emitted above significant amounts. As discussed in previous sections, PSD review is required for PEEC for GHG; for other regulated pollutants, PSD review is not required and the control technology review requirements of the PSD regulations are not applicable.

There are NSPS regulations which are applicable to NO_x and SO_2. In addition, there are also minor emissions of PM/PM_{10}, CO and VOCs as a result of the combustion of natural gas and ULSD oil. Notwithstanding, the emission levels and control technologies proposed for these pollutants are consistent with emission levels established as BACT by the FDEP in recent projects. Subsection 4.2 presents an overview of the control technology and applicable NSPS, and the control technology for minimizing emissions of NO_x, CO, SO_2 and sulfuric acid mist, PM/PM_{10}, and VOCs. Section 4.3 presents the BACT analysis for GHGs.

4.2 Overview of Control Technology and Applicable NSPS

The use of clean fuels (natural gas and ULSD oil), combustion controls, and air pollution control equipment will minimize air emissions and ensure compliance with applicable emission-limiting standards. Using clean fuels will minimize emissions of SO_2, PM/PM_{10}, and other fuel bound contaminants. Combustion controls will minimize the formation of NO_x and the formation of CO and VOCs by combustor design. Further NO_x reduction will be achieved by SCR. The combination of these techniques has been determined to represent BACT on previous projects based on an evaluation of economic, energy, and environmental impacts. The following subsection presents a summary of the Air Pollution Control Technology proposed for PEEC.

EPA updated NSPS for Stationary Combustion Turbines that will commence construction after February 18, 2005. Subpart KKKK (Rule 62-204.800(8)(b)78 F.A.C.) applies to units with a heat input at peak load of 10 MMBtu/hr. The Subpart KKKK emissions requirements applicable to combustion turbines greater than 30 MW apply to CT/HRSG trains associated with PEEC. The NO_x emissions are limited to 15 ppm corrected to 15 percent O_2 or 0.43 lb/MW-hr for natural gas firing and 42 ppm corrected to 15 percent O_2 or 1.3 lb/MW-hr for light oil firing. For PEEC, the NO_x emissions are limited to 2 ppm corrected to 15 percent O_2 and less than 0.05 lb/MW-hr when natural gas firing. For SO_2 emissions, Subpart KKKK requirements limit emissions to 0.9 lb/MW-hr or a potential total sulfur content equivalent to 0.06 lb/MMBtu if multiple fuels are fired. For PEEC the SO_2 emissions are less than 0.04 lb/MW-hr when firing natural gas and 0.02 lb/MW-hr when firing ULSD oil.

Table 4-1 presents the proposed emission limits for PEEC. The proposed GHG BACT emission limit applicable to EPA regulations is discussed in Section 4.3.

NSPS are also applicable to the gas compressor turbines, auxiliary boiler, fuel heaters, emergency generators, and fire pump engine. Subpart KKKK is applicable to the gas compressor turbines with a Subpart KKKK NO_x emissions limit of 25 ppmvd corrected to 15 percent O_2 compared to a proposed NO_x emissions rate for PEEC of 15 ppmvd corrected to 15 percent O_2. The EPA NSPS Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units, applies to the auxiliary boilers and fuel heaters. For the emergency generators and fire pump engine, NSPS Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, is applicable.

4.2.1 Nitrogen Oxides

The Project will result in a net emissions decrease of about 3,900 TPY for NO_x emissions (i.e., more than 85 percent reduction from historical emissions). PSD review, including a BACT determination, is not applicable. However, the NO_x control technology and emission limits proposed for PEEC are consistent with emission limits established as BACT in Florida and EPA Region IV for similarly designed projects. The use of DLN combustors and SCR for PEEC with NO_x emission levels of 2 ppmvd corrected to 15 percent O_2 when firing natural gas and 8 ppmvd corrected to 15 percent O_2 is consistent with recently established BACT emission limits for other combined cycle units when firing ULSD oil. Similarly, the NO_x emission rates proposed for the auxiliary boiler, natural gas heaters, emergency generators, and natural gas compressors have been established as BACT in previous PSD permits.

When firing natural gas, NO_x emissions will be controlled using DLN combustors. DLN combustor technology has been offered and installed by CT manufacturers to reduce NO_x emissions by inhibiting thermal NO_x formation through premixing fuel and air prior to combustion and providing premix combustion to reduce flame temperatures. The DLN combustors have premixed fuel zones plus a standard diffusion flame pilot burner for startup. Low NO_x levels are achieved by introducing fuel primarily to the premix zones and reducing the amount of fuel being combusted from the pilot nozzle.

NO_x emissions will be further controlled by SCR systems when firing either natural gas or ULSD oil. SCR is a post combustion process where NO_x in the gas stream is reacted with ammonia in the presence of a catalyst to form nitrogen and water. The reaction occurs typically between about 320 and 400 degrees Celsius (°C) (600 and 750°F). These temperatures occur within the HRSG where the SCR catalyst and aqueous ammonia injection grid is installed. Aqueous ammonia will be stored onsite in tank(s). The SCR system will be designed for additional NO_x reduction. Flue gas NO_x emissions when firing natural gas will be reduced to 2 ppmvd, corrected to 15 percent O_2. When firing ULSD oil, SCR will reduce NO_x emissions by 80 percent or more to 8 ppmvd corrected to 15 percent O_2 or less.

The NO_x emissions from the auxiliary boiler, fuel heaters, emergency generators, pump fire engine, and natural gas compressors will be limited using combustion techniques. The auxiliary boiler will be equipped with low NO_x burners to reduce NO_x emissions to 0.05 lb/MMBtu (HHV). The fuel heaters will use combustion controls to reduce NO_x emissions to 0.095 lb/MMBtu (HHV). The emergency generators will meet the NSPS Subpart IIII NO_x emission requirements of 6.5 grams per brake horsepower-hour (g/bhp-hr). The natural gas compressors are based on gas turbines using Solar Turbines dry low emissions (DLE) technology or equivalent with a maximum NO_x emission rate of 15 ppmvd corrected to 15 percent O_2.

4.2.2 Carbon Monoxide

The Project will result in a net decrease in CO emissions for the Siemens "H" CTs and a net increase in CO emissions for the MPS "J" CTs that will be less than the PSD significant emission rate of 100 TPY. Therefore, PSD review, including a BACT determination, is not applicable. However, the use of combustion controls to reduce CO emissions in the range proposed for natural gas and ULSD oil firing has been the technology used to achieve low CO emission rates in CTs.

The emission rates are based upon the CTs being considered for PEEC. The CTs will utilize advanced combustion technology with an expected CO emission rate of 9 ppmvd corrected to 15 percent O_2 at baseload operation when firing natural gas and 35 ppmvd corrected to 15 percent O_2 When firing ULSD oil. These CO emission rates envelope the CTs under consideration.

Combustion techniques will be used to reduce the CO emissions from the auxiliary boiler, fuel heaters, fire pump engine, and emergency generators. The auxiliary boiler will be equipped with low NO_x burners designed to reduce CO emissions to 0.08 lb/MMBtu. The fuel heaters will use combustion controls to reduce CO emissions to 0.08 lb/MMBtu. The emergency generators will meet the NSPS Subpart IIII CO emission requirements of 8.5 g/bhp-hr. Each natural gas compressor will be equipped with combustion technology to reduce CO emissions to 25 ppmvd corrected to 15 percent O_2.

The CO emission rates proposed for the auxiliary boiler, fuel heaters, emergency generators, and natural gas compressors have also been established as BACT in previous PSD permits.

4.2.3 Sulfur Oxides (SO_2 and H_2SO_4 Mist)

The Project will result in net emissions decreases of more than 9,000 TPY for SO_2 emissions and about 380 TPY for sulfuric acid (H_2SO_4) mist (i.e., reductions of more than 95 percent for SO_2 and 90 percent for H_2SO_4 from historical emissions). PSD review, including a BACT determination, is not applicable. The only feasible control for the combined cycle unit, auxiliary boilers, fuel heaters, emergency generators, fire pump engine, and natural gas compressors is combustion of clean fuels. Natural gas and ULSD oil are the cleanest fuels available with maximum sulfur contents of 2 gr/100 scf for natural gas and 0.0015 percent sulfur for ULSD oil proposed for PEEC. H_2SO_4 emissions will also be minimized by the use of low sulfur fuels. SO_2 and sulfuric acid mist emission limits based on use of natural gas and ULSD oil have been established as BACT in previous PSD permits.

4.2.4 Particulate Matter and Other Regulated Pollutants

The Project will result in a net emissions decrease of more than 350 TPY for PM/PM_{10} (i.e., more than 50 percent reduction from historical emissions). PSD review, including a BACT determination, is not applicable. The use of clean fuels, characterized by low PM and trace contaminant contents and advanced combustion techniques, results in negligible PM and PM_{10} emissions from the combined cycle unit, auxiliary boiler, fuel heaters, emergency generators, fire pump engine, and natural gas compressors. Emission limits based on the use of clean fuels (i.e., natural gas and ULSD oil) have been established as BACT for PM/PM_{10} emissions in previous PSD permits.

4.2.5 Volatile Organic Compound

The Project will result in a net emissions increase of less than 40 TPY for VOC. Therefore, PSD review, including a BACT determination, is not applicable. Combustion techniques will be used to reduce the VOC emissions from the combined cycle unit, auxiliary boiler, fuel heaters, emergency generators, fire pump engine, and natural gas compressors.

The CTs will utilize advanced combustion technology, and the proposed emission rates are consistent with those established as BACT for these turbines. The proposed VOC emission rate for the MPS "J" CTs or equivalent when firing natural gas is 1 ppmvd corrected to 15 percent O_2 at baseload operation. When firing oil, the VOC emissions from the MPS "J" CTs or equivalent will be based on 10 ppmvd corrected to 15 percent O_2. VOC emissions for the Siemens "H" CTs or equivalent will be based on 1 ppmvd (corrected to 15 percent O_2) when firing natural gas at baseload operation. For the Siemens "H" CTs or equivalent when firing oil, the VOC emissions will be based on 10 ppmvd corrected to 15 percent O_2.

The auxiliary boiler is designed with proper combustion techniques to reduce VOC emissions to 0.005 lb/MMBtu. The fuel heaters will use combustion controls to reduce VOC emissions to 0.005 lb/MMBtu. The emergency generators will meet the NSPS Subpart IIII (Rule 62-204.800(8)(b)79 F.A.C.) VOC emission requirements of 1 g/bhp-hr as total hydrocarbons. Each natural gas compressor will be equipped with combustion technology to reduce VOC emissions to 12.5 ppmvd corrected to 15 percent O_2.

4.3 GHG Control Technology Review

This section addresses EPA's GHG PSD regulations in 40 CFR 52.21. As shown in Tables 2-9A and 2-9B there will be an increase in GHG emissions based on a comparison of potential emissions from PEEC and the baseline actual emissions of the existing Port Everglades Plant Units 1 through 4. As a result, this subsection presents a BACT analysis for the PEEC Project. The approach to the BACT analysis is based on the regulatory definitions of BACT, as well as consideration of EPA's current guidelines suggesting that a "top-down" approach be followed in BACT analyses. The CAA and corresponding implementing regulations require that a BACT analysis be conducted on a case by case basis taking into consideration the amount of emissions reductions that each available emissions reducing technology or technique would achieve, as well as the energy, environmental, economic and other costs associated with each technology or technique.

EPA has recommended since 1990 that permitting authorities use the five step "top down" BACT process to determine BACT. The top down process calls for all available control technologies for a given pollutant to be identified and ranked in descending order of control effectiveness. The permit applicant should first examine the highest ranked ("top") option. The top ranked options should be established as BACT unless the permit applicant demonstrates to the satisfaction of the permitting authority that technical considerations, or energy, environmental, or economic impacts justify a conclusion that the top ranked technology is not "achievable" in that case. If the most effective control strategy is eliminated in this fashion, then the next most effective alternative should be evaluated, and so on, until an option is selected as BACT.

EPA has broken down this "top down" process into the following five steps:

Step 1: Identify all available control technologies

Step 2: Eliminate technically infeasible options

Step 3: Rank remaining control technologies

Step 4: Evaluate most effective controls and document results

Step 5: Select the BACT

The Clean Air Act specifies that BACT cannot be less stringent than any applicable standard of performance under the NSPS. EPA has not promulgated any NSPS that contain emissions limits for GHGs.

EPA issued guidance on the determination of BACT for GHGs ("*PSD and Title V Permitting Guidance for Greenhouse Gases*", March 2011). EPA believes that in BACT reviews of GHGs that the "top down" approach be followed, but that it is important to consider options that improve the overall energy efficiency of the source or modification – through technologies, processes and practices at the emitting unit. In general, a more energy efficient technology burns less fuel than a less energy efficient technology on a per unit of output basis. Thus, considering the most energy efficient technologies in the BACT analysis helps reduce the products of combustion, which includes not only GHGs but other regulated NSR pollutants (e.g., NO_X, SO_2, $PM/PM_{10}/PM_{2.5}$, CO, etc.). Thus, EPA emphasizes that energy efficiency should be considered in BACT determinations for all regulated NSR pollutants (not just GHGs).

The following subsections provide the BACT analysis for the PEEC Project.

4.3.1 BACT Analysis for PEEC – 3-on-1 Combined Cycle Unit

The BACT analysis for the GHG emissions from the PEEC combined cycle unit followed the EPA suggested 5 step "top down" process:

Step 1 – Identify All Available Control Technologies

The first step in the top down BACT process is to identify all "available" control options. Available control options are those air pollution control technologies or techniques (including lower emitting processes and practices) that have the potential for practical application to the emissions unit and the regulated pollutant under evaluation.

EPA has placed potentially applicable control alternatives identified and evaluated in the BACT analysis into the following three categories:

- Inherently Lower Emitting Processes/Practices/Designs
- Add On Controls
- Combinations of Inherently Lower Emitting Processes/Practices/Designs and Add On Controls

EPA recommends that the BACT analysis should consider potentially applicable control techniques from all of the above three categories.

GHGs under EPA regulations are considered as a single air pollutant, which is the aggregate group of the six principal gases, CO_2, N_2O, CH_4, HFCs, PFCs, and SF_6. CO_2 emissions result from the oxidation of carbon in the fuel. CH_4 emissions result from incomplete combustion and N_2O emissions result primarily from low temperature combustion. CO_2, N_2O, and CH_4 are the principal GHGs that will be emitted from the PEEC combined cycle unit.

The combustion of natural gas has the lowest emissions of GHGs of any fossil fuel and emits almost 30 percent less CO_2 than oil, and about 45 percent less CO_2 than coal (source: www.naturalgas.org). The primary fuel for the PEEC combined cycle unit will be natural gas. ULSD oil will be used as backup fuel and will be based on an equivalent of 1,000 hr/yr per CT. It is important to recognize that the definition of BACT in 40 CFR 52.21(b)(12) includes use of "clean fuels" as a pollution control technique. The EPA PSD and the Title V Permitting Guidance for GHGs states that clean fuels which would reduce GHG emissions should be considered while recognizing at the same time that the BACT analysis does not need to include a clean fuel option that would fundamentally redefine the source. Therefore, the proposed CTs will be fired with "clean fuels" as included in the definition for BACT in the CAA Part 169(3).

EPA recommends that permit applicants and permitting authorities should identify all "available" GHG control options that have the potential for practical application to the source under consideration. In its PSD and Title V Permitting Guidance for GHGs, EPA emphasizes on two mitigation approaches for CO_2 – energy efficiency and carbon capture and storage (CCS).

Emissions of CH_4 and N_2O from CTs are less than 0.5 percent of the total CO_2e GHG emissions. As a result, control options for these pollutants are not practicable although an oxidation catalyst system can potentially reduce CH_4 emissions.

Energy Efficiency

Energy efficiency falls under the general category of lower polluting processes/practices. Applying technologies, measures and options that are energy efficient translates not only in the reduction of emissions of the particular regulated NSR air pollutant undergoing BACT review, but it also may achieve collateral reductions of emissions of other pollutants. There are different categories of energy efficient improvements:

- Technologies or processes that maximize the efficiency of the individual emissions unit, and
- Options that could reduce emissions by improving the utilization of thermal energy and electricity that is generated and used onsite.

When the efficiency of the power generation process is increased, less fuel is burned to produce the same amount of electricity. This provides the benefits of lower fuel costs and reduced air pollutant emissions (including CO_2). Several recent BACT determinations for GHG emissions concluded that high efficiency power generation technology is the only available and feasible control technology. Efficient power production is technically feasible and is proposed for the PEEC combined cycle unit.

Carbon Capture and Storage

Carbon capture and storage (CCS) falls under the category of add on controls, which are air pollution control technologies that remove pollutants from a facility's emissions stream. EPA suggests that CCS is an add on pollution control technology that is "available" for large CO_2 emitting facilities including fossil fuel-fired power plants and industrial facilities with high purity CO_2 streams. As a result, EPA suggests that CCS be considered in Step 1 of the BACT analysis.

CCS is composed of three main components: CO_2 capture and/or compression, transport, and storage.

Carbon Capture – Before CO_2 gas can be sequestered, it must be captured as a relatively pure gas, so that it can be feasibly stored. Most power plants and other large point sources use air fired combustors, a process that exhausts CO_2 diluted with nitrogen. Flue gas from natural gas combined cycle plants contains only about 4 percent CO_2 by volume. For effective carbon sequestration, the CO_2 in the exhaust gases must be separated and concentrated due to the low percent by volume.

The most likely options currently identifiable for CO_2 separation and capture include:

- Absorption (chemical and physical),
- Adsorption (physical and chemical),
- Low temperature distillation,
- Gas separation membranes, and
- Mineralization and biomineralization.

Carbon Transport – After the CO_2 is captured, it must be transported to a carbon sequestration site. Pipelines are the most common method for transporting large quantities of CO_2 over long distances. Shipping CO_2 via pipeline involves compressing gaseous CO_2 to a pressure above 1,160 pounds per square inch (psi), to increase CO_2 density and make it easier and less expensive to transport. A CO_2 pipeline would be similar to a high pressure natural gas pipeline and is technically possible. CO_2 also can be transported as a liquid in seagoing vessels or via tankers on roads or railways. In these instances, the CO_2 is held in insulated tanks at low temperatures and relatively low pressures.

Carbon Storage – In a CCS system, CO_2 is captured, it is transported, if necessary, and then stored. Geologic formations such as depleted oil and gas reservoirs, unmineable coal seams, and underground saline formations are potential options for long term storage. Pressurized CO_2 is injected into the deep geologic formations through drilled wells. Under high pressure, CO_2 turns to liquid and can move through a formation as a fluid. Once injected, the liquid CO_2 tends to be buoyant and will flow upward until it encounters a barrier of non porous rock, which can trap the CO_2 and prevent further upward migration. When CO_2 is injected into a coal seam, it is adsorbed onto the coal surfaces, and methane gas is released and produced in adjacent wells. There are other mechanisms for CO_2

trapping as well: CO_2 molecules can dissolve in brine, react with minerals to form solid carbonates, or adsorb in the pores of the porous rock.

Deep saline formations, which are layers of porous rock saturated with brine present an enormous potential for geologic storage of CO_2. However, there is not much experience with saline formations as that acquired through resource recovery from oil and gas reservoirs and coal seams. There is ongoing research focused on storage in organic rich shale, which is a thin horizontal layer of sedimentary rock with low vertical permeability and in basalt formations, which are geologic formations of solidified lava. Other possible options include liquid storage in deep ocean areas.

Oxidation Catalyst

Catalytic oxidation technology, which is primarily designed to reduce CO emissions will also reduce CH_4 emissions but to a lesser extent. Oxidation catalysts operate at elevated temperatures where excess O_2 in the exhaust reacts with CH_4 to form CO_2. No chemical reagent is necessary. The surface of an oxidation catalyst is typically a precious metal.

Oxidation catalysts are susceptible to fine particles suspended in the exhaust gases that can foul and poison the catalyst. Catalyst poisoning reduces catalyst activity and pollutant removal efficiencies. The most effective oxidation of CO and VOC emissions is achieved if the catalyst bed is located prior to the HRSG in the high temperature region of the CT exhaust.

Step 2 – Identification of Technically Feasible Control Alternatives

Under the second step of the top down BACT analysis, a potentially applicable control technique listed in Step 1 may be eliminated from further consideration if it is not technically feasible for the specific source under review. EPA considers a technology to be potentially applicable if it has been demonstrated in practice or is available.

Energy Efficiency

Efficient power generation is technically feasible and is being proposed for the PEEC combined cycle unit. This is discussed in detail in Step 4.

Carbon Capture and Storage (CCS)

In its PSD and Title V permitting guidance for GHGs, EPA states that it does not believe CCS will be a technically feasible BACT option in certain cases at this time. To establish that an option is technically feasible, the permitting record should show either that an available control option has been demonstrated in practice or is available and applicable, with the term "applicable" generally meaning a technology can reasonably be installed and operated on the source type under consideration. EPA recognizes the significant logistical hurdles that the installation and operation of a CCS system presents and that set it apart from other add on controls that are typically used to reduce emissions of other regulated pollutants. In addition, other add on controls typically have an existing accessible infrastructure in place to address waste disposal and other offsite needs. It should also be noted that while CCS may be available according to EPA, it is not "commercially available". All current CCS projects for power plants are primarily in the demonstration stage.

Logistical hurdles for CCS may include obtaining contracts for offsite land acquisition (including the availability of land), the need for funding (including, for example, government subsidies), timing of available transportation infrastructure, developing a site for secure long term storage and environmental permitting for underground GHG sequestration. Not every source has the resources to overcome the offsite logistical barriers necessary to apply CCS technology to its operations.

There are no CCS systems commercially available for full scale power plants in the United States. On February 3, 2010, President Obama established an Interagency Task Force on Carbon Capture and Storage, composed of 14 Executive Departments and Federal Agencies. The Task Force delivered several recommendations to the President on August 12, 2010. The Task Force, co-chaired by the U.S. Department of Energy (DOE) and the EPA, recommended a comprehensive and coordinated strategy to overcome the barriers to the widespread, cost effective deployment of carbon capture and storage (CCS) within 10 years, with a goal of bringing five to ten commercial demonstration projects online by 2016. These projects, to be deployed with the help of federal funding, are intended to demonstrate a range of current generation CCS technologies applied to coal-fired power plants and industrial facilities. The Task Force concluded that such research and development efforts were designed to reduce the cost of CCS and facilitate cost effective deployment after 2020. However, widespread deployment of CCS will occur only if the technology is commercially available at economically competitive prices. Therefore, the application of CCS is very much in the development stage and not commercially available.

In November 2010, EPA published the final rule for Federal requirements of Underground Injection Control (UIC) for CO_2 Geologic Sequestration (GS) Wells, as authorized by the Safe Drinking Water Act (SDWA). The final rule establishes new federal requirements for the underground injection of carbon dioxide for the purpose of long term underground storage, or geologic sequestration, and a new well class – Class VI – to ensure the protection of underground sources of drinking water (USDWs) from injection related activities. Therefore, authorization must be obtained from FDEP under this federally delegated program prior to geologic sequestration. Permitting for a Class VI well takes many years as exploratory wells are likely required for CO_2 sequestration and including drilling deep holes, testing, etc., prior to approval of an injection well. Indeed, the exploratory well process to assess the formation can take over 2 years for drilling and testing, and approval of the start of an injection well process.

In addition to the limitations of CCS discussed above, the PEEC Project replaces a nominal 1,200 MW oil and natural gas fired steam electric plant with an nominal 1,250 MW advanced combined cycle unit on the same footprint. There is limited space to provide the needed infrastructure for CCS on the existing plant property. In addition, the PEEC project is located within the industrialized Port with no additional space for CCS facilities.

Based on these considerations, it can be reasonably concluded that CCS is not applicable to the PEEC Project, and consequently not technically feasible.

Oxidation Catalyst

Catalytic oxidation is an available control technology for CH_4, although no approval for its use for this purpose has occurred. The oxidation catalyst will reduce CH_4 with the following reaction:

$$CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$$

While CH_4 emissions can be reduced using an oxidation catalyst, the amount of CO_2e reduced is less than 0.05 percent. Moreover, the amount of potential CO_2e that could be reduced from the PEEC combined cycle unit is 40 times lower than the EPA GHG thresholds. Therefore, the addition of an oxidation catalyst to the PEEC project for GHG control is neither practicable nor feasible to reduce CH_4.

Step 3 – Rank Remaining Control Technologies

After the list of all available controls is narrowed down to a list of the technically feasible control technologies in Step 2 above, Step 3 of the top down BACT process calls for the remaining control technologies to be listed in order of overall control effectiveness for the regulated NSR pollutant under review. The most effective control alternative (i.e., the option that achieves the lowest emissions level) should be listed at the top and the remaining technologies ranked in descending order of control effectiveness.

Based on the discussion in Steps 1 and 2, the only technically feasible control option for GHGs is energy efficiency.

Step 4 – Economic, Energy, and Environmental Impacts

Under Step 4 of the top down BACT analysis, economic, energy, and environmental impacts must be evaluated for each option remaining under consideration.

The "top" control option and in the case of GHG the "top" energy reduction technology should be established as BACT unless the applicant demonstrates, and the permitting authority agrees, that the energy, environmental, or economic impacts justify a conclusion that the most stringent technology is not "achievable" in that case. If the most stringent technology is eliminated in this fashion, then the next most stringent alternative is considered, and so on.

The "top" control option for PEEC is energy efficiency. The PEEC combined cycle unit will be operating at the combined cycle mode, which is more energy efficient than any electric technology using natural gas as the primary fuel and ULSD oil as a backup fuel. FPL has selected the advanced MHI "J" or Siemens "H" CTs. These CTs are more energy efficient when compared to other available combustion turbine models. Moreover, these CTs will not have duct firing that is slightly less efficient since the heat is added to the HRSG directly. The HRSG is a steam generator with the overall energy cycle less efficient than combined cycle. While duct firing is still an efficient electric generating process for producing maximum generation, is not proposed for PEEC. Thus the PEEC combined cycle unit will be the most efficient available.

The efficiency of the generation technology in producing electricity and fuel utilized are the most important aspects in GHG emissions from electric generation projects. Together, efficiency and fuel type dictate the amount of GHG emissions per unit of generation.

An important measure of the efficiency for an electrical generating facility is the units' heat rate. Heat rate is a measurement of how efficiently a unit uses heat energy. It is expressed as the number of

BTUs of heat required to produce a kilowatt-hour of energy based on HHV. A heat rate of 3,413 Btu/kWh reflects an efficiency of 100 percent from thermal energy to electrical energy.

The PEEC combined cycle unit's heat rate and energy efficiency was compared to data obtained from the U.S. Energy Information Administration (US EIA). Based on data provided in the Annual Energy Review 2010 (see http://www.eia.doe.gov/totalenergy/annual/index.cfm), the approximate heat rate for electricity for fossil fueled power plants in the U.S. in 2010 was 9,760 Btu/kWh (35.0 percent efficiency).

Based on US EIA's 2010 annual review of the electrical power industry, the reported average heat rate for natural gas firing was 8,185 Btu/kWh (41.7 percent efficiency) including all types of generation (see http://www.eia.gov/electricity/annual/pdf/table5.3.pdf).

Of the generation types (see http://www.eia.gov/electricity/annual/pdf/table5.4.pdf), the average heat rates when firing natural gas are:

- Steam turbine – 10,249 Btu/kWh (33.3 percent efficiency),
- Natural gas turbine – 11,590 Btu/kWh (29.5 percent efficiency),
- Internal combustion – 9,917 Btu/kWh (34.4 percent efficiency), and
- Combined cycle – 7,619 (44.8 percent efficiency) Btu/kWh.

Using the heat balance predicted data to estimate the power output of the steam turbine generator, and the heat rate and efficiency of PEEC when using natural gas and USLD oil are as follows (new and clean, based on manufacturer data):

- Natural gas firing –6,357 to 6,488 Btu/kWh (53.7 to 52.6 percent efficiency) (Baseload at 75°F), and
- Oil firing – 6.745 to 7,171 Btu/kWh (50.6 to 47.6 percent efficiency) (Baseload at 75°F)

The overall new and clean heat rate of PEEC using these heat rates for each fuel and an operating scenario of 1,000 hr/yr per CT on oil firing, and 7,760 hr/yr per CT on natural gas firing, is estimated to range from 6,449 to 6,518 Btu/kWh (52.9 to 52.4 percent efficiency). These estimated heat rates are well below the approximate heat rate for all fossil fueled power plants in the U.S. in 2010 and the proposed combined cycle unit is 33 percent more efficient than all U.S. fossil fueled plants. When comparing to all type of generation using natural gas, the proposed power block will be 20 percent more efficient than all generation using natural gas.

The PEEC combined cycle unit will be more efficient than other existing combined cycle plants. This is a result of utilizing a the latest CT technology that results in greater efficiency in the CT generated power and increased exhaust energy through the HRSG to produce more steam electric generation. Together this significantly improves the efficiency over earlier generation combined cycle units. PEEC will have a heat rate over 10 percent lower than average existing combined cycle plants as indicated from EIA 2009 data. The proposed Project will be designed to produce the maximum efficiency for the size of the Project (1,250 MW) including the use of inlet cooling that improves efficiency. For example, at an inlet temperature of 95°F, the use of evaporative cooling will decrease the heat rate by 1 percent or more and translate to a proportional decrease in GHG emissions for the amount of fuel used.

As part of EPA's clean energy initiatives, EPA developed the Emissions & Generation Resource Integrated Database (eGRID) as a resource tool in assessing GHG emissions. eGrid is a comprehensive source of data on the environmental characteristics of almost all electric power generated in the United States with data available based on a variety of geographic regions and locations. Data is also available on a plant specific basis. Based on the latest available eGrid data the following are the emissions of CO_2 on a generation basis for generation facilities located in the same subregion as the Project:

- Florida Reliability Coordination Council – 1,225.7 lb CO_2/MW-hr for all generation (including nuclear), 1,417.3 lb CO_2/MW-hr for total combustion, and
- FPL – 881.6 lb CO_2/MW-hr for all generation (including nuclear); 1,121.3 lb CO_2/MW-hr for total combustion generation.

For PEEC, the net CO_2 emission rate on a generation basis will range from about 740 to 760 lb CO_2/MW-hr over the range of operating temperatures and firing the primary fuel, natural gas. When compared to the existing generation facilities in the region and FPL's system, it can be seen that PEEC's GHG emission rates are lower. Therefore, the GHG emissions are much lower than the existing generation on a generation basis and PEEC will displace less efficient generating units resulting in overall GHG reduction in FPL's system. FPL's analysis indicates that PEEC will reduce FPL's system emissions of CO_2 by 22 million tons from 2016 through 2047.

Step 5 – Select the BACT

In Step 5 of the BACT determination process, the most effective control option not eliminated in Step 4 should be selected as BACT for the pollutant and emissions unit under review and included in the permit.

BACT

Energy efficiency, the only remaining and feasible control technology, is selected as BACT for the GHG emissions from the PEEC Project. Energy efficiency plays a major role in affecting GHG emissions and EPA suggests that more emphasis will be given to energy efficiency in GHG BACT analysis. As demonstrated in the discussion in Step 4, PEEC meets the requirements of energy efficiency under EPA's GHG BACT guidelines. Moreover, the PEEC Project will be part of FPL electric generating system and as the most efficient unit located in a major load center (southeast Florida), PEEC will have a high capacity factor and displace generation from less efficient generating units. FPL's system analysis indicates that PEEC will reduce FPL's system emissions of CO_2 by 22 million tons from 2016 through 2047.

The CCS option was eliminated in Step 2 as not technically feasible for the Project. Although EPA considers CCS as available, it is not commercially available. Indeed, EPA recognizes that at present CCS is an expensive technology, largely because of the costs associated with CO_2 capture and compression. In the Guidance, EPA states that even if not eliminated in Step 2 of the BACT analysis, on the basis of the current costs of CCS, CCS is more likely to be eliminated from consideration in Step 4 of the BACT analysis, even in some cases where underground storage of the captured CO_2 near the power plant is feasible. In the case of PEEC, CCS is not a technically feasible control technology based on the Project's overall purpose (replacing a less efficient power plant of almost equal size) and its location (no sufficient space for CCS facilities in an existing developed industrial area).

Moreover, while there is a net increase in GHG emission as a result of a "potential emissions" to "baseline actual emission" comparison, the more efficient PEEC Project replaces a less efficient existing oil and natural gas-fired steam electric generating plant. Taking into account these factors, CCS would not be feasible in any calculation of cost effectiveness.

FPL proposes an output based GHG BACT limit of 877 lb CO_2e/MW-hr on a 12-month rolling average that would be applicable to the Project. The BACT limit is based on an annual average turbine inlet temperature 75°F, the range in operating loads, 1,000 hr/yr of ULSD oil operation, a 2 percent margin for the difference between guaranteed heat rates and actual heat rates (the vendor has not yet been selected), and a 5 percent margin for degradation over time. This proposed BACT limit is reasonable and appropriate based on recent BACT determinations for similar combined cycle projects. First, the PacifiCorp's Lake Side Block 2 combined cycle project was issued a GHG BACT limit of 950 lb/MW-hr by the Utah Department of Environmental Quality (Approval Order DAE-AN01130310010-11; May 4, 2011). This BACT GHG limit is about 8 percent and 73 lb CO_2e/MW-hr higher than that proposed for PEEC. This is a difference of over 400,000 tons CO_2e per year for the MW-hrs that could be generated by PEEC. Second, the draft PSD Permit for GHG Emissions for the Lower Colorado River Authority's Thomas C. Ferguson Power Plant proposed a GHG BACT limit equivalent to 918 lb/MW-hr by the EPA Region VI (PSD-TX-1244-GHG, September 28, 2011). This BACT GHG limit is about 5 percent and 41 lb CO_2e/MW-hr higher than that proposed for PEEC. This difference is also equivalent to over 230,000 tons CO_2e per year for the MW-hrs that could be generated by PEEC. Based on the BACT analysis and these recent permits, the proposed GHG BACT limit of 877 lb CO_2e/MW-hr on a 12 month rolling average is appropriate as BACT.

4.3.2 BACT Analysis for PEEC – Auxiliary Boiler, Emergency Generators, Natural Gas Heater, Natural Gas Compressor Station and Diesel Fire Pump Engine

The auxiliary boiler, emergency generators, natural gas heaters, natural gas compressor station and diesel fire pump engine are all necessary support facilities for the operation of the PEEC combined cycle unit. GHG emissions potential for these sources are less than 2 percent of the combined cycle system at the maximum requested operation. The actual GHG emissions from these sources are expected to be considerably lower than that requested due to their function. The emergency generators and diesel fire pump, that will have operational limits of no more than 100 hr/yr will normally only be operated a few hours per month for maintenance checks. The auxiliary boiler is used for startup and shutdowns that are not expected to be frequent for the advanced combined cycle unit. The natural gas compressor station is necessary to maintain natural gas pressure to the combustion turbines, but is not operated continuously at full load to serve this purpose. The natural gas fuel heater maintains the temperature of natural gas as needed, but is not required to operate continuously at full load to serve this purpose. Taken together the actual GHG emissions of these sources are expected to be much less than 1 percent of the combined cycle unit. Due to the negligible amount of GHG emissions from these sources compared to the combined cycle system, even 100 percent control of GHG emissions from these units will not make any meaningful reduction in total GHG emissions. Moreover, as discussed above, the PEEC project will reduce GHG emissions in

FPL's system by 22 million tons from 2016 through 2047 for an average reduction of about 700,000 TPY. This is over an order of magnitude lower than the total requested increase in GHG emission from these sources. As a result, a detailed BACT analysis of GHG emissions from these minor units will therefore not be practicable given that GHG emissions are not an individual unit issue. Rather, the GHG emissions of an entire project like PEEC are the most relevant factor in its review. As demonstrated in Section 4.3.1, PEEC will be one of the most energy efficient combined cycle plants in the U.S.

A brief discussion of the BACT steps with respect to GHG emissions from auxiliary boiler, emergency generators, natural gas heaters, natural gas compressor station and diesel fire pump engine is presented below.

Step 1 – Identify All Available Control Technologies

The first step in the top down BACT process is to identify all "available" control options. Available control options are those air pollution control technologies or techniques (including lower emitting processes and practices) that have the potential for practical application to the emissions unit and the regulated pollutant under evaluation.

The definition of BACT in Title 40, Part 52.21(b)(12) of the Code of Federal Regulations [40 CFR 52.21(b)(12)] includes use of clean fuels as a pollution control technique. The proposed auxiliary boiler, natural gas heater and natural gas compressor station will be fired with only natural gas, which is the cleanest GHG emitting fuel compared to other fossil fuels due to its low GHG emissions potential when combusted. The emergency generators and diesel fire pump require fuel located onsite in order to provide to service during emergency situations.

In the BACT analysis, GHGs are considered as a single air pollutant, which is the aggregate group of the six principal gases, CO_2, N_2O, CH_4, HFCs, PFCs, and SF_6. CO_2 emissions result from the oxidation of carbon in the fuel. CH_4 emissions result from incomplete combustion, and N_2O emissions result primarily from low temperature combustion. CO_2, N_2O, and CH_4 are the principal GHGs that will be emitted from the auxiliary boiler, emergency generators, natural gas heaters, natural gas compressor station and diesel fire pump engine. Emissions of CH_4 and N_2O are negligible compared to CO_2 and specific control options for these pollutants are not practicable.

EPA recommends that permit applicants and permitting authorities should identify all "available" GHG control options that have the potential for practical application to the source under consideration. In its PSD and Title V Permitting Guidance for GHGs, EPA emphasizes on two mitigation approaches for CO_2 – energy efficiency and carbon capture and storage (CCS). CCS is not practical for CO_2 emissions from the auxiliary boiler, emergency generators, natural gas heaters, natural gas compressor station and diesel fire pump engine due to the small amount of CO_2 emissions potential from this equipment compared to the combined cycle system. Moreover, these units are not operated continuously or at their rated capacities making the addition of control equipment problematic.

Energy Efficiency

In the GHG BACT guidance, EPA has stressed importance of energy efficiency for combustion sources. The auxiliary boiler will be used to provide steam to the steam cycle during the startup sequences. A boiler's efficiency is measured by its annual fuel utilization efficiency (AFUE). AFUE is the ratio of heat output of the boiler compared to the total energy consumed by the boiler. An AFUE of 90 percent means that 90 percent of the energy in the fuel becomes heat and the other 10 percent is lost in the system. In general, fossil fuel fired boilers have high AFUE rating around 90 percent. For example, based on data from Cleaver Brooks firetube boilers, the fuel to steam efficiencies for boilers are in the 90 percent range for natural gas.

The natural gas heater may be used to warm up the natural gas flowing through the pipeline before feeding into the CTs. The heater supplies heat based on the natural gas conditions. Therefore, the amount of fuel used in the heater is regulated to that necessary for the natural gas delivered to the CT.

Similarly, the natural gas compressors are efficient natural gas turbines connected directly to natural gas compressors. These natural gas turbine/compressors are used to maintain the necessary pressure for natural gas piped to the CTs associated with combined cycle unit. The amount of compression necessary is regulated by matching the needed fuel to the natural gas turbines that produce the necessary pressure for the CTs.

The emergency generators and diesel fire pump are designed to meet the applicable NSPS and NESHAP for non-road engines. These units maximize efficiency while meeting the required emissions standards.

Step 2 – Identification of Technically Feasible Control Alternatives

Under the second step of the top down BACT analysis, a potentially applicable control technique listed in Step 1 may be eliminated from further consideration if it is not technically feasible for the specific source under review. EPA considers a technology to be potentially applicable if it has been demonstrated in practice or is available. The energy efficiency through the regulation of the amount of fuel used is considered to be the only technically feasible CO_2 control option for the auxiliary boiler, emergency generators, natural gas heaters, natural gas compressor station and diesel fire pump engine.

Step 3 – Rank Remaining Control Technologies

After the list of all available controls is narrowed down to a list of the technically feasible control technologies in Step 2, Step 3 of the top down BACT process calls for the remaining control technologies to be listed in order of overall control effectiveness for the regulated New Source Review (NSR) pollutant under review. Based on the discussion in Steps 1 and 2, the only technically feasible control option for CO_2 from the auxiliary boiler, emergency generators, natural gas heater, natural gas compressor station and diesel fire pump engine is energy efficiency through the regulation of fuel to meet the PEEC requirements.

Step 4 – Economic, Energy, and Environmental Impacts

Under Step 4 of the top down BACT analysis, economic, energy, and environmental impacts must be evaluated for each option remaining under consideration.

In the top down BACT analysis, the "top" control option should be established as BACT unless the applicant demonstrates, and the permitting authority agrees, that the energy, environmental, or economic impacts justify a conclusion that the most stringent technology is not "achievable" in that case. If the most stringent technology is eliminated in this fashion, then the next most stringent alternative is considered.

The auxiliary boiler, natural gas heaters, and natural gas compressor station will use natural gas. GHG emissions for natural gas firing is 116.9 lb CO_2e/MMBtu compared to 163.6 lb CO_2/MMBtu for distillate fuel oil firing based on Subpart C of 40 CFR Part 98, Mandatory Greenhouse Gas Reporting. The emission factors include N_2O and CH_4 at the equivalent rates. Therefore, firing natural gas will generate less GHGs than firing oil.

Step 5 – Select the BACT

In Step 5 of the BACT determination process, the most effective control option not eliminated in Step 4 should be selected as BACT for the pollutant and emissions unit under review and included in the permit.

Energy efficiency through the regulation of fuel use to meet the function is the only remaining and feasible control technology is selected as BACT for the GHG emissions from the auxiliary boiler, emergency generators, natural gas heaters, natural gas compressor station and diesel fire pump engine. Additionally, the use of natural gas in the auxiliary boiler, natural gas heater and natural gas compressor station results in the lowest GHG emission practicable.

As mentioned in Step 1, an important measure of the efficiency for a boiler is the units' AFUE natural gas boilers have an AFUE rating around 90 percent in general, which is higher than other fossil fuel fired boilers. In addition, all units are operated only to meet the requirements of PEEC combined cycle units operation. Thus, fuel use is optimized resulting in lower GHG emissions than if these units operate continuously.

The auxiliary boiler, emergency generators, natural gas heater, natural gas compressor station and diesel fire pump engine together accounts for less than 2 percent of the total GHG emissions potential of the PEEC Project with expected emissions to be much less than 1 percent. Moreover, these minor GHG emission units support the overall Project and, as discussed above, PEEC will be one of the most efficient combined cycle units in the U.S. PEEC's GHG emissions on a lb/MW-hr basis will be one of the lowest in the country. The operation of these minor units will be limited: the auxiliary boiler will be based on 2,000 hr/yr; emergency generators and fire pump engine are limited to 100 hours or less; the natural gas heaters are operated as necessary; and only two of three natural gas turbine/compressors will normally be operated and only used to regulate natural gas pressure. Together, the negligible amount of GHG emissions potential, limitation in operating hours, and use of the natural gas fuel, represents the best available option in controlling GHG emissions from these emission units. This is consistent with the definition of BACT, which allows "a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology." Due to the negligible amount of GHG emissions potential, a numerical GHG emission limit is unnecessary.

5.0 AMBIENT MONITORING ANALYSIS

If PSD review is required, FDEP's PSD regulations require that an air quality monitoring analysis be conducted for each criteria and non-criteria pollutant subject to regulation under the CAA before a major stationary source or major modification at a major stationary source is constructed. Criteria pollutants are those pollutants for which AAQS have been established. Non-criteria pollutants are those pollutants that may be regulated by emission standards, for which AAQS have not been established. This analysis may be performed by the use of modeling and/or by monitoring the air quality. In addition, if EPA has not established an acceptable ambient monitoring method for the pollutant, monitoring is not required.

For PEEC, the net emissions changes will be less than the PSD SERs, except for GHG. An air quality monitoring impact analysis for GHG is not required by NSR under EPA PSD air regulations.

However, as a supplement to the Air Construction Permit Application, air quality monitoring data for other regulated pollutants are provided, which demonstrate that Broward County is in attainment of the AAQS for all criteria pollutants. A summary of the maximum pollutant concentrations representative of air quality in Broward County from 2008 through 2010 is presented in Table 5-1. These data indicate that the maximum air quality concentrations measured in the region are well below applicable standards.

The monitoring data are also used to estimate background concentrations that are added to the maximum concentrations predicted for the existing Units 1 through 4 and PEEC to provide total air quality impacts that can be compared to the AAQS (see Section 6.1).

6.0 AIR QUALITY IMPACT ANALYSIS

PEEC will significantly improve air quality in the vicinity of the facility. PEEC will reduce emissions of air pollutants, except for GHG, by approximately 14,000 TPY compared to recent Plant operation, or an emission reduction of approximately 88 percent. PEEC will reduce GHG emissions in FPL's system by an average of 700,000 TPY.

For the PEEC Project, the net emissions changes will be less than the PSD SERs. As a result, an air quality impact analysis is not required by NSR under FDEP air regulations. However, as a supplement to the Air Construction Permit Application, air quality impacts were estimated for the existing Plant and PEEC in the vicinity of the facility for comparison to the AAQS. The general modeling approach followed EPA and FDEP modeling guidelines.

As shown in Table 6-1, the maximum total air quality impacts for PEEC and the existing Port Everglades Plant are predicted to be below and in compliance with the AAQS. Total air quality impacts include the maximum impacts predicted for the PEEC units, added to appropriate background concentrations. Background concentrations are based on the maximum measured concentration from representative air quality data in the vicinity of the facility.

For SO_2, the predicted maximum impacts for PEEC alone will be less than 5 percent of the AAQS and, with background sources, the total predicted maximum impacts are less than 60 percent of the AAQS. The maximum total air quality impacts are primarily due to background concentrations, particularly for the 1 hour average impacts.

For PM_{10}, the predicted maximum impacts for PEEC alone will be less than 5 of the AAQS and, with background sources, less than 40 percent of the AAQS. Similar to SO_2, the maximum total air quality impacts are primarily due to background concentrations.

For NO_2 and CO, the predicted maximum total air quality impacts are also primarily due to background concentrations. For PEEC alone, the predicted maximum NO_2 and CO impacts are about 16 and 1 percent, respectively, of the AAQS. The predicted maximum total NO_2 and CO impacts for PEEC with background sources are about 65 and 23 percent of the AAQS.

The following sections present a summary of the air quality modeling methodology for the air quality impact analyses for the Project.

6.1 Air Modeling Analysis Approach

6.1.1 Air Modeling Scenarios

Air quality analyses were performed to assess the maximum impacts for the existing Port Everglades Plant and PEEC. For the existing Plant, air quality impacts were predicted for the existing Units 1 through 4, which were added to non-modeled background concentrations (see Subsection 6.1.8) to produce total air quality impacts. These impacts were then compared to the AAQS for SO_2, NO_2, PM_{10}, $PM_{2.5}$, and CO.

Similarly, PEEC air quality impacts were predicted for each of the CT vendors and other air emission units for PEEC, such as the fuel heater, natural gas compressor station, and auxiliary boiler, to produce total air quality impacts, which were then compared to the AAQS for SO_2, NO_2, PM_{10}, $PM_{2.5}$, and CO.

6.1.2 General Modeling Approach

In general, when model predictions are used to determine compliance with AAQS, current policies stipulate that the highest annual and the HSH short term (i.e., 24 hours or less) concentrations are compared to the applicable AAQS when using 5 years of meteorological data for the analysis. The HSH concentration is calculated each year for a receptor field by:

1. Eliminating the highest concentration predicted at each receptor,
2. Identifying the second highest concentration at each receptor, and
3. Selecting the highest concentration among these second highest concentrations.

The HSH approach is consistent with AAQS, which generally allows a short term average concentration to be exceeded once per year at each receptor.

For the 1-hour NO_2 impact, the 5-year averages of the 98^{th} (8^{th} highest) percentile of the daily maximum 1-hour average concentrations at each receptor were determined. The maximum 5-year average of these values is used to estimate the maximum impact. Similarly, for the 1-hour SO_2 impact, the 5-year averages of the 99^{th} (4^{th} highest) percentile of the daily maximum 1-hour average concentrations at each receptor were determined. The maximum 5-year average of these values is used to estimate the maximum impact.

The AAQS analysis performed for the Project is a source analysis that evaluates whether the concentrations from sources will comply with the AAQS. These concentrations include the modeled impacts from sources at the facility added to a background concentration. The background concentration accounts for sources not included in the modeling analysis.

6.1.3 Model Selection

The selection of air quality models to calculate air quality impacts for the existing Port Everglades Plant and PEEC must be based on the models' ability to simulate impacts in the vicinity of the facility. The American Meteorological Society and EPA Regulatory Model (AERMOD) dispersion model was used to evaluate the pollutant impacts due to the proposed sources at PEEC. AERMOD (Version 11103) is available on the EPA's Internet web site, Support Center for Regulatory Air Models (SCRAM), within the Technology Transfer Network (TTN). A listing of AERMOD model features is presented in Table 6-2.

The EPA and FDEP recommend that AERMOD be used to predict pollutant concentrations at receptors located within 50 km of a source. AERMOD calculates hourly concentrations based on hourly meteorological data. AERMOD is applicable for the type of Project sources and area in which the Project is located since it is recognized as containing the latest scientific algorithms for simulating plume behavior in all types of terrain.

AERMOD was used to predict the maximum pollutant concentrations due to the existing Port Everglades Plant and PEEC in nearby areas surrounding the facility.

For modeling analyses that will undergo regulatory review, such as determining compliance with AAQS, the following model features are recommended by EPA for rural mode and are referred to as the regulatory default options in AERMOD:

1. Final plume rise at all receptor locations,
2. Stack tip downwash,
3. Buoyancy induced dispersion,
4. Default wind speed profile coefficients for rural mode,
5. Default vertical potential temperature gradients, and
6. Calm wind processing.

The EPA regulatory default options were used to address maximum impacts.

6.1.4 Meteorological Data

Meteorological data used in AERMOD to determine air quality impacts consisted of a concurrent 5 year period of hourly surface weather observations and upper air sounding data collected from the National Weather Service (NWS) stations located at the Fort Lauderdale-Hollywood International Airport and Florida International University (FIU) in Miami, respectively. The 5 year period of the meteorological data was from 2006 through 2010 and was prepared by the FDEP. The NWS office at the airport is located approximately 2.5 km (1.2 miles) southwest of PEEC. The areas between the airport and PEEC are flat with very similar land characteristics. As such, the meteorological parameters collected at Fort Lauderdale-Hollywood International Airport are considered to be very representative of those that exist at PEEC.

Since the airport meteorological station is only 2.5 km from PEEC and the terrain between the two sites is flat, the wind direction and wind speed frequencies that are experienced at the airport are considered to be very similar to that experienced at PEEC. As such, the airport wind direction and wind speed frequencies are considered to be representative for PEEC.

6.1.5 Emission Inventory

Existing FPL Units – The emissions and stack parameters for the existing Units 1 through 4 are presented in Table 6-3. Units 1 through 4 will be retired before PEEC begins operation.

The short term emission rates were based on the maximum rate allowed by the permit for each unit (Permit No. 0110036-009-AV, February 2010), EPA AP-42 emission factors for combustion of fuel oil, or, in the case of SO_2, the maximum historical sulfur content of 1 percent used over the last 5 years (equivalent to about 1.1 lb/MMBtu).

PEEC Sources – Summaries of the criteria pollutant emission rates, physical stack and stack operating parameters for the combined cycle units for PEEC that were used in the air modeling analysis are presented in Tables 2-1A to 2-2A for the MPS "J" CTs for natural gas firing and fuel oil firing, respectively. Similarly, summaries are presented in Tables 2-1B to 2-2B for the Siemens "H" CTs for natural gas firing and fuel oil firing, respectively.

The maximum air quality impacts for PEEC were predicted for a range of possible operating conditions. The emission and stack operating parameters are presented for three operating loads and 35°F, 75°F, and 95°F ambient temperatures for the CTs firing both natural gas and oil.

FPL

A total of 18 modeling scenarios were considered for the MPS "J" CTs operating in the following conditions for natural gas and oil:

- Ambient temperatures of 35°F, 75°F, and 95°F at:
  - 100 percent operating load
  - 75 percent operating load
  - 50 percent operating load

A total of 18 modeling scenarios were also considered for the Siemens "H" CTs operating in the following conditions:

- For natural gas firing, ambient temperatures of 35°F, 75°F, and 95°F at:
  - 100 percent operating load
  - 80 percent operating load
  - 60 percent operating load
- For fuel oil firing, ambient temperatures of 35°F, 75°F, and 95°F at:
  - 100 percent operating load
  - 80 percent operating load
  - 70 percent operating load

The load analysis was performed using the exit gas operating data for the MPS "J" CT and the Siemens "H" CT. Once the worst case operating condition was determined for each CT, subsequent analyses were performed with exit gas operating data specific to each CT vendor.

The proposed combined cycle unit will have HRSG stack heights of 149 ft. Because the proposed stack heights are less than GEP, building downwash effects were included in the modeling analysis. In addition, since the stack heights for the other PEEC sources are also less than GEP, building downwash effects were included in the modeling analysis for these sources.

A separate air quality analysis was performed for the auxiliary boiler alone, which will be used to assist in startup for one of the CTs. As discussed previously, the combustor for the CTs requires steam for combustor cooling, which normally comes from the HRSG. For startup, an auxiliary boiler is required to supply steam for the combustion process for only one CT. Once sufficient quality and quantity of steam is available from the HRSG, steam from the auxiliary boiler is not required for the other CTs. It was conservatively assumed that the annual operation of the auxiliary boiler would be 2,000 hr/yr for the startup of the CT.

Additional analyses were performed for SO_2, NO_x, PM_{10}, $PM_{2.5}$, and CO emissions to address the combined impact of the CTs and other PEEC sources. Detailed descriptions of the other PEEC sources are presented in Tables 2-3 through 2-8 in Section 2.0.

The proposed CTs will have a HRSG stack height of 149 ft and an inner stack diameter of 22 ft. Because the proposed stack heights are less than GEP, building downwash effects were included in the modeling analysis (see following section on building downwash). In addition, since the stack heights for the other PEEC sources are also less than GEP, building downwash effects were included in the modeling analysis for these sources.

6.1.6 Building Downwash Effects

All significant structures for PEEC were identified by the plot plan (see Figure 2-1). The following structures were processed in the EPA Building Profile Input Program [(BPIP), Version 04274] to determine direction specific structure heights and widths for each 10 degree azimuth direction for each source that was included in the modeling analysis:

Structure	Height (ft)	Width (ft)	Length (ft)
CT Air Inlet	98	24	58
HRSG Structure	78	42	102
CT Structure	35	24	99
Compressor Station	10.5	7	20

As a conservative estimate of potential impacts, the natural gas compressors were assumed to be in an enclosed structure. However, each of the natural gas compressors may stand alone and not be enclosed in any structure.

Based on this evaluation, the GEP stack height for the CTs was determined to be 193 ft. Therefore, building downwash effects for the CTs were included in the air modeling analyses. With stack heights of 60 ft or less for the other PEEC sources, building downwash effects were included in the modeling analysis for these sources. The BPIP files are presented in Appendix D.

6.1.7 Receptor Locations

To determine the maximum impact for all pollutants and averaging times in the vicinity of PEEC, concentrations were predicted at receptors located in detailed receptor grids centered on the proposed combined cycle unit, the modeling origin, and extended from the property boundary out to 5 km. More than 3,000 receptors were used in the analysis to determine the maximum impacts for the existing Units 1 through 4 and PEEC. Although the terrain around the immediate vicinity is flat, receptor elevations were included at each receptor in the analysis.

Along the property boundary, a Cartesian receptor grid was used to predict concentrations at 75 receptors spaced at 50 meter intervals. In addition, a general Cartesian grid was used to predict concentrations beyond the property boundary out to 5 km. Receptors were located at the following intervals and distances from the origin:

- Along the property boundary or fenceline – 50 meters,
- Beyond the fenceline to 2 km – 100 meters, and
- From 2 km to 5 km – 250 meters.

The receptors used in the analysis to determine the maximum impacts for the existing Port Everglades Plant and PEEC are presented in Appendix D.

Impacts were also predicted at the PSD Class I area of the Everglades NP using an array of 901 discrete receptors and elevations covering the entire NP that were obtained from the National Park Service Class I extraction program. The receptors were converted to Universal Transverse Mercator (UTM) coordinates, North American Datum 83 (NAD83).

6.1.8 Background Concentrations

Background concentrations are necessary to determine total ambient air quality impacts to demonstrate compliance with the AAQS. "Background concentrations" are defined as concentrations due to sources other than those specifically included in the modeling analysis. For all pollutants, background would include other point sources not included in the modeling, fugitive emission sources, and natural background sources. In general, monitoring data collected near the area in which the air quality impact is performed is used for this purpose.

Summaries of ambient SO_2, PM_{10}, $PM_{2.5}$, NO_2, and CO concentrations measured are presented in Section 5.0. Based on data collected from 2008 to 2010, the highest annual and 3 year average of second highest short term concentrations were selected to represent background concentrations and are as follows:

Pollutant	Averaging Period	Background Concentration (ppm)	($\mu g/m^3$)
SO_2	1-hour	0.038	99.6
	3-hour	0.036	93.0
	24-hour	0.008	20.9
	Annual	0.0010	2.6
PM_{10}	24-hour	NA	18.1
	Annual	NA	49
$PM_{2.5}$	24-hour	NA	7.1
	Annual	NA	16
NO_2	1-hour	0.049	92.2
	Annual	0.0096	11.9
CO	1-hour	2.8	3,182
	8-hour	2.0	2,300

6.2 Model Results

6.2.1 Air Quality Impacts for the Existing Units 1 through 4

Air modeling analyses were performed to determine the maximum total air quality impacts of SO_2, NO_2, PM_{10}, $PM_{2.5}$, and CO from the existing Units 1 through 4 added to background concentrations. A summary of the maximum total air quality predicted for comparison to the AAQS in the Plant's vicinity is presented in Table 6-4. These results indicate that the maximum pollutant impacts predicted for the existing Units 1 through 4 are less than the AAQS.

The highest annual, HSH 24 hour, and HSH 3 hour SO_2 concentrations are predicted to be 32, 221, and 604 micrograms per cubic meter ($\mu g/m^3$), respectively. These concentrations are below the annual, 24 hour, and 3 hour SO_2 AAQS of 60, 260, and 1,300 $\mu g/m^3$, respectively.

The highest annual NO_2 concentration is predicted to be 21$\mu g/m^3$, which is below the annual NO_x AAQS of 100 $\mu g/m^3$.

The highest annual and HSH 24 hour PM_{10} concentrations are 19 and 56 $\mu g/m^3$, respectively. These concentrations are below the annual and 24 hour PM_{10} AAQS of 50 and 150 $\mu g/m^3$, respectively.

The highest annual and 24 hour $PM_{2.5}$ concentrations are 8 and 21 $\mu g/m^3$, respectively. These concentrations are below the annual and 24 hour $PM_{2.5}$ AAQS of 15 and 35 $\mu g/m^3$, respectively.

The HSH 8 hour and HSH 1 hour CO concentrations are predicted to be 2,314 and 3,203 $\mu g/m^3$, respectively. These concentrations are below the 8 hour and 1 hour CO AAQS of 10,000 and 40,000 $\mu g/m^3$, respectively. It should be noted that the background concentrations contribute more than 99 percent to the total air quality impacts.

6.2.2 Air Quality Impacts due to PEEC

The maximum pollutant concentrations predicted for PEEC for the CTs firing natural gas and fuel oil are given in Table 6-5 for impacts in the Plant's vicinity. Based on the worst-case operating condition, two additional modeling analyses were performed. The first analysis included the CTs and fuel heater and the second analysis included the CTs, fuel heater, and natural gas compressor station. The results of these additional analyses are also presented in Table 6-5.

The maximum concentrations for PEEC, including the CTs, fuel heater, and gas compression station as well as background concentrations, for comparison to the AAQS are presented in Table 6-6 for impacts in the Plant's vicinity. As shown in these tables, the modeling results indicate that maximum concentrations are predicted to be less than the AAQS and are comparable among the CT vendors considered.

CTs and Fuel Heater

For the CTs and fuel heater, the highest annual, 24 hour, 3 hour, and 1 hour SO_2 concentrations are predicted to be 3, 24, 98, and 106 $\mu g/m^3$, respectively. These concentrations are below the annual, 24 hour, 3 hour, and 1 hour SO_2 AAQS of 60, 260, 1,300, and 197 $\mu g/m^3$, respectively.

The highest annual and 1 hour NO_2 concentrations are predicted to be 13 and 120 $\mu g/m^3$, respectively, which are below the annual and 1 hour NO_2 AAQS of 100 and 188 $\mu g/m^3$, respectively.

The highest annual and 24 hour PM_{10} concentrations are 19 and 54 $\mu g/m^3$, respectively. These concentrations are below the annual and 24 hour PM_{10} AAQS of 50 and 150 $\mu g/m^3$, respectively.

The highest annual and 24 hour $PM_{2.5}$ concentrations are 8 and 21 μg/m^3, respectively. These concentrations are below the annual and 24 hour $PM_{2.5}$ AAQS of 15 and 35 μg/m^3, respectively.

The highest 8 hour and 1 hour CO concentrations are predicted to be 2,333 and 3,219 μg/m^3, respectively. These concentrations are below the 8 hour and 1 hour CO AAQS of 10,000 and 40,000 μg/m^3, respectively. Similar to the air quality impacts predicted for the existing FPL units, the background concentrations contribute more than 99 percent to the total air quality impacts.

CTs, Fuel Heater, and Natural Gas Compressor Station

For the CTs, fuel heater, and natural gas compressor station, the results are similar to or slightly higher than those for the CTs and fuel heater alone. For the CTs and fuel heater, the highest annual, 24 hour, 3 hour, and 1 hour SO_2 concentrations are predicted to be 3, 24, 99, and 106 μg/m^3, respectively. These concentrations are below the annual, 24 hour, 3 hour, and 1 hour SO_2 AAQS of 60, 260, 1,300, and 197 μg/m^3, respectively.

The highest annual and 1 hour NO_2 concentrations are predicted to be 13 and 123 μg/m^3, respectively, which are below the annual and 1 hour NO_2 AAQS of 100 and 188 μg/m^3, respectively.

The highest annual and 24 hour PM_{10} concentrations are 19 and 54 μg/m^3, respectively. These concentrations are below the annual and 24 hour PM_{10} AAQS of 50 and 150 μg/m^3, respectively.

The highest annual and 24 hour $PM_{2.5}$ concentrations are 8 and 21 μg/m^3, respectively. These concentrations are below the annual and 24 hour $PM_{2.5}$ AAQS of 15 and 35 μg/m^3, respectively.

The highest 8 hour and 1 hour CO concentrations are predicted to be 2,334 and 3,220 μg/m^3, respectively. These concentrations are below the 8 hour and 1 hour CO AAQS of 10,000 and 40,000 μg/m^3, respectively. Again, the background concentrations contribute more than 99 percent to the total air quality impacts.

Auxiliary Boiler

The maximum concentrations for the auxiliary boiler for PEEC with background concentrations for comparison to the AAQS are presented in Table 6-7. It should be noted that the auxiliary boiler is needed only for the MPS "J" CTs for startup of the CT. As shown in Table 6-7, the modeling results indicate that maximum concentrations due to the auxiliary boiler are also predicted to be less than the AAQS and are similar to those predicted for the CTs and other PEEC sources.

The highest annual, 24 hour, 3 hour, and 1 hour SO_2 concentrations are predicted to be 2.6, 22, 96, and 104 $\mu g/m^3$, respectively. These concentrations are below the annual, 24 hour, 3 hour, and 1 hour SO_2 AAQS of 60, 260, 1,300, and 197 $\mu g/m^3$, respectively.

The highest annual and 1 hour NO_2 concentrations are predicted to be 12 and 120 $\mu g/m^3$, which are below the annual NO_x AAQS of 100 and 188 $\mu g/m^3$, respectively.

The highest annual and 24 hour PM_{10} concentrations are 18 and 51 $\mu g/m^3$, respectively. These concentrations are below the annual and 24 hour PM_{10} AAQS of 50 and 150 $\mu g/m^3$, respectively.

The highest 8 hour and 1 hour CO concentrations are predicted to be 2,329 and 3,238 $\mu g/m^3$, respectively. These concentrations are below the 8 hour and 1 hour CO AAQS of 10,000 and 40,000 $\mu g/m^3$, respectively.

Examples of the modeling input and summary files are provided in Appendix E.

6.2.3 Air Quality Impacts Predicted at the Everglades NP

Air quality impacts for Units 1 through 4 at the existing Port Everglades Plant and PEEC were also predicted for SO_2, NO_2, PM_{10}, and $PM_{2.5}$ at the PSD Class I area of the Everglades NP. A summary of these maximum predicted impacts is presented in Table 6-8. These results indicate that the maximum pollutant impacts predicted for PEEC are much lower than those for existing Units 1 through 4.

6.3 Conclusions

Based on these air quality modeling analyses, the maximum pollutant concentrations due to PEEC are predicted to be less than the AAQS and will comply with all applicable AAQS. Indeed, the modeling results clearly demonstrate that Florida's air quality will be protected and be substantially improved with PEEC. This is demonstrated by Figure 6-1, which presents the maximum total air quality impacts predicted for the existing Units 1 through 4 and PEEC compared to the AAQS. As shown in Figure 6-1, there is improvement in the maximum total air quality concentrations for SO_2 and PM_{10} with PEEC.

In conclusion, PEEC will reduce actual emissions of air pollutants by more than 14,000 TPY from the existing operation, or more than approximately 90 percent reduction, while improving the general air quality in the vicinity of PEEC.

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TABLES

TABLE 2-1A
STACK, OPERATING, AND EMISSION DATA
FOR THE COMBUSTION TURBINES/HRSGS -
NATURAL GAS COMBUSTION, MPS 501J CT

		Operating and Emission Data [a] for Ambient Temperature			
		Combustion Turbine/ HRSG			
Parameter	**Units**	**35 °F**	**59 °F**	**75 °F**	**95 °F**
CT/HRSG Stack Data					
Height	ft	149	149	149	149
Diameter	ft	22.0	22.0	22.0	22.0
100 Percent Load					
Temperature	°F	196	195	195	195
Velocity	ft/sec	61.1	58.9	57.3	55.3
Maximum Hourly Emissions per CT					
SO_2	lb/hr	17.0	16.3	15.8	15.2
$PM/PM_{10}/PM_{2.5}$	lb/hr	8.4	8.1	7.8	7.5
NO_x	lb/hr	21.4	20.5	19.8	19.0
CO	lb/hr	58.5	56.2	54.3	52.1
VOC (as methane)	lb/hr	3.7	3.6	3.5	3.3
Sulfuric Acid Mist	lb/hr	3.3	3.2	3.1	3.0
75 Percent Load					
Temperature	°F	184	185	186	187
Velocity	ft/sec	49.2	47.2	45.8	44.2
Maximum Hourly Emissions per CT					
SO_2	lb/hr	13.7	13.0	12.6	12.0
$PM/PM_{10}/PM_{2.5}$	lb/hr	6.8	6.5	6.3	6.0
NO_x	lb/hr	17.0	16.1	15.5	14.8
CO	lb/hr	46.6	44.2	42.4	40.6
VOC (as methane)	lb/hr	3.0	2.8	2.7	2.6
Sulfuric Acid Mist	lb/hr	2.67	2.53	2.44	2.34
50 Percent Load					
Temperature	°F	184	185	186	187
Velocity	ft/sec	38.7	38.0	37.4	36.7
Maximum Hourly Emissions per CT					
SO_2	lb/hr	10.4	9.9	9.6	9.2
$PM/PM_{10}/PM_{2.5}$	lb/hr	5.3	5.1	4.9	4.8
NO_x	lb/hr	13.0	12.3	11.8	11.4
CO	lb/hr	35.5	33.7	32.4	31.1
VOC (as methane)	lb/hr	2.3	2.1	2.1	2.0
Sulfuric Acid Mist	lb/hr	2.03	1.93	1.87	1.79

[a] Refer to Appendix A for detailed information on basis of pollutant emission rates and operating data.

Sources: MPS, 2011; Golder, 2011.

TABLE 2-1B
STACK, OPERATING, AND EMISSION DATA
FOR THE COMBUSTION TURBINES/HRSGS -
NATURAL GAS COMBUSTION, SIEMENS H CT

		Operating and Emission Data [a] for Ambient Temperature Combustion Turbine/ HRSG			
Parameter	**Units**	**35 °F**	**59 °F**	**75 °F**	**95 °F**
CT/HRSG Stack Data					
Height	ft	149	149	149	149
Diameter	ft	22.0	22.0	22.0	22.0
100 Percent Load					
Temperature	°F	196	195	195	195
Velocity	ft/sec	63.1	60.4	58.2	55.9
Maximum Hourly Emissions per CT					
SO_2	lb/hr	15.6	14.9	14.3	13.7
$PM/PM_{10}/PM_{2.5}$	lb/hr	15.1	13.9	13.7	12.6
NO_x	lb/hr	21.2	20.2	19.4	18.6
CO	lb/hr	32.2	31.0	30.0	28.0
VOC (as methane)	lb/hr	3.7	3.5	3.4	3.2
Sulfuric Acid Mist	lb/hr	3.0	2.9	2.8	2.7
80 Percent Load					
Temperature	°F	184	185	186	187
Velocity	ft/sec	51.1	48.6	47.8	46.2
Maximum Hourly Emissions per CT					
SO_2	lb/hr	12.9	12.0	11.6	10.9
$PM/PM_{10}/PM_{2.5}$	lb/hr	12.4	11.2	11.0	10.9
NO_x	lb/hr	17.6	16.4	15.8	14.9
CO	lb/hr	54.0	50.0	48.0	45.0
VOC (as methane)	lb/hr	3.1	2.9	2.8	2.6
Sulfuric Acid Mist	lb/hr	2.51	2.34	2.26	2.13
60 Percent Load					
Temperature	°F	184	185	186	187
Velocity	ft/sec	43.2	41.6	41.1	40.0
Maximum Hourly Emissions per CT					
SO_2	lb/hr	10.5	9.9	9.5	9.0
$PM/PM_{10}/PM_{2.5}$	lb/hr	10.7	10.6	10.5	10.4
NO_x	lb/hr	14.4	13.5	13.0	12.2
CO	lb/hr	44.0	41.1	40.0	37.2
VOC (as methane)	lb/hr	2.5	2.4	2.3	2.1
Sulfuric Acid Mist	lb/hr	2.03	1.92	1.85	1.75

[a] Refer to Appendix B for detailed information on basis of pollutant emission rates and operating data.

Sources: Siemens, 2011; Golder, 2011.

TABLE 2-2A
STACK, OPERATING, AND EMISSION DATA
FOR THE COMBUSTION TURBINES/HRSGS -
ULTRA LOW-SULFUR DISTILLATE OIL COMBUSTION, MPS 501J CT

		Operating and Emission Data [a] for Ambient Temperature			
		Combustion Turbine/ HRSG			
Parameter	**Units**	**35 °F**	**59 °F**	**75 °F**	**95 °F**
CT/HRSG Stack Data					
Height	ft	149	149	149	149
Diameter	ft	22	22	22	22
100 Percent Load					
Temperature	°F	359	357	355	354
Velocity	ft/sec	77.1	73.3	70.9	68.0
Maximum Hourly Emissions per CT					
SO_2	lb/hr	4.0	3.7	3.6	3.4
$PM/PM_{10}/PM_{2.5}$	lb/hr	20.8	19.8	19.2	18.4
NO_x	lb/hr	78.2	73.3	70.6	66.8
CO	lb/hr	208.3	195.3	187.9	177.9
VOC (as methane)	lb/hr	34.0	31.9	30.7	29.0
Lead	lb/hr	0.773	0.727	0.699	0.665
Sulfuric Acid Mist	lb/hr	0.04	0.03	0.03	0.03
75 Percent Load					
Temperature	°F	359	357	355	354
Velocity	ft/sec	62.9	60.0	58.1	55.5
Maximum Hourly Emissions per CT					
SO_2	lb/hr	3.2	3.1	2.9	2.8
$PM/PM_{10}/PM_{2.5}$	lb/hr	17.0	16.3	15.7	15.1
NO_x	lb/hr	63.4	60.0	57.7	54.8
CO	lb/hr	168.9	159.7	153.7	145.9
VOC (as methane)	lb/hr	27.6	26.1	25.1	23.8
Lead	lb/hr	0.630	0.596	0.573	0.547
Sulfuric Acid Mist	lb/hr	0.03	0.03	0.03	0.03
60 Percent Load					
Temperature	°F	359	357	355	354
Velocity	ft/sec	53.7	51.5	49.9	47.8
Maximum Hourly Emissions per CT					
SO_2	lb/hr	2.8	2.7	2.6	2.5
$PM/PM_{10}/PM_{2.5}$	lb/hr	14.5	13.9	13.5	13.0
NO_x	lb/hr	55.0	52.1	50.3	47.9
CO	lb/hr	146.4	138.8	134.0	127.5
VOC (as methane)	lb/hr	23.9	22.7	21.9	20.8
Lead	lb/hr	0.547	0.518	0.500	0.478
Sulfuric Acid Mist	lb/hr	0.03	0.02	0.02	0.02

[a] Refer to Appendix A for detailed information on basis of pollutant emission rates and operating data.

Sources: MPS, 2011; Golder, 2011.

TABLE 2-2B
STACK, OPERATING, AND EMISSION DATA
FOR THE COMBUSTION TURBINES/HRSGS -
ULTRA LOW-SULFUR DISTILLATE OIL COMBUSTION, SIEMENS H CT

		Operating and Emission Data [a] for Ambient Temperature			
		Combustion Turbine/ HRSG			
Parameter	**Units**	**35 °F**	**59 °F**	**75 °F**	**95 °F**
CT/HRSG Stack Data					
Height	ft	149	149	149	149
Diameter	ft	22	22	22	22
100 Percent Load					
Temperature	°F	359	357	355	354
Velocity	ft/sec	79.4	75.8	72.8	68.3
Maximum Hourly Emissions per CT					
SO_2	lb/hr	4.1	3.9	3.8	3.6
$PM/PM_{10}/PM_{2.5}$	lb/hr	60.1	57.0	55.0	51.9
NO_x	lb/hr	88.8	84.6	81.0	77.3
CO	lb/hr	68.0	64.0	62.0	59.0
VOC (as methane)	lb/hr	39.0	37.0	35.0	34.0
Lead	lb/hr	0.038	0.036	0.034	0.033
Sulfuric Acid Mist	lb/hr	0.80	0.76	0.73	0.70
80 Percent Load					
Temperature	°F	359	357	355	354
Velocity	ft/sec	64.1	61.6	59.6	57.3
Maximum Hourly Emissions per CT					
SO_2	lb/hr	3.4	3.2	3.1	2.9
$PM/PM_{10}/PM_{2.5}$	lb/hr	48.9	46.8	44.8	42.8
NO_x	lb/hr	73.9	69.5	66.3	62.3
CO	lb/hr	56.0	53.0	50.0	47.0
VOC (as methane)	lb/hr	32.0	30.0	29.0	27.0
Lead	lb/hr	0.031	0.030	0.028	0.027
Sulfuric Acid Mist	lb/hr	0.67	0.63	0.60	0.56
70 Percent Load					
Temperature	°F	359	357	355	354
Velocity	ft/sec	57.9	56.0	54.5	52.7
Maximum Hourly Emissions per CT					
SO_2	lb/hr	3.1	2.9	2.8	2.7
$PM/PM_{10}/PM_{2.5}$	lb/hr	43.8	42.8	40.7	39.7
NO_x	lb/hr	67.6	63.6	60.6	57.1
CO	lb/hr	51.0	48.0	46.0	43.0
VOC (as methane)	lb/hr	29.0	28.0	26.0	25.0
Lead	lb/hr	0.029	0.027	0.026	0.024
Sulfuric Acid Mist	lb/hr	0.61	0.57	0.55	0.52

[a] Refer to Appendix B for detailed information on basis of pollutant emission rates and operating data.

Sources: Siemens, 2011; Golder, 2011.

TABLE 2-3A
SUMMARY OF MAXIMUM POTENTIAL ANNUAL EMISSIONS FOR THE CTS/HRSGS, MPS 501J CTS

								Maximum Emissions (tons/year)					
							Operating Scenario	Operating Hours					
							Nat Gas 100 % Load	8,760	7,760	0	3,880	0	3,880
							Fuel Oil 100 % Load	0	1,000	0	1,000	0	1,000
	Maximum Hourly Emissions (lb/hr) - Fuel for Ambient Temperature & Load						Nat Gas 80 % Load	0	0	8,760	3,880	0	0
							Fuel Oil 80 % Load	0	0	0	0	0	0
							Nat Gas 60 % Load	0	0	0	0	8,760	3,880
	Nat Gas 75 °F	Fuel Oil 75 °F	Nat Gas 75 °F	Fuel Oil 75 °F	Nat Gas 75 °F	Fuel Oil 75 °F	Fuel Oil 70 % Load	0	0	0	0	0	0
Pollutant	**100%**	**100%**	**75%**	**75%**	**50%**	**50%**	**TOTAL**	**8,760**	**8,760**	**8,760**	**8,760**	**8,760**	**8,760**
One Combustion Turbine													
SO_2	15.8	3.6	12.6	2.9	9.6	2.6		69.2	63.1	55.0	56.8	42.0	51.1
$PM/PM_{10}/PM_{2.5}$	7.8	19.2	6.3	15.7	4.9	13.5		34.3	40.0	27.5	36.9	21.7	34.4
NO_x	19.8	70.6	15.5	57.7	11.8	50.3		86.9	112.3	67.8	103.8	51.9	96.7
CO	54.3	187.9	42.4	153.7	32.4	134.0		238.0	304.8	185.7	281.6	142.0	262.3
VOC (as methane)	3.5	30.7	2.7	25.1	2.1	21.9		15.1	28.7	11.8	27.3	9.0	26.0
Sulfuric Acid Mist	3.1	0.7	2.4	0.6	1.9	0.5		13.5	12.3	10.7	11.1	8.2	9.9
Lead	0.0	0.033	0.0	0.027	0.0	0.023		0.0	0.016	0.0	0.016	0.0	0.016
HAPs	1.23	2.90	0.98	2.38	0.75	2.07		5.4	6.2	4.3	5.7	3.3	5.3
Three Combustion Turbines													
SO_2	47.4	11	37.7	9	28.8	8		208	189	165	170	126	153
$PM/PM_{10}/PM_{2.5}$	23.5	58	18.8	47	14.8	41		102.8	119.9	82.4	111	65	103
NO_x	59.5	212	46.4	173	35.5	151		261	337	203	311	156	290
CO	163.0	564	127.2	461	97.3	402		714	914	557	845	426	787
VOC (as methane)	10.4	92.0	8.1	75.3	6.2	65.6		45.3	86.2	35.4	81.8	27.1	78.1
Sulfuric Acid Mist	9.2	2.1	7.3	1.7	5.6	1.5		40.4	36.8	32.1	33.2	24.5	29.8
Lead	0.00	0.10	0.00	0.08	0.00	0.07		0.00	0.049	0.00	0.049	0.00	0.049
HAPs	3.69	8.69	2.93	7.13	2.24	6.22		16.2	18.7	12.9	17.2	9.8	15.9

Sources: MPS, 2011; Golder, 2011.

TABLE 2-3B
SUMMARY OF MAXIMUM POTENTIAL ANNUAL EMISSIONS FOR THE CTS/HRSGS, SIEMENS H CTS

	Maximum Hourly Emissions (lb/hr) - Fuel for Ambient Temperature & Load						Operating Scenario	Maximum Emissions (tons/year) Operating Hours					
							Nat Gas 100 % Load	8,760	7,760	0	3,880	0	3,880
							Fuel Oil 100 % Load	0	1,000	0	1,000	0	1,000
							Nat Gas 80 % Load	0	0	8,760	3,880	0	0
							Fuel Oil 80 % Load	0	0	0	0	0	0
							Nat Gas 60 % Load	0	0	0	0	8,760	3,880
							Fuel Oil 70 % Load	0	0	0	0	0	0
Pollutant	**Nat Gas 75 °F 100%**	**Fuel Oil 75 °F 100%**	**Nat Gas 75 °F 80%**	**Fuel Oil 75 °F 80%**	**Nat Gas 75 °F 60%**	**Fuel Oil 75 °F 70%**	**TOTAL**	**8,760**	**8,760**	**8,760**	**8,760**	**8,760**	**8,760**
One Combustion Turbine													
SO_2	14.3	3.8	11.6	3.1	9.5	2.8		62.5	57.2	50.8	52.1	41.7	48.0
$PM/PM_{10}/PM_{2.5}$	13.7	55.0	11.0	44.8	10.5	40.7		60.2	80.8	48.4	75.6	46.0	74.5
NO_x	19.4	81.0	15.8	66.3	13.0	60.6		85.1	115.9	69.4	108.9	56.8	103.3
CO	30.0	62.0	48.0	50.0	40.0	46.0		131.4	147.4	210.2	182.3	175.2	166.8
VOC (as methane)	3.4	35.0	2.8	29.0	2.3	26.0		14.9	30.7	12.3	29.5	10.1	28.6
Sulfuric Acid Mist	2.8	0.73	2.3	0.60	1.9	0.55		12.1	11.1	9.9	10.1	8.1	9.3
Lead	0.00	0.034	0.00	0.028	0.00	0.026		0.0	0.017	0.0	0.017	0.0	0.017
HAPs	1.15	3.08	0.94	2.52	0.77	2.31		5.1	6.0	4.1	5.6	3.4	5.3
Three Combustion Turbines													
SO_2	42.8	11	34.8	9.2	28.6	8.4		187	172	152	156	125	144
$PM/PM_{10}/PM_{2.5}$	41.2	165	33.1	134	31.5	122		180.5	242.4	145.1	227	138	224
NO_x	58.3	243	47.5	199	38.9	182		255	348	208	327	170	310
CO	90.0	186	144.0	150	120.0	138		394	442	631	547	526	500
VOC (as methane)	10.2	105.0	8.4	87.0	6.9	78.0		44.7	92.1	36.8	88.6	30.2	85.7
Sulfuric Acid Mist	8.3	2.2	6.8	1.8	5.6	1.6		36.4	33.4	29.6	30.4	24.4	28.0
Lead	0.00	0.103	0.00	0.084	0.00	0.077		0.000	0.052	0.000	0.052	0.000	0.052
HAPs	3.46	9.23	2.82	7.56	2.31	6.92		15.16	18.04	12.33	16.8	10.1	15.8

Sources: Siemens, 2011; Golder, 2011.

TABLE 2-4
PERFORMANCE, STACK PARAMETERS, AND EMISSIONS FOR THE AUXILIARY BOILER

Parameter	Units	Values
Performance		
Number of Units		1
Fuel		Natural gas
Heat Input (HHV) [a]	MMBtu/hr	99.77
Heat Content (HHV-Btu/scf)	Btu/scf	1,020
Fuel Usage	scf/hr	97,814
Rating [a]	lb steam/hr	85,000
Maximum operation/yr	hours	2,000
Maximum Fuel Usage	scf/yr	195,627,451
Exhaust Flow [a]		
Mass Flow	lb/hr	88,066
Molecular Weight		27.62
Moisture	%	18.17
Stack Parameters [a]		
Diameter	ft	2.75
Height	ft	60
Temperature	°F	296
Velocity	ft/sec	82
Flow	acfm	29,325
Emissions		
SO_2 -Basis [b]	grains S/100 scf	2
Emissions	lb/hr	0.56
	TPY	0.56
NO_x - Basis [a]	lb/MMBtu	0.050
Emissions	lb/hr	4.99
	TPY	4.99
CO - Basis [a]	lb/MMBtu	0.080
Emissions	lb/hr	7.98
	TPY	7.98
VOC - Basis [c]	lb/MMscf	5.5
Emissions	lb/MMBtu	0.0054
	lb/hr	0.54
	TPY	0.54
$PM/PM_{10}/PM_{2.5}$ - Basis [c,d]	lb/MMscf	7.6
Emissions	lb/MMBtu	0.0075
	lb/hr	0.74
	TPY	0.74

[a] Nebraska Boiler (2005); Golder Associates, (2005); Values are typical.

[b] Typical maximum sulfur content for natural gas

[c] EPA, AP-42, Natural Gas Combustion (March 1998).

[d] For PM, emissions include filterable and condensables.

TABLE 2-5

PERFORMANCE AND EMISSION DATA FOR THE EMERGENCY GENERATORS

Parameter		**Units**	**Values**	
Performance				
Number of Units			1	2
Rating		kW	2,250	4,500
Rating		hp	3,200	6,400
Fuel			Diesel	Diesel
Fuel Heat content (HHV)		Btu/lb	19,500	19,500
Fuel density		lb/gal	7.06	7.06
Heat input (HHV)		MMBtu/hr	21.01	42
Fuel usage		gal/hr	152.6	305
Maximum operation/yr		hours	100	200
Maximum fuel usage		gal/yr	15,261	30,522
Stack Parameters (typical)				
Diameter		ft	1.0	1.0
Height		ft	30	30
Temperature		°F	916	916
Flow		acfm	17,463	17,463
Emissions				
SO_2 -	Basis	%S	0.0015%	
	Conversion of S to SO_2	%	100	
	Molecular weight SO_2/ S (64/32)		2	
	Emission rate	lb/hr	0.032	0.065
		TPY	0.0016	0.0032
NO_x -	Basis	g/hp-hr	6.9	
	Emission rate	lb/hr	48.7	97.4
		TPY	2.4	4.9
CO -	Basis	g/hp-hr	8.5	
	Emission rate	lb/hr	60.0	120
		TPY	3.0	6.0
VOC -	Basis	g/hp-hr	1.0	
	Emission rate	lb/hr	7.1	14.1
		TPY	0.35	0.71
$PM/PM_{10}/PM_{2.5}$ -	Basis	g/hp-hr	0.4	
	Emission rate	lb/hr	2.8	5.6
		TPY	0.14	0.28

Source: FPL, 2011; Golder; 2011.

TABLE 2-6

PERFORMANCE, STACK PARAMETERS, AND EMISSIONS FOR THE NATURAL GAS FUEL HEATER

Parameter	Units	Values
Performance[a]		
Number of Units		1
Fuel		Natural gas
Heat Input (HHV)	MMBtu/hr	9.90
Heat Content (HHV-Btu/scf)	Btu/scf	1,020
Fuel Usage	scf/hr	9,706
Maximum operation/yr	hours	8,760
Maximum Fuel Usage	MMscf/yr	85.0
Stack Parameters (typical)		
Diameter	ft	1.4
Height	ft	30
Temperature	^{o}F	500
Velocity	ft/sec	53.6
Flow	acfm	4,950
Emissions		
SO_2 -Basis [b]	grains S/100 scf	2
Emissions	lb/MMBtu	0.0056
	lb/hr	0.055
	TPY	0.24
NO_x - Basis [c]	lb/MMscf	100
Emission rate	lb/MMBtu	0.098
	lb/hr	0.97
	TPY	4.25
CO - Basis [c]	lb/MMscf	84
Emission rate	lb/MMBtu	0.082
	lb/hr	0.82
	TPY	3.57
VOC - Basis [c]	lb/MMscf	5.5
Emission rate	lb/MMBtu	0.0054
	lb/hr	0.053
	TPY	0.23
$PM/PM_{10}/PM_{2.5}$ - Basis [c,d]	lb/MMscf	7.6
Emission rate	lb/MMBtu	0.0075
	lb/hr	0.074
	TPY	0.32

Note: Project will also have spare heater.

[a] Based on 10 MMBtu/hr (HHV) indirect gas heaters from Hanover Compression Company or equivalent.

[b] Typical maximum for natural gas.

[c] EPA, AP-42, Natural Gas Combustion (March 1998): small boilers < 100 MMBtu/hr.

[d] For PM, emissions include filterable and condensables.

TABLE 2-7

ESTIMATED PERFORMANCE AND EMISSION DATA FOR FIRE PUMP ENGINE

Parameter		Units	Values
Performance			
Number			1
Rating		hp	300
Fuel			Diesel
Fuel Heat content (HHV)		MMBtu/hr	19,500
Fuel density		lb/gal	7.06
Heat input (HHV) [a]		MMBtu/hr	2.32
Fuel usage		gal/hr	16.9
Maximum operation/yr		hours	100
Maximum fuel usage		gal/yr	1,685
Stack Parameters			
Exhaust Flow		cfm	1,750
Stack Velocity		ft/sec	60
Exhaust Temperature		^{o}F	744
Stack Height		ft	17
Stack Diameter		ft	0.79
Emissions			
SO_2 -	Basis	%S	0.0015%
	Conversion of S to SO_2	%	100
	Molecular weight SO_2/S (64/32)		2
	Emission rate	lb/hr	0.0036
		TPY	0.00018
NO_x -	Basis [b]	g/hp-hr	6.8
	Emission rate	lb/hr	4.50
		TPY	0.225
CO -	Basis [b]	g/hp-hr	2.6
	Emission rate	lb/hr	1.7
		TPY	0.086
VOC -	Basis [b]	g/hp-hr	1.0
	Emission rate	lb/hr	0.66
		TPY	0.033
$PM/PM_{10}/PM_{2.5}$ -	Basis [b]	g/hp-hr	0.4
	Emission rate	lb/hr	0.26
		TPY	0.013

[a] 2000 gpm fire pump; 300 ft head NFPA 20 Certified; Fairbanks Morse Fire Pumps, 2008.

[b] Emissions based on 40 CFR Part 60 Subpart IIII.

TABLE 2-8

PERFORMANCE AND EMISSION DATA FOR THE GAS COMPRESSORS

Parameter		Units		Values				
Performance								
Engine Make/Model			P	Solar Centaur 50				Total
Number of Units				1				2
Engine Configuration			P	Gas turbine				
Fuel			P	Natural Gas				
Fuel Heat Content (Btu/scf) (LHV)		Btu/scf	P	939.2				
Fuel Heat Content (Btu/scf) (HHV)		Btu/scf		1,041				
Maximum operation/engine		hours		8,760				
Ambient temperature		°F	P	35	59	75	95	75
Net output power		hp	P	6,238	5,927	5,514	4,952	11,028
Heat input (LHV)		MMBtu/hr	P	52.82	51.04	48.72	45.70	97.4
Heat input (HHV)		MMBtu/hr		58.52	56.55	53.98	50.64	108.0
Engine Heat Rate		Btu/hp-hr	P	8,467	8,612	8,836	9,229	8,836
Maximum Fuel Usage		MMscf/hr		0.0562	0.0543	0.0519	0.0487	0.104
Maximum Fuel Usage		MMscf/yr		--	--	454.4	--	908.8
Stack Parameters								
Height		ft	P	20.7	20.7	20.7	20.7	
Diameter		ft	P	3.50	3.50	3.5	3.5	
Temperature		°F	P	917	952	969	994	
Exhaust flow		lb/hr	P	152,700	145,767	139,138	130,381	
Exhaust flow		acfm		91,560	89,625	86,579	82,549	
Exhaust velocity		ft/sec		158.6	155.3	150.0	143.0	
Emissions								
SO_2 -	Basis	grains/100 scf		2	2	2	2	
	Conversion of S to SO_2			100	100	100	100	
	Ratio Molecular weight SO_2/ S (64/32)			2	2	2	2	
	Emission rate	lb/hr		0.321	0.311	0.296	0.278	0.59
		TPY		1.41	1.36	1.30	1.22	2.60
NO_x -	Basis [a]	ppmvd @15% O2		15.0	15.0	15.0	15.0	
		lb/MMBtu (LHV)		0.060	0.060	0.059	0.059	
		lb/MW-hr		0.68	0.69	0.70	0.72	
	Emission rate	lb/hr		3.17	3.06	2.87	2.70	5.75
		TPY		13.9	13.4	12.6	11.8	25.2
CO -	Basis [a]	ppmvd @15% O2		25.0	25.0	25.0	25.0	
		lb/MMBtu (LHV)		0.061	0.061	0.060	0.059	
		lb/MW-hr		0.68	0.70	0.71	0.73	
	Emission rate	lb/hr		3.22	3.11	2.92	2.70	5.85
		TPY		14.1	13.6	12.8	11.8	25.6
UHC -	Basis [a]	ppmvd @15% O2		25.0	25.0	25.0	25.0	
		lb/MMBtu (LHV)		0.035	0.035	0.034	0.034	
		lb/MW-hr		0.40	0.40	0.41	0.42	
	VOC/UHC	%		50%	50%	50%	50%	
	VOC Basis	ppmvd @15% O2		12.5	12.5	12.5	12.5	
		lb/MMBtu (LHV)		0.018	0.018	0.017	0.017	
	Emission rate	lb/hr		0.92	0.89	0.83	0.78	1.66
		TPY		4.0	3.9	3.6	3.4	7.3
PM/PM_{10}/PM2.5 -	Basis: condensibles [b]	lb/MMBtu		0.0047	0.0047	0.0047	0.0047	
	filterables [b]	lb/MMBtu		0.0019	0.0019	0.0019	0.0019	
	total [b]	lb/MMBtu		0.0063	0.0063	0.0063	0.0063	
	Emission rate	lb/hr		0.37	0.36	0.34	0.32	0.68
		TPY		1.6	1.6	1.5	1.4	3.0

Sources: FPL, 2011; Golder, 2011.

[a] Manufacturer's specification

[b] Based on EPA AP-42, Volume I, Section 3.1, Stationary Gas Turbines (April 2000).

TABLE 2-9A
SUMMARY OF MAXIMUM POTENTIAL ANNUAL EMISSIONS FOR PEEC, MPS 501J CTS

	PEEC Project Maximum Potential Annual Emissions (TPY)								Netting Calculations		
Pollutant	**3 CTs/HRSGs with Duct Burners [a]**	**1 Auxiliary Boiler [b]**	**2 Emergency Generators**	**1 Natural Gas Heater**	**2 Gas Compressors**	**1 Fire Pump Engine**	**Fuel Oil Storage Tank**	**TOTAL**	**Maximum 2-Year Average from Existing Units 1 to 4 [c] (TPY)**	**Change (TPY)**	**PSD Significant Emission Rate (TPY)**
SO_2	208	0.56	0.003	0.24	2.60	0.00018	NA	211	9,494	-9,283	40
PM	120	0.74	0.28	0.32	2.98	0.013	NA	124	604	-479	25
PM_{10}	120	0.74	0.28	0.32	2.98	0.013	NA	124	604	-479	15
$PM_{2.5}$	120	0.74	0.28	0.32	2.98	0.01	NA	124	402	-278	10
NO_x	337	4.99	4.87	4.25	25.2	0.22	NA	376	4,260	-3,884	40
CO	914	7.98	6.00	3.57	25.6	0.086	NA	958	885	73	100
VOC (as methane)	86.2	0.54	0.71	0.23	7.3	0.033	5.82	100.8	76.9	23.8	40
Sulfuric Acid Mist	40.4	Neg.	Neg.	Neg.	Neg.	Neg.	NA	40.4	422.3	-382	7
Lead	0.049	Neg.	Neg.	Neg.	Neg.	Neg.	NA	0.049	0.10	-0.049	0.6
Greenhouse Gases (CO_2e)	4,410,327	11,670	687	5,072	55,313	15.2	NA	4,483,085	2,551,038	1,932,047	75,000

[a] Based on oil-firing for: 1,000 hours (maximum).
[b] An auxiliary boiler is only required to supply steam to the MPS 501J CT during startup.
[c] Based on actual emissions from Annual Operating Reports from 2006-2010.

Note: Neg.= negligible; NA= not applicable

Source: Golder, 2011.

TABLE 2-9B
SUMMARY OF MAXIMUM POTENTIAL ANNUAL EMISSIONS FOR PEEC, SIEMENS H CTS

	PEEC Project Maximum Potential Annual Emissions (TPY)							Netting Calculations		
Pollutant	3 CTs/HRSGs [a]	2 Emergency Generators	1 Natural Gas Heater	2 Gas Compressors	1 Fire Pump Engine	Fuel Oil Storage Tank	TOTAL	Maximum 2-Year Average from Existing Units 1 to 4 [b] (TPY)	Change (TPY)	PSD Significant Emission Rate (TPY)
SO_2	187	0.003	0.24	2.60	0.00018	NA	190	9,494	-9,304	40
PM	242	0.28	0.32	2.98	0.013	NA	246	604	-358	25
PM_{10}	242	0.28	0.32	2.98	0.013	NA	246	604	-358	15
$PM_{2.5}$	242	0.28	0.32	2.98	0.013	NA	246	402	-156	10
NO_x	348	4.87	4.25	25.2	0.22	NA	382	4,260	-3,878	40
CO	631	6.00	3.57	25.6	0.086	NA	666	885	-219	100
VOC (as methane)	92.1	0.71	0.23	7.3	0.033	5.82	106	76.9	29.2	40
Sulfuric Acid Mist	36.4	Neg.	Neg.	Neg.	Neg.	NA	36.4	422.3	-386	7
Lead	0.052	Neg.	Neg.	Neg.	Neg.	NA	0.052	0.10	-0.047	0.6
Greenhouse Gases (CO_2e)	4,058,754	687	5,072	55,313	15.2	NA	4,119,841.35	2,551,038	1,568,804	75,000

[a] Based on oil-firing for: 1,000 hours (maximum).

[b] Based on actual emissions from Annual Operating Reports from 2006-2010.

Note: Neg.= negligible; NA= not applicable

Source: Golder, 2011.

TABLE 2-10
SUMMARY OF MAXIMUM POTENTIAL ANNUAL HAP EMISSIONS FOR PEEC

Pollutant	3 CTs/HRSGs	1 Auxiliary Boiler [b]	2 Emergency Generators	1 Natural Gas Heater	2 Gas Compressors	1 Fire Pump Engine	Fuel Oil Storage Tank	TOTAL	HAP Major Source Threshold (TPY)
	Maximum Potential Annual Emissions (TPY)								
MPS 501J CTs									
Total HAPs	18.7	0.0088	0.003	0.004	0.45	0.0002	NA	19.1	25
Single HAP [a]	7.9	0.0073	0.0002	0.003	0.34	0.00001	NA	8.2	10
Siemens H CTs									
Total HAPs	18.0	NA	0.003	0.004	0.45	0.0002	NA	18.5	25
Single HAP [a]	6.9	NA	0.0002	0.003	0.34	0.00001	NA	7.3	10

[a] Based on formaldehyde emissions

[b] An auxiliary boiler is only required to supply steam to the MPS 501J CT during startup.

Note: NA= not applicable.

Source: Golder, 2011.

TABLE 3-1

NATIONAL AND STATE AAQS, ALLOWABLE PSD INCREMENTS, AND SIGNIFICANT IMPACT LEVELS

Pollutant	Averaging Time	National AAQS ($\mu g/m^3$) Primary Standard	National AAQS ($\mu g/m^3$) Secondary Standard	Florida AAQS ($\mu g/m^3$)	PSD Increments ($\mu g/m^3$) Class I	PSD Increments ($\mu g/m^3$) Class II	Significant Impact Levels ($\mu g/m^3$) Class I	Significant Impact Levels ($\mu g/m^3$) Class II
Particulate Matter (PM_{10}) [a]	Annual Arithmetic Mean	NA	NA	50	4	17	0.2	1
	24-Hour Maximum	150	150	150	4	30	0.3	5
Particulate Matter ($PM_{2.5}$) [a]	Annual Arithmetic Mean	15	15	15	1	4	0.06	0.3
	24-Hour Maximum	35	35	35	2	9	0.07	1.2
Sulfur Dioxide [b]	Annual Arithmetic Mean	80	NA	60	2	20	0.1	1
	24-Hour Maximum	365	NA	260	5	91	0.2	5
	3-Hour Maximum	NA	1,300	1,300	25	512	1	25
	1-Hour Maximum	197	NA	NA	NA	NA	NA	7.9 [e]
Carbon Monoxide	8-Hour Maximum	10,000	10,000	10,000	NA	NA	NA	500
	1-Hour Maximum	40,000	40,000	40,000	NA	NA	NA	2,000
Nitrogen Dioxide [c]	Annual Arithmetic Mean	100	100	100	2.5	25	0.1	1
	1-Hour Maximum	188	NA	NA	NA	NA	NA	7.6 [e]
Ozone [d]	1-Hour Maximum	NA	NA	235	NA	NA	NA	NA
	8-Hour Maximum	147	147	NA	NA	NA	NA	NA
Lead	Rolling 3-Month Average	0.15	0.15	0.15	NA	NA	NA	NA

Note: NA = not applicable.
AAQS = ambient air quality standard.

[a] On October 17, 2006, EPA promulgated revised PM_{10} and $PM_{2.5}$ AAQS; the $PM_{2.5}$ AAQS had been promulgated on July 18, 1997. For PM_{10}, the annual standard was revoked and the 24-hour standard was retained. The 24-hour $PM_{2.5}$ standard was revised to 35 $\mu g/m^3$ based on the 3-year averages of the 98th percentile values. The annual $PM_{2.5}$ standard of 15 $\mu g/m^3$, 3-year averages at community monitors, was retained.

[b] On June 23, 2010, EPA promulgated the 1-hour SO_2 standard at a level of 75 parts per billion (ppb), based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations (effective August 23, 2010). EPA is also revoking both the existing 24-hour and annual primary SO_2 standards, effective one year after the designation of an area, pursuant to section 107 of the Clean Air Act.

[c] On February 9, 2010, EPA promulgated the 1-hour NO_2 standard at a level of 100 ppb, based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations (effective April 12, 2010).

[d] On March 27, 2008, EPA promulgated revised AAQS for ozone. The O_3 standard was modified to be 0.075 ppm (147 $\mu g/m^3$) for the 8-hour average; achieved when the 3-year average of 99th percentile values is 0.075 ppm or less.

[e] For NO_2 and SO_2 1-hour averaging period, an interim Class II significant impact level is shown.

Sources: Federal Register, Vol. 43, No. 118, June 19, 1978; 40 CFR 50; 40 CFR 52.21; Florida Chapter 62.204, F.A.C.
Golder, 2011.

TABLE 3-2
PSD SIGNIFICANT EMISSION RATES AND
DE MINIMIS MONITORING CONCENTRATIONS

Pollutant	Regulated Under	Significant Emission Rate (TPY)	De Minimis *Monitoring* Concentration ($\mu g/m^3$) [a]
Sulfur Dioxide	NAAQS, NSPS	40	13, 24-hour
Particulate Matter [PM(TSP)]	NSPS	25	NA
Particulate Matter (PM_{10})	NAAQS	15	10, 24-hour
Particulate Matter ($PM_{2.5}$) [c]	NAAQS	10, or	4, 24-Hour
	NAAQS	40 of SO_2, or	NA
	NAAQS	40 of NO_x	NA
Nitrogen Dioxide	NAAQS, NSPS	40	14, annual
Carbon Monoxide	NAAQS, NSPS	100	575, 8-hour
Volatile Organic Compounds (Ozone)	NAAQS, NSPS	40	100 TPY[b]
Lead	NAAQS	0.6	0.1, 3-month
Sulfuric Acid Mist	NSPS	7	NM
Total Fluorides	NSPS	3	0.25, 24-hour
Total Reduced Sulfur	NSPS	10	10, 1-hour
Reduced Sulfur Compounds	NSPS	10	10, 1-hour
Hydrogen Sulfide	NSPS	10	0.2, 1-hour
Mercury	NESHAP	0.1	0.25, 24-hour
MWC Organics (dioxin/furans)	NSPS	$3.5x10^{-6}$	NM
MWC Metals (as PM)	NSPS	15	NM
MWC Acid Gases (SO_2 + HCl)	NSPS	40	NM
MSW Landfill Gases (as NMOC)	NSPS	50	NM
Greenhouse Gases [d]	--	0 (mass basis), and	NM
	--	75,000 (CO_2e basis)	NM

Note: Ambient monitoring requirements for any pollutants may be exempted if the impact of the increase is less than *de minimis* monitoring concentrations.

NA = not applicable
NM = no ambient measurement method established; therefore, no *de minimis* concentration has been established
mg/m^3 = micrograms per cubic meter
MWC = municipal waste combustor
MSW = municipal solid waste
NMOC = non-methane organic compounds

[a] Short-term concentrations are not to be exceeded

[b] No *de minimis* concentration; an increase in VOC OR NO_x emissions of 100 TPY or more will require a monitoring analysis for ozone

[c] Any emission rate of these pollutants.

[d] On July 20, 2011, biogenic CO_2 emissions were deferred from consideration in the significant emission rates for three years.

Source: 40 CFR 52.21
Rule 62-212.400, F.A.C.

TABLE 3-3

MAXIMUM EMISSION CHANGES DUE TO PEEC, INCLUDING EMISSION REDUCTIONS DUE TO THE EXISTING UNITS 1 THROUGH 4 AT PORT EVERGLADES PLANT, COMPARED TO THE PSD SIGNIFICANT EMISSION RATES

	Pollutant Emissions		
Pollutant	**Net Emission Changes* (TPY)**	**Significant Emission Rate (TPY)**	**PSD Review**
Sulfur Dioxide	−9,283	40	No
Particulate Matter [PM (TSP)]	−358	25	No
Particulate Matter (PM_{10})	−358	15	No
Particulate Matter ($PM_{2.5}$)	−156	15	No
Nitrogen Dioxide	-3,878	40	No
Carbon Monoxide	73	100	No
Volatile Organic Compounds	29.2	40	No
Lead	−0.047	0.6	No
Sulfuric Acid Mist	−382	7	No
Total Fluorides	NEG	3	No
Total Reduced Sulfur	NEG	10	No
Reduced Sulfur Compounds	NEG	10	No
Hydrogen Sulfide	NEG	10	No
Mercury	NEG	0.1	No
Greenhouse Gases	1,932,047	100,000	Yes

Note: NEG = Negligible.

* A. Based on emissions from operating at baseload at 75°F for all pollutants except SO_2:

- 100-percent load, natural gas – 7,760 hours
- 100-percent load, oil firing – 1,000 hours

B. SO_2 emissions based on operations at baseload at 75°F:

- 100-percent load, natural gas – 8,760 hours

Includes emissions from the fuel heater, emergency generators, auxiliary boiler, fire pump engine, fuel oil storage tank, and gas compressor station (see Tables 2-9A and B, which present the maximum potential emissions for PEEC) and emission reductions from the existing Units 1 through 4 at Port Everglades Plant.

TABLE 4-1
PROPOSED EMISSION LIMITS FOR CTS/HRSGS FOR PEEC

Pollutant	CT(s)	Fuel	Operating Mode	Proposed Emission Limits	Compliance Methods
NO_x	J and H	Natural Gas	All	2 ppmvd at 15% O_2	Initial: EPA Methods- 7E or 20, Continuous: CEM 30-day rolling average
	J and H	ULSD	All	8 ppmvd at 15% O_2	Initial: EPA Methods- 7E or 20, Continuous: CEM 30-day rolling average
CO	J	Natural Gas	Baseload	9 ppmvd at 15% O_2	Initial: EPA Method 10
		ULSD	Baseload	35 ppmvd at 15% O_2	Initial: EPA Method 10
	H	Natural Gas	Baseload	5 ppmvd at 15% O_2	Initial: EPA Method 10
		ULSD	Baseload	10 ppmvd at 15% O_2	Initial: EPA Method 10
VOC	J	Natural Gas	Baseload	1 ppmvd at 15% O_2	Initial Only: EPA Methods 18 or 25a
		ULSD	Baseload	10 ppmvd at 15% O_2	Initial Only: EPA Methods 18 or 25a
	H	Natural Gas	Baseload	1 ppmvd at 15% O_2	Initial Only: EPA Methods 18 or 25a
		ULSD	Baseload	10 ppmvd at 15% O_2	Initial Only: EPA Methods 18 or 25a
PM/PM_{10}	J and H	Natural Gas	All	10% Opacity	Initial/Annual: EPA Method 9
	J and H	ULSD	All	10% Opacity	Initial/Annual: EPA Method 9
SO_2 and SAM	J and H	Natural Gas	All	2 grains S/100 scf	Initial/Annual: 40 CFR Part 75 Fuel Sampling
	J and H	ULSD	All	0.0015% S	Initial/Annual: 40 CFR Part 75 Fuel Sampling
GHG	J and H	Natural Gas & ULSD	All	877 lb CO_{2e} /MW-hr	12-month rolling average; CO_{2e} based on 40 CFR Part 98, Subpart C MW-hr based on 40 CFR Part Subpart KKKK

Note: CT = combustion turbine; HRSG = heat recovery steam generator; ULSD = ultra low sulfur distillate light oil.
J = MPS 501J CT; H = Siemens H CT.

TABLE 5-1
SUMMARY OF MAXIMUM MEASURED SO_2, NO_2, PM_{10}, $PM_{2.5}$, O_3, AND CO CONCENTRATIONS
REPRESENTATIVE OF PEEC PROJECT, 2008 THROUGH 2010

Pollutant/ AIRS Site No.	Location	County	Measurement Period: Year	Measurement Period: Months	Measured Concentration: 1-Hour Highest	1-Hour 2nd Highest	1-Hour Percentile	3-Hour Highest	3-Hour 2nd Highest	8-Hour Highest	8-Hour 2nd Highest	8-Hour 3-year Average 4th Highest	24-Hour Highest	24-Hour 2nd Highest	24-Hour Percentile	Annual Average
Sulfur dioxide (SO_2) [c]	**Florida AAQS**				**NA**	**NA**	**0.075 ppm** 99th	**NA**	**0.5 ppm**	**NA**	**NA**	**NA**	**NA**	**0.1 ppm**		**0.02 ppm**
12-011-0010	Fort Lauderdale,	Broward	2010	Jan-Dec	0.076	0.056	0.038	--	--	NA	NA	NA	0.015	0.0059	NA	0.0004
	Lincoln Park Elementary School		2009	Jan-Dec	0.096	0.072	--	0.057	0.057	NA	NA	NA	0.015	0.014	NA	0.0015
			2008	Jan-Dec	0.031	0.021	--	0.019	0.014	NA	NA	NA	0.005	0.004	NA	0.0011
Nitrogen dioxide (NO_2) [d]	**Florida AAQS**				**NA**	**NA**	**0.1 ppm** 98th	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**		**0.053 ppm**
12-011-8002	Dania	Broward	2010	Jan-Dec	0.065	0.054	0.049	NA	NA	NA	NA	NA	NA	NA	NA	0.0071
	7000 N. Ocean Drive		2009	Jan-Dec	0.066	0.050	--	NA	NA	NA	NA	NA	NA	NA	NA	0.0065
			2008	Jan-Dec	0.058	0.055	--	NA	NA	NA	NA	NA	NA	NA	NA	0.0053
Particulate Matter (PM_{10}) [a]	**Florida AAQS**				**NA**	**NA**		**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**150 µg/m³**		**50 µg/m³**
12-011-0010	Fort Lauderdale,	Broward	2010	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	37	32	NA	15.4
	Lincoln Park Elementary School		2009	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	49	43	NA	14.1
			2008	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	50	41	NA	18.7
12-011-3002	Hollywood	Broward	2009	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	35	34	NA	17.6
	2701 Plunkett Street		2008	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	82	64	NA	18.5
															NA	
Particulate Matter ($PM_{2.5}$) [a]	**Florida AAQS**				**NA**	**NA**		**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**35 µg/m³** 98th	**15 µg/m³**
12-011-2003	Pompano Beach	Broward	2010	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	13.5	12.2	12.2	6.69
	1951 NE 48th Street		2009	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	14.7	13.0	12.3	7.09
			2008	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	28.2	26.1	18.3	7.29
12-011-3002	Hollywood	Broward	2009	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	10.2	10.2	10.2	6.47
	2701 Plunkett Street		2008	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	30.0	24.5	21.8	7.69
Ozone (O_3) [b]	**Florida AAQS**				**NA**	**0.12 ppm**		**NA**	**NA**	**NA**	**NA**	**0.075 ppm**	**NA**	**NA**		**NA**
12-011-8002	Dania	Broward	2010	Jan-Dec	0.107	0.074	NA	NA	NA	NA	NA	0.069	NA	NA	NA	NA
	7000 N. Ocean Drive		2009	Jan-Dec	0.077	0.073	NA	NA	NA	NA	NA	0.069	NA	NA	NA	NA
			2008	Jan-Dec	0.083	0.082	NA	NA	NA	NA	NA	0.069	NA	NA	NA	NA
Carbon monoxide (CO)	**Florida AAQS**				**NA**	**35 ppm**		**NA**	**NA**	**NA**	**9 ppm**	**NA**	**NA**	**NA**		**NA**
12-011-0010	Fort Lauderdale,	Broward	2010	Jan-Dec	2.3	2.3	NA	NA	NA	1.8	1.6	NA	NA	NA	NA	NA
	Lincoln Park Elementary School		2009	Jan-Dec	3.1	2.8	NA	NA	NA	2.0	1.9	NA	NA	NA	NA	NA
			2008	Jan-Dec	3.2	3.2	NA	NA	NA	2.5	2.5	NA	NA	NA	NA	NA
12-011-3002	Hollywood	Broward	2009	Jan-Dec	1.8	1.8	NA	NA	NA	1.5	1.5	NA	NA	NA	NA	NA
	2701 Plunkett Street		2008	Jan-Dec	2.4	2.1	NA	NA	NA	1.7	1.6	NA	NA	NA	NA	NA

Note: NA = not applicable.
AAQS = ambient air quality standard.

[a] On October 17, 2006, EPA promulgated revised PM_{10} and $PM_{2.5}$ AAQS; the $PM_{2.5}$ AAQS had been promulgated on July 18, 1997. For PM_{10}, the annual standard was revoked and the 24-hour standard was retained. The 24-hour $PM_{2.5}$ standard was revised to 35 µg/m³ based on the 3-year averages of the 98th percentile values. The annual $PM_{2.5}$ standard of 15 µg/m³, 3-year averages at community monitors, was retained.

[b] On March 27, 2008, EPA promulgated revised AAQS for ozone. The O_3 standard was modified to be 0.075 ppm for the 8-hour average; achieved when the 3-year average of 99th percentile values is 0.08 ppm or less.

[c] On June 23, 2010, EPA promulgated the 1-hour SO_2 standard at a level of 75 parts per billion (ppb), based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations (effective August 23, 2010). EPA is also revoking both the existing 24-hour and annual primary SO_2 standards, effective one year after the designation of an area, pursuant to section 107 of the Clean Air Act.

[d] On February 9, 2010, EPA promulgated the 1-hour NO_2 standard at a level of 100 ppb, based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations (effective April 12, 2010).

TABLE 6-1
SUMMARY OF PREDICTED POLLUTANT CONCENTRATIONS
FOR THE EXISTING UNITS 1 THROUGH 4 AT PORT EVERGLADES PLANT AND THE PEEC PROJECT
COMPARED TO AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	Maximum Concentration (ug/m^3) Existing Units 1, 2, 3 & 4 Only	Maximum Concentration (ug/m^3) PEEC Only [b]	Total Concentration (ug/m^3) including Background [a] Units 1, 2, 3 & 4	Total Concentration (ug/m^3) including Background [a] PEEC [b]	Ambient Air Quality Standard (AAQS) (µg/m^3)
SO_2	Annual	29.8	0.4	32.4	3.0	60
	24-Hour	200	3.3	221	24.2	260
	3-Hour	511	5.5	604	98.5	1,300
	1-Hour	NA	6.0	NA	106	197
PM_{10}	Annual	1.1	0.6	19.1	18.7	50
	24-Hour	6.8	4.9	55.8	53.9	150
$PM_{2.5}$	Annual	0.7	0.6	7.8	7.7	15
	24-Hour	4.5	4.9	20.5	20.9	35
NO_2	Annual	9.3	1.4	21.1	13.3	100
	1-Hour	NA	30.8	NA	123	188
CO	8-Hour	14.2	34.0	2314	2,334	10,000
	1-Hour	21.1	38.3	3203	3,220	40,000

[a] Background concentration based on the maximum measured concentration from representative air quality data for the Site.

[b] PEEC sources include the 3 CTs/HRSGs, fuel heater, and gas compressors.

TABLE 6-2

MAJOR FEATURES OF THE AERMOD MODEL, VERSION 11353

AERMOD Model Features
• Plume dispersion/growth rates are determined by the profile of vertical and horizontal turbulence, vary with height, and use a continuous growth function.
• In a convective atmosphere, uses three separate algorithms to describe plume behavior as it comes in contact with the mixed layer lid; in a stable atmosphere uses a mechanically mixed layer near the surface.
• Polar or Cartesian coordinate systems for receptor locations can be included directly or by an external file reference.
• Urban model dispersion is input as a function of city size and population density; sources can also be modeled individually as urban sources.
• Stable plume rise: uses Briggs equations with winds and temperature gradients at stack top up to half way up to plume rise. Convective plume rise: plume superimposed on random convective velocities.
• Procedures suggested by Briggs (1974) for evaluating stack-tip downwash.
• Has capability of simulating point, volume, area, and multi-sized area sources.
• Accounts for the effects of vertical variations in wind and turbulence (Brower et al., 1998).
• Uses measured and computed boundary layer parameters and similarity relationships to develop vertical profiles of wind, temperature, and turbulence (Brower et al., 1998).
• Concentration estimates for 1-hour to annual average times.
• Creates vertical profiles of wind, temperature, and turbulence using all available measurement levels.
• Terrain features are depicted by use of a controlling hill elevation and a receptor point elevation.
• Modeling domain surface characteristics are determined by selected direction and month/season values of surface roughness length, Albedo, and Bowen ratio.
• Contains both a mechanical and convective mixed layer height, the latter based on the hourly accumulation of sensible heat flux.
• The method of Pasquill (1976) to account for buoyancy-induced dispersion.
• A default regulatory option to set various model options and parameters to EPA-recommended values.
• Contains procedures for calm-wind and missing data for the processing of short term averages.

Note: AERMOD = The American Meteorological Society and Environmental Protection Agency Regulatory Model.

Source: EPA, 2011.

TABLE 6-3
EXISTING FPL PORT EVERGLADES PLANT, UNITS 1 THROUGH 4
STACK, OPERATING, AND EMISSIONS DATA

Parameter	Units	Operating and Emission Data			
		Unit 1	Unit 2	Unit 3	Unit 4
Stack Data [a]					
Height	feet	343	343	343	343
Diameter	feet	14.0	14.0	18.1	18.1
Operating Data [a]					
Heat input[b]	MMBtu/hr	2,300	2,300	4,000	4,000
Temperature	°F	289	289	287	287
Flow rate	acfm	813,929	813,929	1,263,181	1,263,181
Velocity	ft/sec	88.1	88.1	81.8	81.8
Maximum Hourly Emissions					
SO_2	lb/MMBtu [b]	1.10	1.10	1.10	1.10
	lb/hr	2,530	2,530	4,400	4,400
PM/PM_{10}	lb/MMBtu [a,c]	0.039	0.039	0.039	0.039
	lb/hr	89	89	155	155
$PM_{2.5}$	lb/MMBtu [c]	0.026	0.026	0.026	0.026
	lb/hr	59	59	103	103
NO_x	lb/MMBtu [a]	0.36	0.36	0.53	0.53
	lb/hr	828	828	2,120	2,120
CO	lb/MMBtu [d]	0.03	0.03	0.03	0.03
	lb/hr	75.7	75.7	132.5	132.5

[a] Stack and operating parameters based on Permit No. 0110036-007-AV (2009) and Title V permit application (2008).

[b] Based on use of maximum historical sulfur fuel oil content of 1 percent.

[c] Based on 0.1 lb/MMBtu (soot-blowing) for 3 hr/day and 0.03 lb/MMBtu (steady-state) for 21 hr/day.

[d] Based on AP-42 emission factor for combustion for No. 6 fuel oil (Table 1.3-1, U.S. EPA, 1998) and 152 MMBtu/1,000 gal: CO: 5 lb/1000 gal

[e] Based on AP-42 emission factor for combustion for No. 6 fuel oil with ESP (Table 1.3-1, U.S. EPA, 1998).

TABLE 6-4
SUMMARY OF PREDICTED POLLUTANT CONCENTRATIONS
FOR THE EXISTING UNITS 1 THROUGH 4 AT PORT EVERGLADES PLANT
COMPARED TO AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	Concentration Rank	Maximum Concentration (ug/m^3) Existing Units 1, 2, 3 & 4 Only	Background	Total	Ambient Air Quality Standard (AAQS) (μg/m^3)
SO_2	Annual	Highest	29.8	2.6	32.4	60
	24-Hour	Highest, 2nd-Highest	200	20.9	221	260
	3-Hour	Highest, 2nd-Highest	511	93.0	604	1,300
PM_{10}	Annual	Highest	1.1	18.1	19.1	50
	24-Hour	Highest, 6th-Highest	6.8	49.0	55.8	150
$PM_{2.5}$	Annual	Highest	0.7	7.1	7.8	15
	24-Hour	Highest, 6th-Highest	4.5	16.0	20.5	35
NO_2	Annual	Highest	9.3	11.9	21.1	100
CO	8-Hour	Highest, 2nd-Highest	14.2	2,300	2,314	10,000
	1-Hour	Highest, 2nd-Highest	21.1	3,182	3,203	40,000

TABLE 6-5
SUMMARY OF MAXIMUM POLLUTANT CONCENTRATIONS PREDICTED
FOR NATURAL GAS- AND DISTILLATE FUEL OIL-FIRING FOR PEEC

Pollutant	Averaging Time	MPS J CTs Maximum Predicted Concentration (µg/m³)			Siemens H CTs Maximum Predicted Concentration (µg/m³)		
		Natural Gas	Fuel Oil	Maximum	Natural Gas	Fuel Oil	Maximum
CTs Only [a]							
SO_2	Annual	0.34	0.04	0.34	0.31	0.04	0.31
	24-Hour	3.29	0.34	3.29	2.97	0.34	2.97
	3-Hour	5.49	0.67	5.49	4.98	0.68	4.98
	1-Hour	6.02	0.72	6.02	5.28	0.73	5.28
$PM_{10}/PM_{2.5}$	Annual	0.17	0.22	0.18	0.30	0.63	0.34
	24-Hour	1.63	1.81	1.81	2.84	4.95	4.95
NO_2	Annual [c]	0.32	0.63	0.36	0.32	0.70	0.36
	1-Hour [c]	6.05	11.30	11.30	5.75	12.56	12.56
CO	8-Hour	17.4	33.1	33.1	19.5	10.6	19.5
	1-Hour	20.7	37.6	37.6	21.9	12.0	21.9
CTs and Fuel Heater [b]							
SO_2	Annual	0.36	NM	0.36	0.32	NM	0.32
	24-Hour	3.29	NM	3.29	2.97	NM	2.97
	3-Hour	5.49	NM	5.49	4.98	NM	4.98
	1-Hour	6.02	NM	6.02	5.28	NM	5.28
$PM_{10}/PM_{2.5}$	Annual	NM	0.22	0.22	NM	0.63	0.63
	24-Hour	NM	1.81	1.81	NM	4.95	4.95
NO_2	Annual [c]	NM	0.90	0.90	NM	1.10	1.10
	1-Hour [c]	NM	27.6	27.6	NM	27.6	27.6
CO	8-Hour	NM	33.1	33.1	19.5	NM	19.5
	1-Hour	NM	37.6	37.6	21.9	NM	21.9
CTs, Fuel Heater, and Gas Compressors [b]							
SO_2	Annual	0.40	NM	0.40	0.36	NM	0.36
	24-Hour	3.29	NM	3.29	2.97	NM	2.97
	3-Hour	5.49	NM	5.49	4.98	NM	4.98
	1-Hour	6.02	NM	6.02	5.28	NM	5.28
$PM_{10}/PM_{2.5}$	Annual	NM	0.25	0.25	NM	0.63	0.63
	24-Hour	NM	1.81	1.81	NM	4.95	4.95
NO_2	Annual [c]	NM	1.12	1.12	NM	1.43	1.43
	1-Hour [c]	NM	30.8	30.8	NM	30.8	30.8
CO	8-Hour	NM	33.1	33.1	34.0	NM	34.0
	1-Hour	NM	38.3	38.3	38.0	NM	38.0

[a] Based on pollutant emissions for each vendor. Impacts are based on highest impacts predicted for CTs only. Maximum annual average concentrations for the CTs are based on prorating the maximum impacts for each operation by the following maximum number of hours requested for that operation:

Pollutant	Hours for Each Operation Natural Gas	Fuel Oil	Total
SO_2	8,760	0	8,760
$PM_{10}/PM_{2.5}$	7,760	1,000	8,760
NO_2	7,760	1,000	8,760

[b] Based on modeling the CTs for the fuel which produced the maximum impacts for the CTs only; as a conservative estimate of air impacts, the higher predicted concentration from the highest impacts for the CTs only or the highest concentrations, accounting for the format of the standard, for the CTs with other project sources (e.g., highest, second-highest 3-hour impacts).

[c] NO_x to NO_2 conversion factor based on EPA Modeling Guidelines:
75 % for annual average;
80 % for 1-hour average.

Note: NM = Not Modeled.

TABLE 6-6
MAXIMUM POLLUTANT CONCENTRATIONS PREDICTED FOR PEEC COMPARED TO THE AAQS

		MPS J CTs			Siemens H CTs			
		Maximum Predicted Concentration ($\mu g/m^3$)			Maximum Predicted Concentration ($\mu g/m^3$)			
Pollutant	Averaging Time	PEEC [a]	Background [b]	Total	PEEC [a]	Background [b]	Total	AAQS ($\mu g/m^3$)
CTs and Fuel Heater								
SO_2	Annual	0.36	2.6	2.97	0.32	2.6	2.93	60
	24-Hour	3.29	20.9	24.2	2.97	20.9	23.8	260
	3-Hour	5.49	93.0	98.5	4.98	93.0	98.0	1,300
	1-Hour	6.02	99.6	105.6	5.28	99.6	104.8	197
PM_{10}	Annual	0.22	18.1	18.3	0.63	18.1	18.7	50
	24-Hour	1.81	49.0	50.8	4.95	49.0	53.9	150
$PM_{2.5}$	Annual	0.22	7.1	7.3	0.63	7.1	7.7	15
	24-Hour	1.81	16.0	17.8	4.95	16.0	20.9	35
NO_2	Annual	0.90	11.9	12.8	1.10	11.9	13.0	100
	1-Hour	27.59	92.2	119.8	27.59	92.2	119.8	188
CO	8-Hour	33.1	2,300	2,333	19.5	2,300	2,320	10,000
	1-Hour	37.6	3,182	3,219	21.9	3,182	3,204	40,000
CTs, Fuel Heater, and Gas Compressors								
SO_2	Annual	0.40	2.6	3.01	0.36	2.6	2.97	60
	24-Hour	3.29	20.9	24.2	2.97	20.9	23.8	260
	3-Hour	5.49	93.0	98.5	4.98	93.0	98.0	1,300
	1-Hour	6.02	99.6	105.6	5.28	99.6	104.8	197
PM_{10}	Annual	0.25	18.1	18.3	0.63	18.1	18.7	50
	24-Hour	1.81	49.0	50.8	4.95	49.0	53.9	150
$PM_{2.5}$	Annual	0.25	7.1	7.3	0.63	7.1	7.7	15
	24-Hour	1.81	16.0	17.8	4.95	16.0	20.9	35
NO_2	Annual	1.12	11.9	13.0	1.43	11.9	13.3	100
	1-Hour	30.79	92.2	123.0	30.79	92.2	123.0	188
CO	8-Hour	33.1	2,300	2,333	34.0	2,300	2,334	10,000
	1-Hour	38.3	3,182	3,220	38.0	3,182	3,220	40,000

[a] Based on highest concentrations predicted for the project in Table 6-5.

[b] Based on concentrations measured at representative monitoring stations nearest the Site.

TABLE 6-7
SUMMARY OF POLLUTANT CONCENTRATIONS PREDICTED FOR THE PEEC AUXILIARY BOILER
COMPARED TO EPA AMBIENT AIR QUALITY STANDARDS

Pollutant	Emission Rate	Units	Averaging Time	Maximum Concentration [a,d] (ug/m3)	Background Concentration [b] (ug/m^3)	Total Concentration (ug/m^3)	Ambient Air Quality Standard (AAQS) (ug/m^3)
SO_2	0.56	TPY	Annual	0.033	2.6	2.6	60
	0.56	lb/hr	24-Hour	1.4	20.9	22.3	260
	0.56	lb/hr	3-Hour	2.8	93.0	95.8	1,300
	0.56	lb/hr	1-Hour	3.9	99.6	103.5	197
PM_{10}	0.74	TPY	Annual	0.04	18.1	18.1	50
	0.74	lb/hr	24-Hour	1.8	49.0	50.8	150
$PM_{2.5}$	0.74	TPY	Annual	0.04	7.1	7.1	50
	0.74	lb/hr	24-Hour	1.8	16.0	17.8	150
NO_x [c]	4.99	TPY	Annual	0.22	11.9	12.1	100
	4.99	lb/hr	1-Hour	27.9	92.2	120.1	188
CO	7.98	lb/hr	8-Hour	28.8	2,300	2,329	10,000
	7.98	lb/hr	1-Hour	55.8	3,182	3,238	40,000

[a] Concentrations are based on highest concentrations predicted using 5 years of meteorological data from 2006 to 2010 of surface and upper air data from the National Weather Service stations at Ft. Lauderdale-Hollywood International Airport and Florida International University (FIU).
Based on highest annual and highest short-term average concentrations predicted for the units, by ratioing modeled rate to pollutant specific rate:

Modeled Rate (lb/hr)	Averaging Time	Predicted Concentration (ug/m^3)
79.37	Annual	20.4
	24-Hour	197.2
	8-Hour	286.1
	3-Hour	393.9
	1-Hour	555.3

[b] Based on highest concentrations measured at representative monitoring stations nearest the site.
[c] NO_x to NO_2 conversion factor of 0.75 and 0.80 applied to modeled annual and 1-hour NO_x impacts, respectively, based on EPA Modeling Guidelines.
[d] Based on 2,000 hours/yr operation.

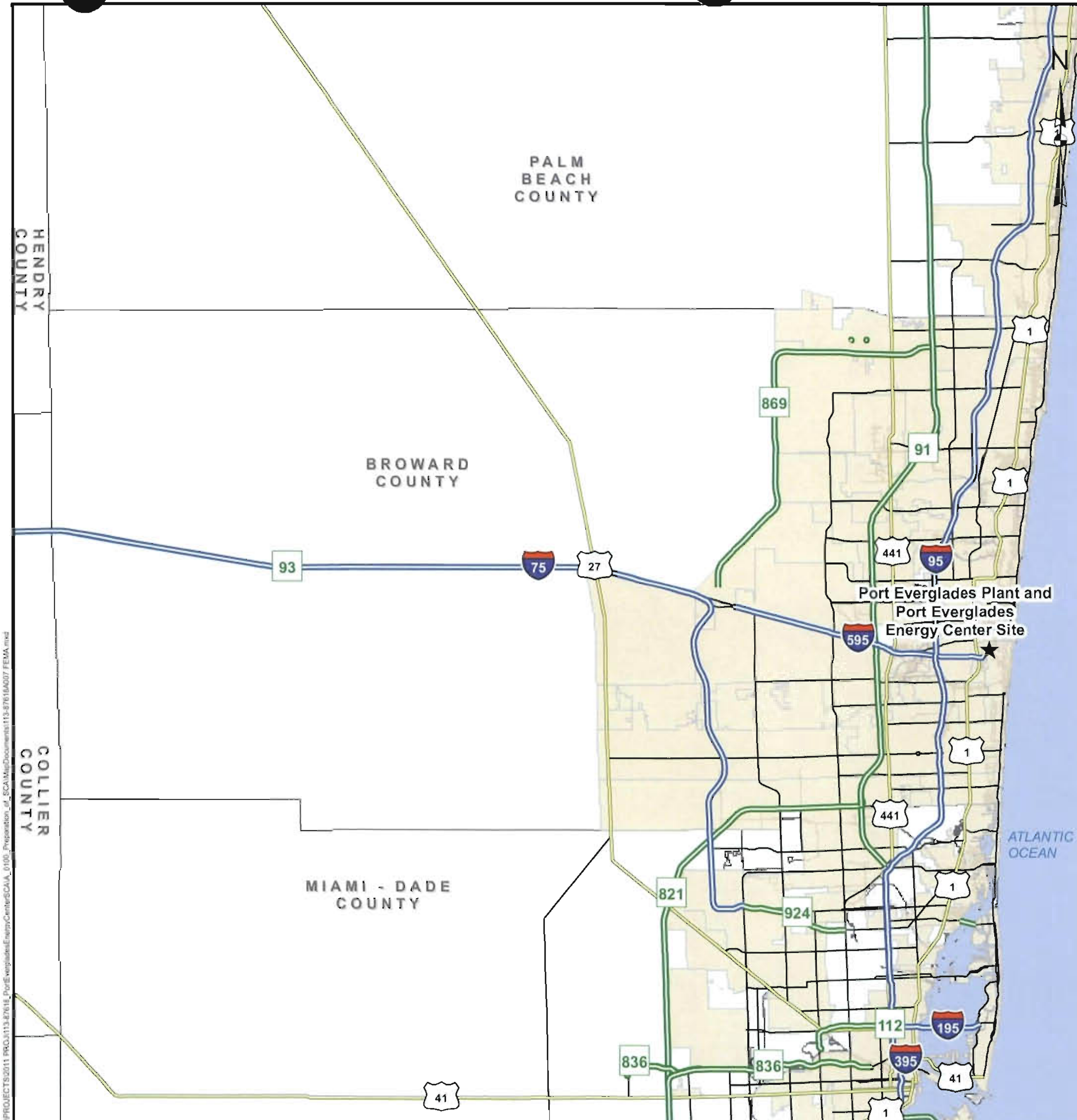
TABLE 6-8
MAXIMUM POLLUTANT CONCENTRATIONS PREDICTED FOR THE EXISTING UNITS 1 THROUGH 4 AT PORT EVERGLADES PLANT AND THE PEEC PROJECT AT THE PSD CLASS I AREA OF THE EVERGLADES NATIONAL PARK

Pollutant	Averaging Time	Maximum Predicted Concentration ($\mu g/m^3$)		
		PEEC [a]		Existing
		MPS J CTs	Siemens H CTs	Units 1 - 4
		CTs and Fuel Heater		
SO_2	Annual	0.0035	0.0032	0.79
	24-Hour	0.084	0.075	10.5
	3-Hour	0.32	0.29	42.1
	1-Hour	0.62	0.56	90.9
PM_{10}	Annual	0.0038	0.011	0.028
	24-Hour	0.055	0.16	0.37
$PM_{2.5}$	Annual	0.0038	0.011	0.028
	24-Hour	0.055	0.16	0.37
NO_2	Annual [b]	0.011	0.012	0.25
	1-Hour [b]	1.73	1.93	30.6
		CTs, Fuel Heater, and Gas Compressors		
SO_2	Annual	0.0036	0.0033	0.79
	24-Hour	0.087	0.078	10.5
	3-Hour	0.33	0.30	42.1
	1-Hour	0.64	0.58	90.9
PM_{10}	Annual	0.0038	0.011	0.028
	24-Hour	0.055	0.16	0.37
$PM_{2.5}$	Annual	0.0038	0.011	0.028
	24-Hour	0.055	0.16	0.37
NO_2	Annual [b]	0.011	0.013	0.25
	1-Hour [b]	1.84	2.04	30.6

[a] Based on CT baseload operations at 35 °F which has the highest emissions; for NO_2 and PM_{10}/$PM_{2.5}$, oil-firing; for SO_2, natural gas-firing.

[b] NO_x to NO_2 conversion factor based on EPA Modeling Guidelines:
75 % for annual average;
80 % for 1-hour average.

FIGURES



AREA MAP

LEGEND

★ Port Everglades Plant and Port Everglades Energy Center Site

REFERENCES

1. Port Everglades Plant and Port Everglades Energy Center Site Location, FPL 2011
2. Municipalities, Broward County Florida, 2011, Plam Beach County Florida, 2010, and Miami Dade County Florida. 2009
3. Roads, Florida Department of Transportation, 2011

7 3.5 0 Miles

REV	DATE	DWS	REVISION DESCRIPTION	GIS	CHK	RVW

PROJECT

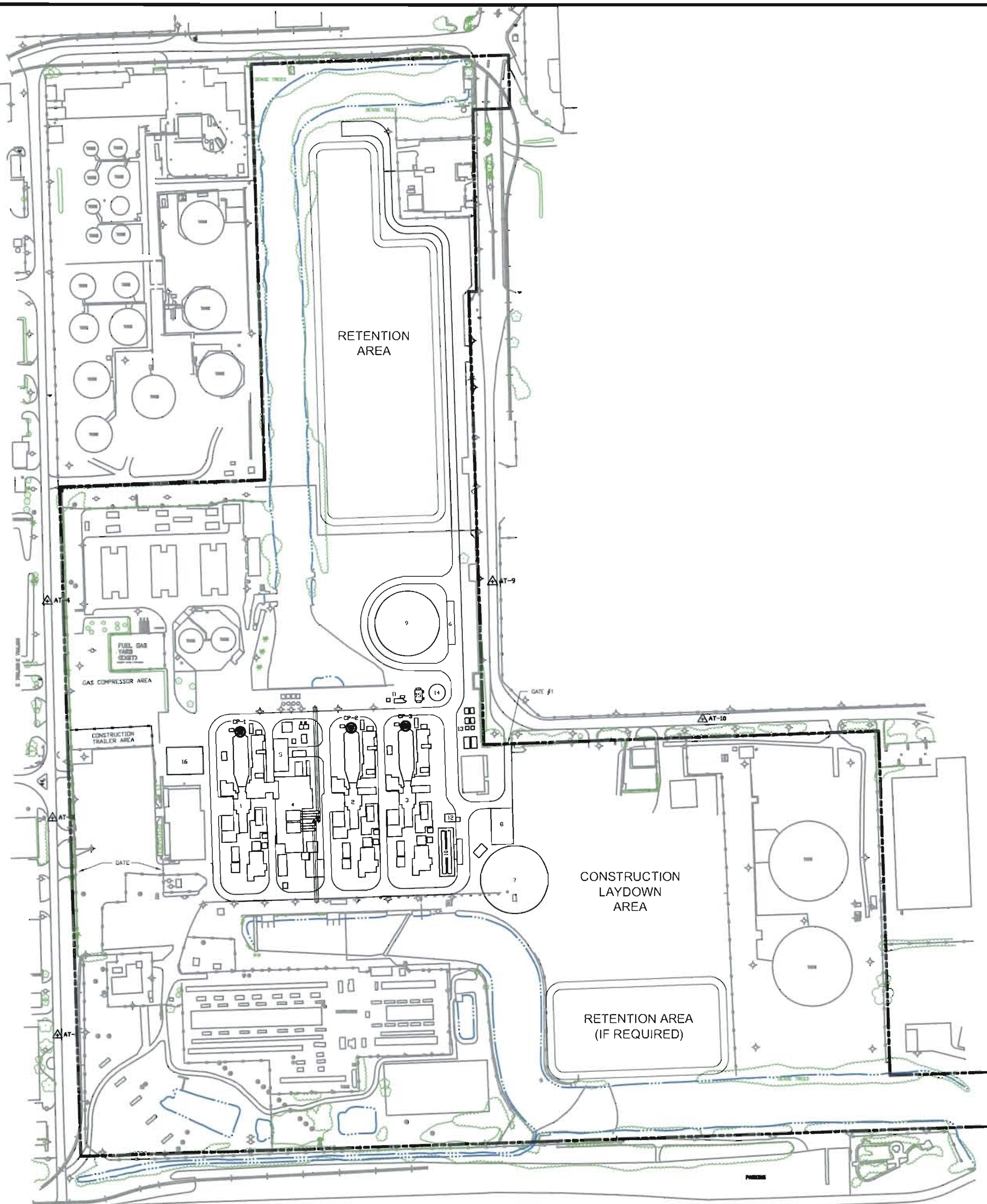
FPL
PORT EVERGLADES ENERGY CENTER

TITLE

GENERAL LOCATION OF THE FPL PORT EVERGLADES PLANT AND PORT EVERGLADES ENERGY CENTER

FPL

PROJECT No. 113-87616			FILE No. 113-87616A028
DESIGN	RCM	12/21/2011	SCALE AS SHOWN REV 0
GIS	NRL	1/13/2012	
CHECK	RCM	1/13/2012	FIGURE 1-1
REVIEW	KFK	1/13/2012	



LEGEND

PROPERTY LINE

WATER

VEGETATION / BRUSH

FACILITIES LEGEND				
ITEM NO.	DESCRIPTION	NORTH	EAST	REFERENCE LOCATION
1	COMBUSTION TURBINE NO. 5A			
2	COMBUSTION TURBINE NO. 5B			
3	COMBUSTION TURBINE NO. 5C			
4	STEAM TURBINE 5			
5	CONTROL/HURRICANE SHELTER			
6	FUEL TRUCK UNLOADING			
7	DEMINERALIZED WATER STORAGE TANK			
8	DEMIN WATER TREATMENT TRAILER PARKING			
9	FUEL STORAGE TANK			
10	AMMONIA STORAGE TANK & TRANSFER PUMPS			
11	AUX BOILER			
12	H2 BULK STORAGE			
13	AIR COMPRESSORS & RECEIVERS			
14	FIRE WATER STORAGE TANK			
15	FIRE PUMP SHELTER			
16	DRY STORAGE			

REFERENCES

1.) BASE MAP TAKEN FROM CADD FILE ORIGINALLY PREPARED BY BLACK & VEATCH TITLED "FLORIDA POWER & LIGHT, PORT EVERGLADES PLANT, SITE – ARRANGEMENTS, OVERALL SITE PLOT PLAN", DRAWING No. AND CADD FILE NAME 174101-DS-0001, REVISION 0, DATED 08/18/11.

325 0 325

SCALE FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

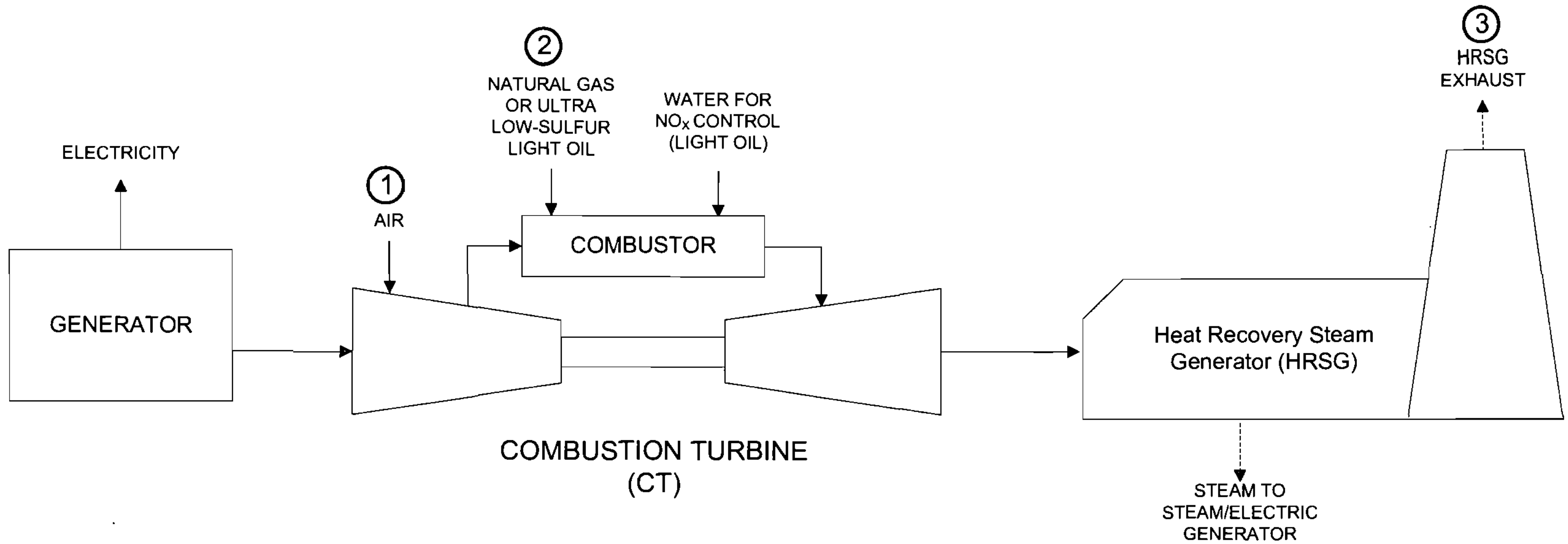
TITLE

CONCEPTUAL PLOT PLAN

FPL

PROJECT No.	113-87618		FILE No.	11387618-A019
DESIGN	RL	08/25/11	SCALE AS SHOWN	REV. 0
CADD	NRL	1/13/2012		
CHECK	RCM	1/13/2012	2-1	
REVIEW	KFK	1/13/2012		

Drawing file: 113-87618A019 ConceptualSitePlan.dwg Jan 13, 2012 - 7:39pm



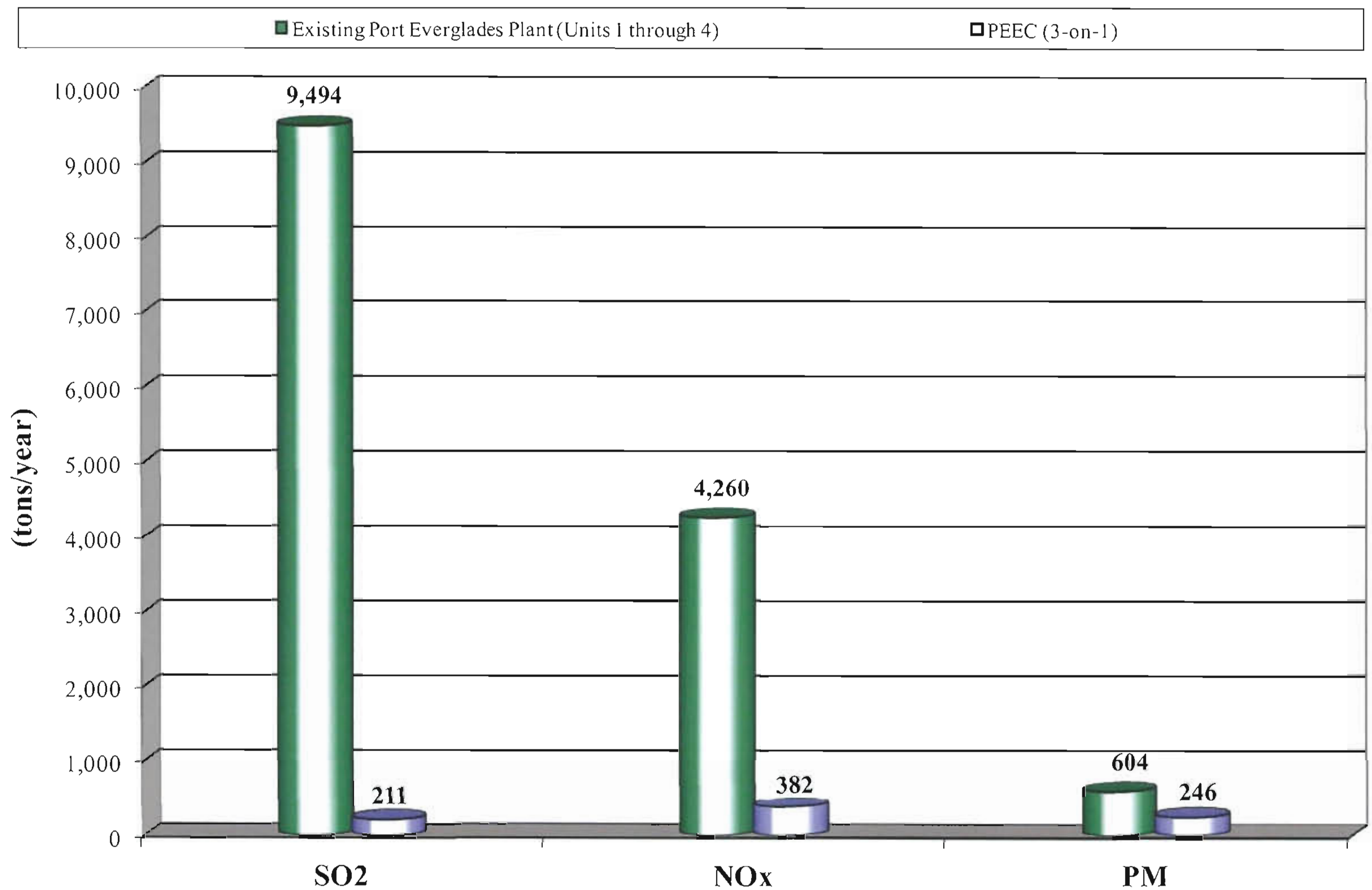
	Parameters	Units	Fuel	MPS 501J Class	Siemens H Class
1	Inlet Air	lb/hr	Gas	4,625,400	4,696,101
		lb/hr	Oil	4,639,600	4,767,933
2	CT Heat Input	MMBtu/hr (HHV)	Gas	2,819	2,538
		MMBtu/hr (HHV)	Oil	2,334	2,453
3	HRSG Velocity	ft/sec	Gas	57.3	58.2
		ft/sec	Oil	70.9	72.8
3	HRSG Temperature	°F	Gas	195	195
		°F	Oil	355	355
3	HRSG Stack Height	feet	Gas/Oil	149	149
3	HRSG Stack Diameter	feet	Gas/Oil	22	22

Figure 2-2. Process Flow Diagram for Each CT/HRSG Train
Baseload Operation, Turbine Inlet Temperature of 75°F
FPL Port Everglades Energy Center, Broward County, Florida

Source: MPS, 2011; Siemens, 2011; Golder, 2011.

Process Flow Legend
Solid/Liquid →
Gas →
Steam →

FPL



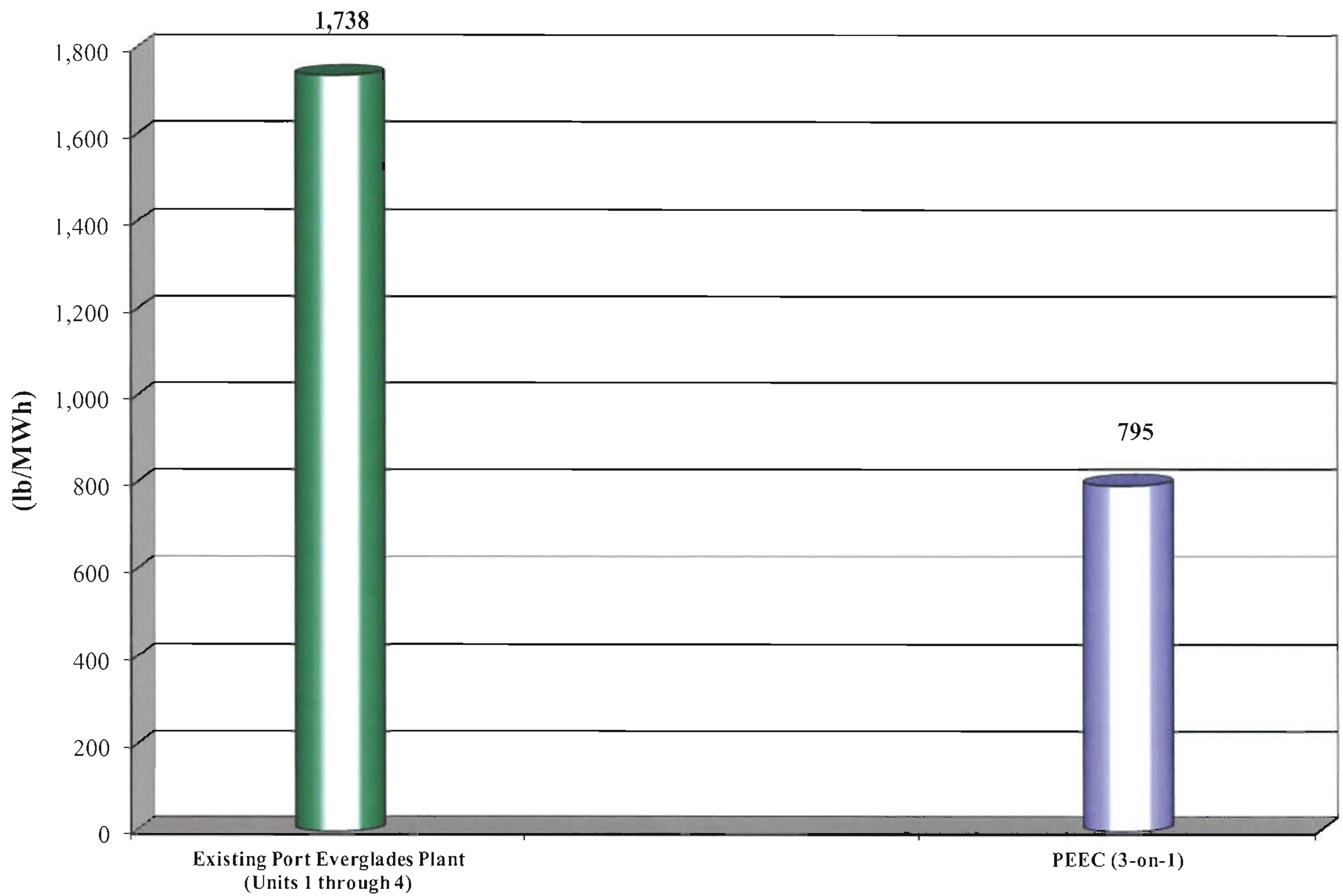
Notes: Existing Port Everglades based on 2006 and 2007 with an approximate capacity factor of 29%.
PEEC based on 100% capacity factor on natural gas and light oil;
7,760 hours on gas and 1,000 hours of oil at full load.

Figure 2-3.
Comparison of Historical Actual SO_2, NO_x, and PM Annual Emissions (TPY) for the Existing Units 1 through 4 at Port Everglades Plant Compared to Projected Potential Annual Emissions (TPY) for PEEC

Y:\Projects\2011\113-87618 FPL PEEC SCA\Appx (10.1-10.11)\Appx 10.2.5 AC Pmt (PSD)\Figures\Figure 2-3rev1.docx

Source: Golder, 2012.

FPL

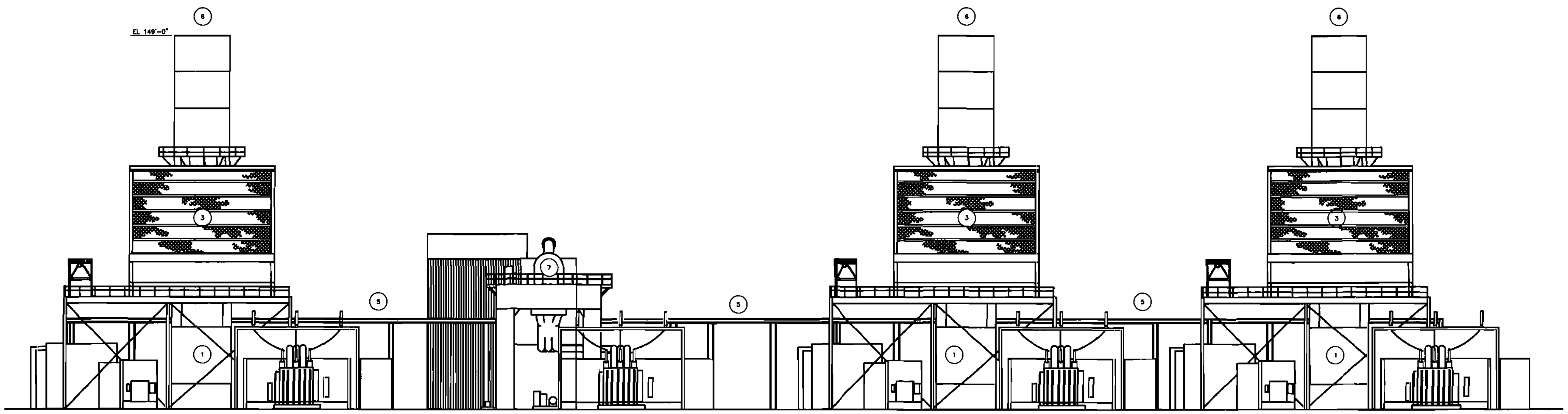


Notes: Existing Port Everglades based on 2007 eGrid Data from EPA (2010).
PEEC based on 100% capacity factor on natural gas and light oil;
7,760 hours on gas and 1,000 hours of oil at full load.

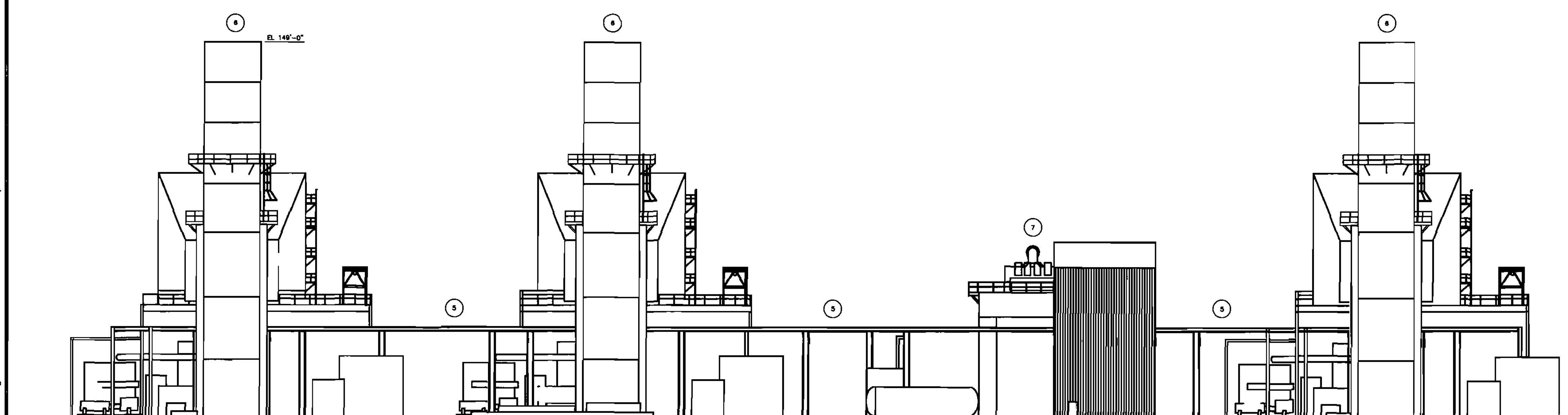
Figure 2-4.
Comparison of CO_2 Emission Rates (lb/MW-hr) for the Existing Units 1 through 4 at Port Everglades Plant and PEEC

Y:\Projects\2011\113-87618 FPL PEEC SCA\Appx (10.1-10.11)\Appx 10.2.5 AC Pmt (PSD)\Figures\Figure 2-4rev1.docx

Source: Golder, 2012.



SOUTH ELEVATION
SCALE: 1"=30'-0"



NORTH ELEVATION
SCALE: 1"=30'-0"

LEGEND	
ITEM NO.	DESCRIPTION
1	COMBUSTION TURBINE & GENERATOR
2	
3	CT AIR INLET FILTER
4	
5	PIPE RACK
6	STACK
7	STEAM TURBINE

REFERENCES: ORGINAL PROFILES CREATED BY BLACK & VEATCH. DRAWING NAME SITE-ARRANGEMENTS ELEVATIONS DRAWING No. 174101-DS-0051, Rev. 0. DATED 18/AUG/2011

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
A	01/01/01	XXX	REV_DESC	XXX		

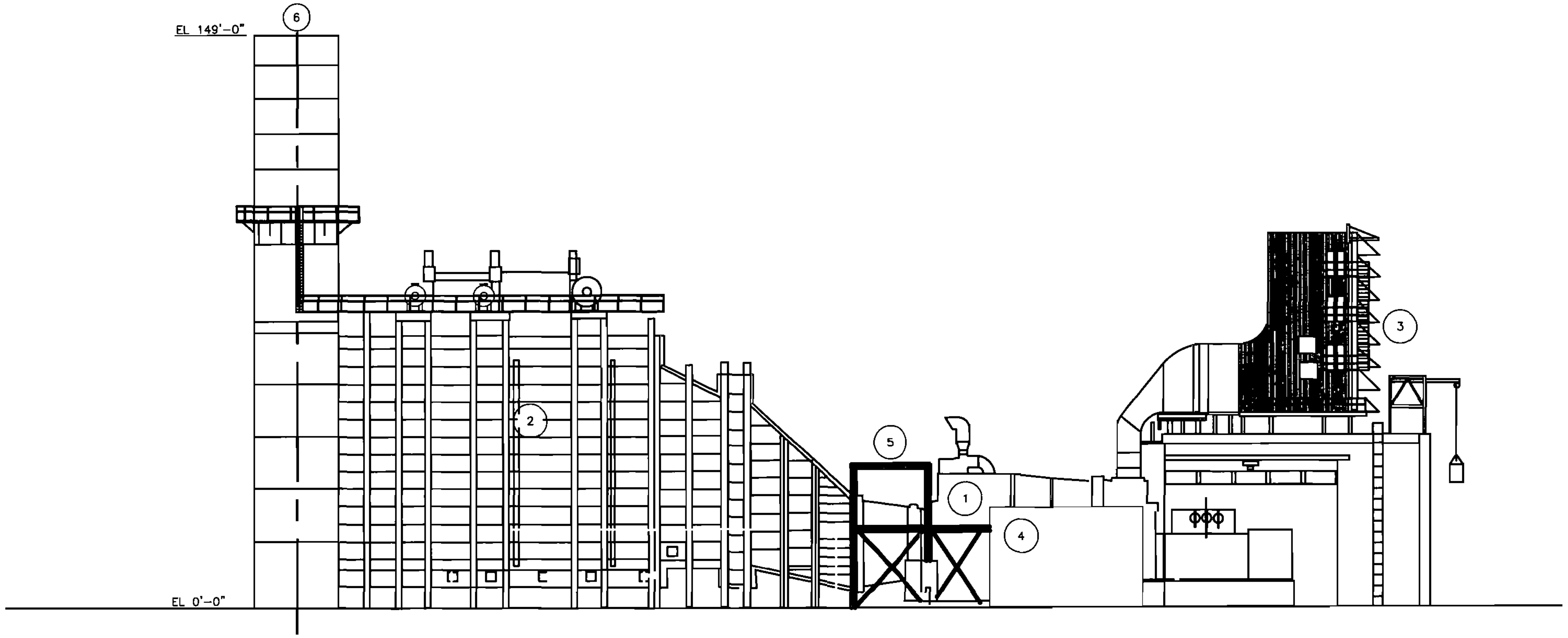
PROJECT
FPL
PORT EVERGLADES ENERGY CENTER

TITLE
NORTH-SOUTH PROFILE OF COMBUSTION TURBINES AND HRSGs

PROJECT No.		113-87618	FILE No.	113-87618C003
DESIGN	NRL	11/7/2011	SCALE AS SHOWN	REV. 0
CADD	NRL	11/7/2011		
CHECK			**FIGURE 2-5**	
REVIEW				

FPL

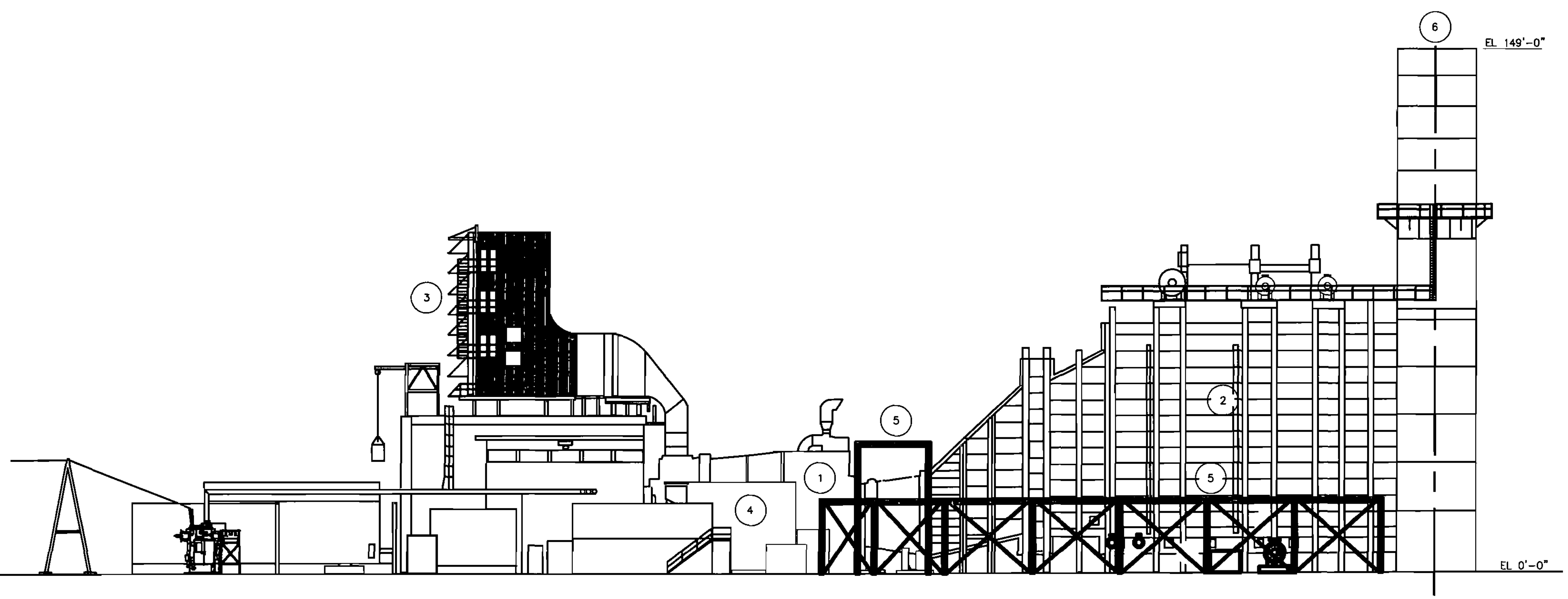
Drawing file: 113-87618C003_NorthSouthProfile.dwg Nov 15, 2011 - 3:39pm



WEST ELEVATION
SCALE: 1/16"=1'-0"

LEGEND

ITEM NO.	DESCRIPTION
1	COMBUSTION TURBINE & GENERATOR
2	HRSG
3	CT AIR INLET FILTER
4	CT TURBINE ENCLOSURE
5	PIPE RACK
6	STACK



EAST ELEVATION
SCALE: 1/16"=1'-0"

REFERENCES: ORGINAL PROFILES CREATED BY BLACK & VEATCH. DRAWING NAME SITE-ARRANGEMENTS ELEVATIONS DRAWING No. 174101-DS-0050, Rev. 0. DATED 18/AUG/2011

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
A	01/01/01	XXX	REV_DESC	XXX		

PROJECT
FPL
PORT EVERGLADES ENERGY CENTER

TITLE
EAST-WEST PROFILE OF COMBUSTION TURBINES AND HRSGs

FPL

PROJECT No.		113-87618	FILE No.	113-87618_C004
DESIGN	NRL	11/7/2011	SCALE AS SHOWN	REV. 0
CADD	NRL	11/7/2011		
CHECK			**FIGURE 2-6**	
REVIEW				

Drawing file: 113-87618C004_EastWestProfile.dwg Nov 15, 2011 - 3:39pm

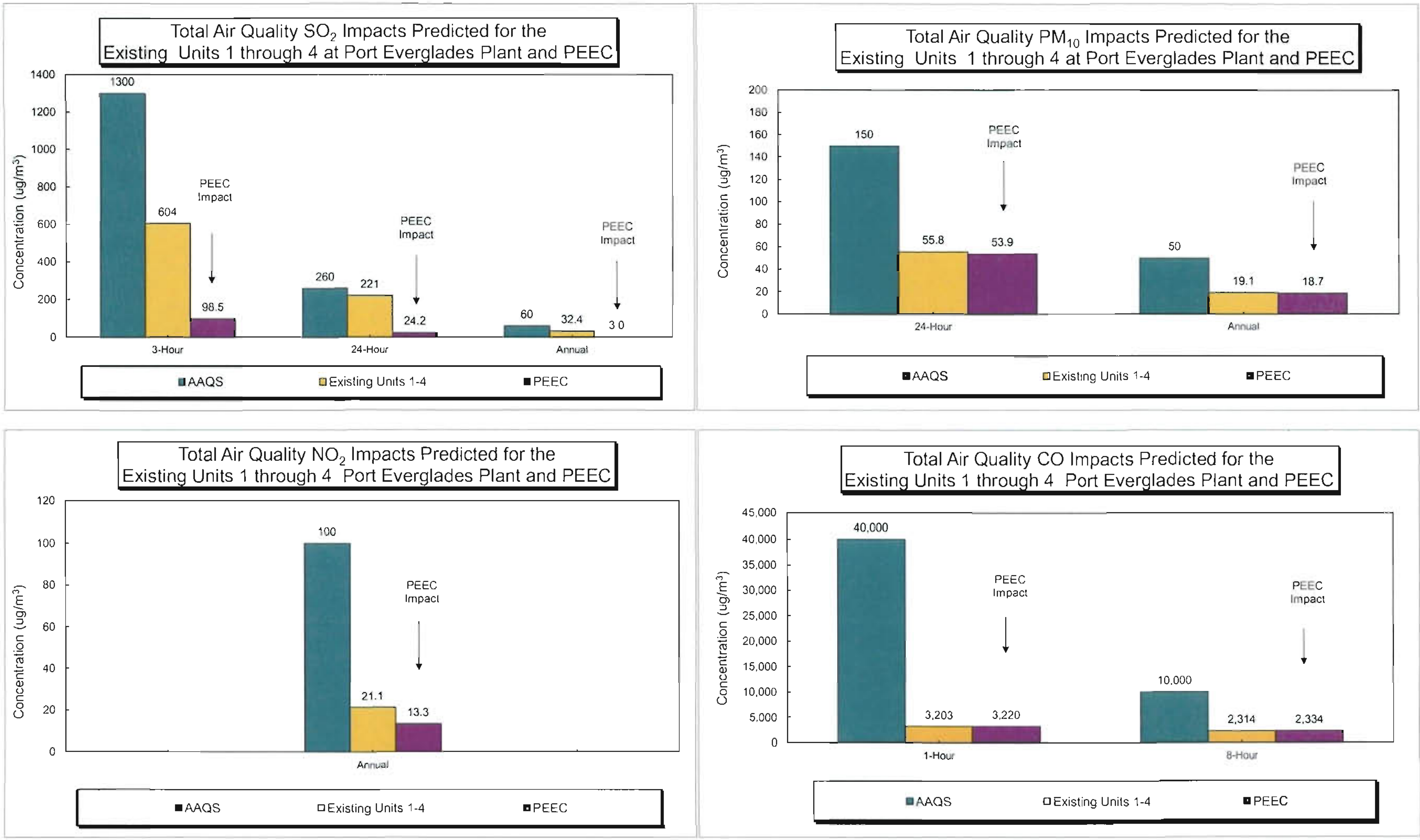


Figure 6-1.
Maximum Total Air Quality Impacts of the Existing Units 1 through 4 at Port Everglades and PEEC Compared to Ambient Air Quality Standards

PEEC/Appendix 10.2.5

Source: Golder, 2011

FPL

APPENDIX A

TABLE A-1-501J
DESIGN INFORMATION AND STACK PARAMETERS FOR THE PEEC PROJECT
DRY LOW NO_x COMBUSTOR, NATURAL GAS, BASE LOAD

Parameter	CT Only Turbine Inlet Temperature 35 °F	59 °F	75 °F	95 °F
Combustion Turbine Performance				
Heat Input (MMBtu/hr, LHV)	2,733.1	2,623.8	2,539.4	2,440.1
(MMBtu/hr, HHV)	3,033.7	2,912.4	2,818.7	2,708.5
Evaporative Cooler	Off	On	On	On
Relative Humidity (%)	60	60	60	60
Fuel heating value (Btu/lb, LHV)	20,940	20,940	20,940	20,940
(Btu/lb, HHV)	23,243	23,243	23,243	23,243
(HHV/LHV)	1.110	1.110	1.110	1.110
Steam Flow (lb/hr)	NA	NA	NA	NA
CT/DB Exhaust Flow				
Volume flow (acfm) = [Mass flow (lb/hr) x 1545.4 x Temp (°F + 460 K)] / [2112.5 x 60 min/hr x MW]				
Mass Flow (lb/hr)	4,949,000	4,768,200	4,625,400	4,441,300
Temperature (°F)	1,159	1,173	1,188	1,202
Moisture (% Vol.)	9.09	9.83	10.57	12.11
Oxygen (% Vol.)	11.14	11.03	10.92	10.65
Molecular Weight	28.42	28.33	28.25	28.12
Volume flow (acfm)	3,437,425	3,351,097	3,289,887	3,200,507
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)	2,733	2,624	2,539	2,440
Heat content (Btu/lb, LHV)	20,940	20,940	20,940	20,940
Fuel usage (lb/hr)	130,521	125,301	121,270	116,528
Heat content (Btu/cf, LHV)	918	918	918	918
Fuel density (lb/ft^3)	0.0438	0.0438	0.0438	0.0438
Fuel usage (cf/hr)	2,977,233	2,858,170	2,766,231 2.42E+10	2,658,061
Fuel Usage - Duct Burner Only				
Fuel usage (lb/hr)- calculated	0	0	0	0
Fuel usage (cf/hr)- calculated	0	0	0	0
HRSG Stack				
HRSG - Stack Height (feet)	149	149	149	149
Diameter (feet)	22	22	22	22
HRSG Stack Flow Conditions				
Velocity (ft/sec) = Volume flow (acfm) / [((diameter)² /4) x 3.14159] / 60 sec/min				
Mass flow (lb/hr)	4,949,000	4,768,200	4,625,400	4,441,300
HRSG Stack Temperature (°F)	196	195	195	195
Molecular weight	28.42	28.33	28.25	28.12
Volume flow (acfm)	1,392,804	1,344,133	1,307,570	1,261,331
Diameter (feet)	22	22	22	22
Velocity (ft/sec)- calculated	61.1	58.9	57.3	55.3

Note: Universal gas constant = 1,545.4 ft-lb(force)/°R; atmospheric pressure = 2,112.5 lb(force)/ft² (@14.67 psia).
Source: MPS, 2011; CT Performance Data; Golder, 2011.

TABLE A-2-501J
MAXIMUM EMISSIONS FOR CRITERIA POLLUTANTS FOR THE PEEC PROJECT
MPS 501J CT, DRY LOW NO_x COMBUSTOR, NATURAL GAS, BASE LOAD

Parameter	CT Only Turbine Inlet Temperature				
	35 °F	59 °F	75 °F	95 °F	
Particulate (including $PM_{2.5}$) from CT and SCR					
Total PM_{10} = PM_{10} (front half) + PM_{10} [$(NH_4)_2SO_4$] in HRSG only (back-half)					
a. PM_{10} (front half) (lb/hr)					
Particulate from CT (lbhr)= Emission (mg/m^3 N) x Flow rate (acfm) x 60 min/hr x (1 m^3/(3.283 ft)^3) x (273.15 K/ CT T					
Emission (mg/m^3 N)	1	1	1	1	9
Turbine Flow (acfm)	3,437,425	3,351,097	3,289,887	3,200,507	0
(m^3/hr)	5,844,709	5,697,925	5,593,849	5,441,874	0
Temperature (°F)	1,159	1,173	1,188	1,202	0
(K)	899	907	915	923	#
Emission (lb/hr)	3.91	3.78	3.68	3.55	
Total CT/DB emission rate (lb/hr)	3.9	3.8	3.7	3.5	
b. PM_{10} [$(NH_4)_2SO_4$] from HRSG only (back half) = Sulfur trioxide from conversion of SO_2 converts to ammonium sulfate (=					
Particulate from conversion of SO_2 = SO_2 emissions (lb/hr) x conversion of SO_2 to SO_3 in CT and in SCR x lb SO_3/lb *conversion of SO_3 to $(NH_4)_2SO_4$ x lb $(NH_4)_2SO_4$/ lb SO_3*					
CT SO_2 emission rate (lb/hr)	17.0	16.3	15.8	15.2	
Conversion (%) from SO_2 to SO_3 in CT	10.0	10.0	10.0	10.0	
DB SO_2 emission rate (lb/hr)	--	--	--	--	
Conversion (%) from SO_2 to SO_3 in DB	--	--	--	--	
Remaining SO_2 (lb/hr) after conversion	15.3	14.7	14.2	13.7	
Conversion (%) from SO_2 to SO_3 in SCR	3.0	3.0	3.0	3.0	
MW SO_3/ SO_2 (80/64)	1.3	1.3	1.3	1.3	
Conversion (%) from SO_3 to $(NH_4)_2(SO_4)$	100	100	100	100	
MW $(NH_4)_2$ SO_4/ SO_3 (132/80)	1.7	1.7	1.7	1.7	
HRSG Particulate as $(NH_4)_2(SO_4)$ (lb/hr)	4.46	4.28	4.14	3.98	
Total HRSG stack emission rate (lb/hr) [a + b]	8.4	8.1	7.8	7.5	#
(lb/mmBtu, HHV)	NA	NA	NA	NA	
Sulfur Dioxide					
SO_2 (lb/hr)= Natural gas (scf/hr) x sulfur content(gr/100 scf) x 1 lb/7000 gr x (lb SO_2 /lb S) /100					
Fuel use (cf/hr)	2,977,233	2,858,170	2,766,231	2,658,061	
Sulfur content (grains/ 100 cf)	2	2	2	2	
lb SO_2 /lb S (64/32)	2	2	2	2	
HRSG stack emission rate (lb/hr)	17.0	16.3	15.8	15.2	
Nitrogen Oxides					
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisure (%)]					
NO_x (ppmv actual) = NO_x (ppmd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]					
NO_x (lb/hr) = NO_x (ppm actual) x Volume flow (acfm) x 46 (mole. wgt NO_x) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas co					
Basis, ppm actual	46.6	46.4	46.1	45.8	
CT/DB, ppmvd @15% O_2	35	35	35	35	
Moisture (%)	9.09	9.83	10.57	12.11	
Oxygen (%)	11.14	11.03	10.92	10.65	
Oxygen (%) dry	12.25	12.23	12.21	12.12	
Turbine Flow (acfm)	3,437,425	3,351,097	3,289,887	3,200,507	
Turbine Flow (acfm), dry	3,125,088	3,021,748	2,942,189	2,812,858	
Turbine Exhaust Temperature (°F)	1,159	1,173	1,188	1,202	
CT/DB emission rate (lb/hr)	373.7	358.9	347.2	332.6	
HRSG Stack emission rate, ppmvd @ 15% O_2	2.0	2.0	2.0	2.0	
HRSG stack emission rate (lb/hr)	21.4	20.5	19.8	19.0	#
Carbon Monoxide					
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisure (%)]					
CO (ppmv wet or actual) = CO (ppmvd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]					
CO (lb/hr) = CO (ppm actual) x Volume flow (acfm) x 28 (mole. wgt CO) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constan					
Basis, ppm actual	12.00	11.92	11.85	11.77	
Basis, ppmvd @ 15% O_2	9.00	9.00	9.00	9.00	
Moisture (%)	9.09	9.83	10.57	12.11	
Oxygen (%)	11.14	11.03	10.92	10.65	
Oxygen (%) dry	12.25	12.23	12.21	12.12	
Turbine Flow (acfm)	3,437,425	3,351,097	3,289,887	3,200,507	
Turbine Flow (acfm), dry	3,125,088	3,021,748	2,942,189	2,812,858	
Turbine Exhaust Temperature (°F)	1,159	1,173	1,188	1,202	
CT/DB emission rate (lb/hr)	58.5	56.2	54.3	52.1	
HRSG Stack emission rate, ppmvd @ 15% O_2	9.0	9.0	9.0	9.0	
HRSG Stack emission rate (lb/hr)	58.5	56.2	54.3	52.1	
Volatile Organic Compounds					
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisure (%)]					
VOC (ppmv wet or actual) = VOC (ppmvd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]					
VOC (lb/hr) = VOC (ppm actual) x Volume flow (acfm) x 16 (mole. wgt CH_4) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas co					
Basis, ppm actual	1.33	1.32	1.32	1.31	
Basis, ppmvd @ 15% O_2	1.00	1.00	1.00	1.00	
Moisture (%)	9.09	9.83	10.57	12.11	
Oxygen (%) wet	11.14	11.03	10.92	10.65	
Oxygen (%) dry	12.25	12.23	12.21	12.12	
Turbine Flow (acfm)	3,437,425	3,351,097	3,289,887	3,200,507	
Turbine Flow (acfm), dry	3,125,088	3,021,748	2,942,189	2,812,858	
Turbine Exhaust Temperature (°F)	1,159	1,173	1,188	1,202	
CT/DB emission rate (lb/hr)	3.71	3.57	3.45	3.31	
HRSG Stack emission rate, ppmvd @ 15% O_2	1.0	1.0	1.0	1.0	
HRSG Stack emission rate (lb/hr)	3.7	3.6	3.5	3.3	
Sulfuric Acid Mist					
Sulfuric Acid Mist (lb/hr)= SO_2 emission (lb/hr) x Conversion to H_2SO_4 (% by weight)/100					
CT SO_2 emission rate (lb/hr)	17.0	16.3	15.8	15.2	
CT Conversion to H_2SO_4 (% by weight)	10	10	10	10	
DB SO_2 emission rate (lb/hr)	0	0	0	0	
DB Conversion to H_2SO_4 (%)	20	20	20	20	
SCR SO_2 (lb/hr)(remaining SO_2 after conversion)	15.3	14.7	14.2	13.7	
SCR Conversion to H_2SO_4 (% by weight)	3	3	3	3	
HRSG Stack emission rate (lb/hr)	3.31	3.18	3.07	2.95	
Lead					
Lead (lb/hr) = NA					
Emission Rate Basis	NA	NA	NA	NA	
Emission rate (lb/hr)	NA	NA	NA	NA	

Note: ppmvd= parts per million, volume dry; O_2= oxygen.
Source: MPS, 2011; CT Performance Data; Golder, 2011.

TABLE A-3-501J
DESIGN INFORMATION AND STACK PARAMETERS
FOR THE PEEC PROJECT
MPS 501J CT, DRY LOW NO_x COMBUSTOR, NATURAL GAS, 75% LOAD

Parameter	Turbine Inlet Temperature			
	35 °F	59 °F	75 °F	95 °F
Combustion Turbine Performance				
Heat Input (MMBtu/hr, LHV)	2,202.7	2,090.4	2,017.4	1,930.2
(MMBtu/hr, HHV)	2,445.0	2,320.3	2,239.3	2,142.5
Relative Humidity (%)	60	60	60	60
Fuel heating value (Btu/lb, LHV)	20,940	20,940	20,940	20,940
(Btu/lb, HHV)	23,243	23,243	23,243	23,243
(HHV/LHV)	1.110	1.110	1.110	1.110
CT/DB Exhaust Flow				
Volume flow (acfm) = [Mass flow (lb/hr) x 1545.4 x Temp (°F + 460 K)] / [2112.5 x 60 min/hr x MW]				
Mass flow (lb/hr)	4,064,000	3,889,000	3,764,200	3,606,000
Temperature (°F)	1,182	1,202	1,218	1,237
Moisture (% Vol.)	8.86	9.34	10.04	11.49
Oxygen (% Vol.)	11.41	11.39	11.32	11.06
Molecular Weight	28.44	28.39	28.38	28.20
Volume flow (acfm)	2,860,818	2,776,342	2,713,211	2,645,766
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)	2,203	2,090	2,017	1,930
Heat content (Btu/lb, LHV)	20,940	20,940	20,940	20,940
Fuel usage (lb/hr)	105,191	99,828	96,342	92,178
Heat content (Btu/cf, LHV)	918	918	918	918
Fuel density (lb/ft^3)	0.0438	0.0438	0.0438	0.0438
Fuel usage (cf/hr)	2,399,455	2,277,124	2,197,603	2,102,614
HRSG Stack				
HRSG - Stack Height (feet)	149	149	149	149
Diameter (feet)	22	22	22	22
HRSG Stack Flow Conditions				
Velocity (ft/sec) = Volume flow (acfm) / [((diameter)² /4) x 3.14159] / 60 sec/min				
Mass flow (lb/hr)	4,064,000	3,889,000	3,764,200	3,606,000
HRSG Stack Temperature (°F)	184	185	186	187
Molecular weight	28.44	28.39	28.38	28.20
Volume flow (acfm)	1,122,026	1,077,461	1,044,538	1,008,727
Diameter (feet)	22	22	22	22
Velocity (ft/sec)	49.2	47.2	45.8	44.2

Note: Universal gas constant = 1,545.4 ft-lb(force)/°R; atmospheric pressure = 2,112.5 lb(force)/ft² (@14.67 psia).
Source: MPS, 2011; CT Performance Data; Golder, 2011.

TABLE A-4-501J
MAXIMUM EMISSIONS FOR CRITERIA POLLUTANTS FOR THE PEEC PROJECT
MPS 501J CT, DRY LOW NO_x COMBUSTOR, NATURAL GAS, 75% LOAD

Parameter	Turbine Inlet Temperature 35 °F	59 °F	75 °F	95 °F
Particulate (including $PM_{2.5}$) from CT and SCR				
Total PM_{10} = PM_{10} (front half) + PM_{10} [$(NH_4)_2SO_4$] in HRSG only (back-half)				
a. PM_{10} (front half) (lb/hr)				
Particulate from CT (lbhr)= Emission (mg/m^3 N) x Flow rate (acfm) x 60 min/hr x (1 m^3/(3.283 ft)^3) x (273.15 K/ CT Temp (K)) x 2.2046 x 10^{-6} lb/mg				
Emission (mg/m^3 N)	1	1	1	1
Turbine Flow (acfm)	2,860,818	2,776,342	2,713,211	2,645,766
(m^3/hr)	4,864,295	4,720,660	4,613,317	4,498,639
Temperature (°F)	1,182	1,202	1,218	1,237
(K)	912	923	932	943
Emission (lb/hr)	3.21	3.08	2.98	2.87
b. PM_{10} [$(NH_4)_2SO_4$] from HRSG only (back half) = Sulfur trioxide from conversion of SO_2 converts to ammonium sulfate (= PM_{10})				
Particulate from conversion of SO_2 = SO_2 emissions (lb/hr) x conversion of SO_2 to SO_3 in CT and in SCR x lb SO_3/lb SO_2 x conversion of SO_3 to $(NH_4)_2SO_4$ x lb $(NH_4)_2SO_4$/ lb SO_3				
CT SO_2 emission rate (lb/hr)	13.7	13.0	12.6	12.0
Conversion (%) from SO_2 to SO_3 in CT	10.0	10.0	10.0	10.0
Remaining SO_2 (lb/hr) in CT after conversion	12.3	11.7	11.3	10.8
Conversion (%) from SO_2 to SO_3 in SCR	3.0	3.0	3.0	3.0
MW SO_3/ SO_2 (80/64)	1.3	1.3	1.3	1.3
Conversion (%) from SO_3 to $(NH_4)_2(SO_4)$	100	100	100	100
MW $(NH_4)_2$ SO_4/ SO_3 (132/80)	1.7	1.7	1.7	1.7
HRSG Particulate as $(NH_4)_2(SO_4)$ (lb/hr)	3.59	3.41	3.29	3.15
Total HRSG stack emission rate (lb/hr) [a + b]	6.8	6.5	6.3	6.0
(lb/mmBtu, HHV)	NA	NA	NA	NA
Sulfur Dioxide				
SO_2 (lb/hr)= Natural gas (scf/hr) x sulfur content(gr/100 scf) x 1 lb/7000 gr x (lb SO_2 /lb S) /100				
Fuel use (cf/hr)	2,399,455	2,277,124	2,197,603	2,102,614
Sulfur content (grains/ 100 cf)	2	2	2	2
lb SO_2 /lb S (64/32)	2	2	2	2
HRSG Stack emission rate (lb/hr)	13.7	13.0	12.6	12.0
Nitrogen Oxides				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]				
NO_x (ppm actual) = NO_x (ppmd @ 15% O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
NO_x (lb/hr) = NO_x (ppm actual) x Volume flow (acfm) x 46 (mole. wgt NO_x) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] :				
Basis, ppm actual	45.3	44.8	44.4	44.1
CT / DB, ppmvd @15% O_2	35	35	35	35
Moisture (%)	8.86	9.34	10.04	11.49
Oxygen (%)	11.41	11.39	11.32	11.06
Oxygen (%) dry	12.52	12.56	12.58	12.50
Turbine Flow (acfm)	2,860,818	2,776,342	2,713,211	2,645,766
Turbine Flow (acfm), dry	2,607,465	2,516,948	2,440,907	2,341,790
Turbine Exhaust Temperature (°F)	1,182	1,202	1,218	1,237
CT Emission rate (lb/hr)	297.8	282.6	270.8	259.6
HRSG Stack emission rate, ppmvd @ 15% O_2	2.0	2.0	2.0	2.0
HRSG Stack emission rate (lb/hr)	17.0	16.1	15.5	14.8
Carbon Monoxide				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]				
CO (ppmv wet or actual) = CO (ppmvd @ 15% O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
CO (lb/hr) = CO (ppm actual) x Volume flow (acfm) x 28 (mole. wgt CO) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 ,				
Basis, ppm actual	11.6	11.5	11.4	11.3
Basis, ppmvd @ 15% O_2	9	9	9	9
Moisture (%)	8.86	9.34	10.04	11.49
Oxygen (%)	11.41	11.39	11.32	11.06
Oxygen (%) dry	12.52	12.56	12.58	12.50
Turbine Flow (acfm)	2,860,818	2,776,342	2,713,211	2,645,766
Turbine Flow (acfm), dry	2,607,465	2,516,948	2,440,907	2,341,790
Turbine Exhaust Temperature (°F)	1,182	1,202	1,218	1,237
CT Emission rate (lb/hr)	46.6	44.2	42.4	40.6
HRSG Stack emission rate, ppmvd @ 15% O_2	9	9	9	9
HRSG Stack emission rate (lb/hr)	46.6	44.2	42.4	40.6
Volatile Organic Compounds				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]				
VOC (ppmv wet or actual) = VOC (ppmvd @ 15% O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
VOC (lb/hr) = VOC (ppm actual) x Volume flow (acfm) x 16 (mole. wgt CH_4) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] :				
Basis, ppmvd	1.29	1.28	1.27	1.26
Basis, ppmvd @ 15% O_2	1	1	1	1
Moisture (%)	8.86	9.34	10.04	11.49
Oxygen (%)	11.41	11.39	11.32	11.06
Oxygen (%) dry	12.52	12.56	12.58	12.50
Turbine Flow (acfm)	2,860,818	2,776,342	2,713,211	2,645,766
Turbine Flow (acfm), dry	2,607,465	2,516,948	2,440,907	2,341,790
Turbine Exhaust Temperature (°F)	1,182	1,202	1,218	1,237
CT Emission rate (lb/hr)	2.96	2.81	2.69	2.58
HRSG Stack emission rate, ppmvd @ 15% O_2	1	1	1	1
HRSG Stack emission rate (lb/hr)	3.0	2.8	2.7	2.6
Sulfuric Acid Mist				
Sulfuric Acid Mist (lb/hr)= SO_2 emission (lb/hr) x Conversion to H_2SO_4 (% by weight)/100				
CT SO_2 emission rate (lb/hr)	13.7	13.0	12.6	12.0
CT Conversion to H_2SO_4 (% by weight)	10	10	10	10
DB SO_2 emission rate (lb/hr)	0	0	0	0
DB Conversion to H_2SO_4 (%)	20	20	20	20
SCR SO_2 emission rate (lb/hr) - calculated (remaining SO_2 after conversion)	12.3	11.7	11.3	10.8
HRSG Stack emission rate (lb/hr)	2.67	2.53	2.44	2.34
Lead				
Lead (lb/hr) = NA				
Emission Rate Basis	NA	NA	NA	NA
HRSG Stack emission rate (lb/hr)	NA	NA	NA	NA

Note: ppmvd= parts per million, volume dry; O2= oxygen.
Source: MPS, 2011; CT Performance Data; Golder, 2011.

TABLE A-5-501J
DESIGN INFORMATION AND STACK PARAMETERS
FOR THE PEEC PROJECT
MPS 501J CT, DRY LOW NO_x COMBUSTOR, NATURAL GAS, 50% LOAD

Parameter	**Turbine Inlet Temperature**			
	35 °F	**59 °F**	**75 °F**	**95 °F**
Combustion Turbine Performance				
Heat Input (MMBtu/hr, LHV)	1,673.7	1,594.0	1,540.8	1,476
(MMBtu/hr, HHV)	1,857.8	1,769.3	1,710.3	1,638.5
Relative Humidity (%)	60	60	60	60
Fuel heating value (Btu/lb, LHV)	20,940	20,940	20,940	20,940
(Btu/lb, HHV)	23,243	23,243	23,243	23,243
(HHV/LHV)	1.110	1.110	1.110	1.110
CT/DB Exhaust Flow				
Volume flow (acfm) = [Mass flow (lb/hr) x 1545.4 x Temp (°F + 460 K)] / [2112.5 x 60 min/hr x MW]				
Mass flow (lb/hr)	3,197,900	3,125,400	3,070,200	2,991,800
Temperature (°F)	1,237	1,237	1,237	1,237
Moisture (% Vol.)	8.56	8.92	9.50	10.85
Oxygen (% Vol.)	11.72	11.86	11.90	11.77
Molecular Weight	28.44	28.39	28.38	28.20
Volume flow (acfm)	2,326,538	2,278,198	2,238,039	2,195,120
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)	1,674	1,594	1,541	1,476
Heat content (Btu/lb, LHV)	20,940	20,940	20,940	20,940
Fuel usage (lb/hr)	79,928	76,122	73,582	70,492
Heat content (Btu/cf, LHV)	918	918	918	918
Fuel density (lb/ft^3)	0.0438	0.0438	0.0438	0.0438
Fuel usage (cf/hr)	1,823,203	1,736,383	1,678,431	1,607,952
HRSG Stack				
HRSG - Stack Height (feet)	149	149	149	149
Diameter (feet)	22	22	22	22
HRSG Stack Flow Conditions				
Velocity (ft/sec) = Volume flow (acfm) / [((diameter)^2 /4) x 3.14159] / 60 sec/min				
Mass flow (lb/hr)	3,197,900	3,125,400	3,070,200	2,991,800
HRSG Stack Temperature (°F)	184	185	186	187
Molecular weight	28.44	28.39	28.38	28.20
Volume flow (acfm)	882,905	865,903	851,958	836,914
Diameter (feet)	22	22	22	22
Velocity (ft/sec)	38.7	38.0	37.4	36.7

Note: Universal gas constant = 1,545.4 ft-lb(force)/°R; atmospheric pressure = 2,112.5 lb(force)/ft^2 (@14.67 psia).
Source: MPS, 2011; CT Performance Data; Golder, 2011.

TABLE A-6-501J
MAXIMUM EMISSIONS FOR CRITERIA POLLUTANTS FOR THE PEEC PROJECT
MPS 501J CT, DRY LOW NO_x COMBUSTOR, NATURAL GAS, 50% LOAD

Parameter	Turbine Inlet Temperature 35 °F	59 °F	75 °F	95 °F
Particulate from CT and HRSG				
Particulate (including $PM_{2.5}$) from CT and SCR				
a. PM_{10} (front half) (lb/hr)				
Particulate from CT (lbhr)= Emission (mg/m^3 N) x Flow rate (acfm) x 60 min/hr x (1 m^3/(3.283 ft)^3) x (273.15 K/ CT Temp (K)) x 2.2046 x 10^{-6} lb/mg)				
Emission (mg/m^3 N)	1	1	1	1
Turbine Flow (acfm)	2,326,538	2,278,198	2,238,039	2,195,120
(m^3/hr)	3,955,850	3,873,657	3,805,374	3,732,398
Temperature (°F)	1,237	1,237	1,237	1,237
(K)	943	943	943	943
Emission (lb/hr)	2.53	2.47	2.43	2.38
b. PM_{10} [$(NH_4)_2SO_4$] from HRSG only (back half) = Sulfur trioxide from conversion of SO_2 converts to ammonium sulfate (= PM_{10})				
Particulate from conversion of SO_2 = SO_2 emissions (lb/hr) x conversion of SO_2 to SO_3 in CT and in SCR x lb SO_3/lb SO_2 x conversion of SO_3 to $(NH_4)_2SO_4$ x lb $(NH_4)_2SO_4$/ lb SO_3				
CT SO_2 emission rate (lb/hr)	10.4	9.9	9.6	9.2
Conversion (%) from SO_2 to SO_3 in CT	10.0	10.0	10.0	10.0
Remaining SO_2 (lb/hr) in CT after conversion	9.4	8.9	8.6	8.3
Conversion (%) from SO_2 to SO_3 in SCR	3.0	3.0	3.0	3.0
MW SO_3/ SO_2 (80/64)	1.3	1.3	1.3	1.3
Conversion (%) from SO_3 to $(NH_4)_2(SO_4)$	100	100	100	100
MW $(NH_4)_2$ SO_4/ SO_3 (132/80)	1.7	1.7	1.7	1.7
HRSG Particulate as $(NH_4)_2(SO_4)$ (lb/hr)	2.73	2.60	2.51	2.41
Total HRSG stack emission rate (lb/hr) [a + b]	5.3	5.1	4.9	4.8
(lb/mmBtu, HHV)	NA	NA	NA	NA
Sulfur Dioxide				
SO_2 (lb/hr)= Natural gas (scf/hr) x sulfur content(gr/100 scf) x 1 lb/7000 gr x (lb SO_2 /lb S) /100				
Fuel use (cf/hr)	1,823,203	1,736,383	1,678,431	1,607,952
Sulfur content (grains/ 100 cf)	2	2	2	2
lb SO_2 /lb S (64/32)	2	2	2	2
HRSG Stack emission rate (lb/hr)	10.4	9.9	9.6	9.2
Nitrogen Oxides				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]				
NO_x (ppm actual) = NO_x (ppmd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
NO_x (lb/hr) = NO_x (ppm actual) x Volume flow (acfm) x 46 (mole. wgt NO_x) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 6(				
Basis, ppm actual	43.8	42.6	41.6	40.7
CT / DB, ppmvd @15% O_2	35	35	35	35
Moisture (%)	8.56	8.92	9.50	10.85
Oxygen (%)	11.72	11.86	11.90	11.77
Oxygen (%) dry	12.82	13.02	13.14	13.20
Turbine Flow (acfm)	2,326,538	2,278,198	2,238,039	2,195,120
Turbine Flow (acfm), dry	2,127,478	2,075,037	2,025,412	1,957,007
Turbine Exhaust Temperature (°F)	1,237	1,237	1,237	1,237
CT Emission rate (lb/hr)	226.7	215.6	207.2	198.8
HRSG Stack emission rate, ppmvd @ 15% O_2	2.0	2.0	2.0	2.0
HRSG Stack emission rate (lb/hr)	13.0	12.3	11.8	11.4
Carbon Monoxide				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]				
CO (ppmv wet or actual) = CO (ppmvd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
CO (lb/hr) = CO (ppm actual) x Volume flow (acfm) x 28 (mole. wgt CO) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 min				
Basis, ppm actual	11.3	10.9	10.7	10.5
Basis, ppmvd @ 15% O_2	9	9	9	9
Moisture (%)	8.56	8.92	9.50	10.85
Oxygen (%)	11.72	11.86	11.90	11.77
Oxygen (%) dry	12.82	13.02	13.14	13.20
Turbine Flow (acfm)	2,326,538	2,278,198	2,238,039	2,195,120
Turbine Flow (acfm), dry	2,127,478	2,075,037	2,025,412	1,957,007
Turbine Exhaust Temperature (°F)	1,237	1,237	1,237	1,237
CT Emission rate (lb/hr)	35.5	33.7	32.4	31.1
HRSG Stack emission rate, ppmvd @ 15% O_2	9	9	9	9
HRSG Stack emission rate (lb/hr)	35.5	33.7	32.4	31.1
Volatile Organic Compounds				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]				
VOC (ppmv wet or actual) = VOC (ppmvd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
VOC (lb/hr) = VOC (ppm actual) x Volume flow (acfm) x 16 (mole. wgt CH_4) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 6(				
Basis, ppmvd	1.25	1.22	1.19	1.16
Basis, ppmvd @ 15% O_2	1	1	1	1
Moisture (%)	8.56	8.92	9.50	10.85
Oxygen (%)	11.72	11.86	11.90	11.77
Oxygen (%) dry	12.82	13.02	13.14	13.20
Turbine Flow (acfm)	2,326,538	2,278,198	2,238,039	2,195,120
Turbine Flow (acfm), dry	2,127,478	2,075,037	2,025,412	1,957,007
Turbine Exhaust Temperature (°F)	1,237	1,237	1,237	1,237
CT Emission rate (lb/hr)	2.25	2.14	2.06	1.98
HRSG Stack emission rate, ppmvd @ 15% O_2	1	1	1	1
HRSG Stack emission rate (lb/hr)	2.3	2.1	2.1	2.0
Sulfuric Acid Mist				
Sulfuric Acid Mist (lb/hr)= SO_2 emission (lb/hr) x Conversion to H_2SO_4 (% by weight)/100				
CT SO_2 emission rate (lb/hr)	10.4	9.9	9.6	9.2
CT Conversion to H_2SO_4 (% by weight)	10	10	10	10
DB SO_2 emission rate (lb/hr)	0	0	0	0
DB Conversion to H_2SO_4 (%)	20	20	20	20
SCR SO_2 emission rate (lb/hr) - calculated (remaining SO_2 after conv	9.4	8.9	8.6	8.3
SCR Conversion to H_2SO_4 (% by weight)	3	3	3	3
HRSG Stack emission rate (lb/hr)	2.03	1.93	1.87	1.79
Lead				
Lead (lb/hr) = NA				
Emission Rate Basis	NA	NA	NA	NA
HRSG Stack emission rate (lb/hr)	NA	NA	NA	NA

Note: ppmvd= parts per million, volume dry; O2= oxygen.
Source: MPS, 2011; CT Performance Data; Golder, 2011.

TABLE A-7-501J
DESIGN INFORMATION AND STACK PARAMETERS
FOR THE PEEC PROJECT
MPS 501J CT, DRY LOW NO_x COMBUSTOR, DISTILLATE OIL, BASE LOAD

Parameter	Turbine Inlet Temperature 35 °F	59 °F	75 °F	95 °F
Combustion Turbine Performance				
Heat Input (MMBtu/hr, LHV)	2,436.6	2,292.1	2,201.5	2,096.5
(MMBtu/hr, HHV)	2,582.8	2,429.6	2,333.6	2,222.3
Relative Humidity (%)	60	60	60	60
Fuel heating value (Btu/lb, LHV)	18,387	18,387	18,387	18,387
(Btu/lb, HHV)	19,490	19,490	19,490	19,490
(HHV/LHV)	1.060	1.060	1.060	1.060
CT/DB Exhaust Flow				
Volume flow (acfm) = [Mass flow (lb/hr) x 1545.4 x Temp (°F + 460 K)] / [2112.5 x 60 min/hr x MW]				
Mass Flow (lb/hr)	5,050,000	4,799,000	4,639,600	4,436,700
Temperature (°F)	982	1,000	1,014	1,033
Moisture (% Vol.)	8.22	8.70	9.32	10.77
Oxygen (% Vol.)	12.06	12.08	12.00	11.79
Molecular Weight	28.66	28.60	28.52	28.41
Volume flow (acfm)	3,097,943	2,986,968	2,923,623	2,842,769
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)	2,437	2,292	2,202	2,097
Heat content (Btu/lb, LHV)	18,387	18,387	18,387	18,387
Fuel usage (lb/hr)	132,518	124,659	119,731	114,021
HRSG Stack				
HRSG - Stack Height (feet)	149	149	149	149
Diameter (feet)	22	22	22	22
HRSG Stack Flow Conditions				
Velocity (ft/sec) = Volume flow (acfm) / [((diameter)² /4) x 3.14159] / 60 sec/min				
Mass flow (lb/hr)	5,050,000	4,799,000	4,639,600	4,436,700
HRSG Stack Temperature (°F)	359	357	355	354
Molecular weight	28.66	28.60	28.52	28.41
Volume flow (acfm)	1,759,511	1,671,474	1,616,522	1,549,909
Diameter (feet)	22	22	22	22
Velocity (ft/sec)	77.1	73.3	70.9	68.0

Note: Universal gas constant = 1,545.4 ft-lb(force)/°R; atmospheric pressure = 2,112.5 lb(force)/ft² (@14.67 psia).
Source: MPS, 2011; CT Performance Data; Golder, 2011.

TABLE A-8-501J
MAXIMUM EMISSIONS FOR CRITERIA POLLUTANTS FOR THE PEEC PROJECT
MPS 501J CT, DRY LOW NO_x COMBUSTOR, DISTILLATE OIL, BASE LOAD

Parameter	Turbine Inlet Temperature			
	35 °F	59 °F	75 °F	95 °F
Particulate (including $PM_{2.5}$) from CT and SCR				
Total PM_{10} = PM_{10} (front half) + PM_{10} [$(NH_4)_2SO_4$] in HRSG only (back-half)				
a. PM_{10} (front half) (lb/hr)				
Particulate from CT (lbhr)= Emission (mg/m^3 N) x Flow rate (acfm) x 60 min/hr x (1 m^3/(3.283 ft)^3) x (273.15 K/ CT Temp (K)) x 2.2046 x 10^{-6} lb/mg)				
Emission (mg/m^3 N)	5	5	5	5
Turbine Flow (acfm)	3,097,943	2,986,968	2,923,623	2,842,769
(m^3/hr)	5,267,483	5,078,790	4,971,085	4,833,607
Temperature (°F)	982	1,000	1,014	1,033
(K)	801	811	819	829
Emission (lb/hr)	19.80	18.86	18.28	17.55
b. PM_{10} ($(NH_4)_2SO_4$) from HRSG only (back half) = Sulfur trioxide from conversion of SO_2 converts to ammonium sulfate (= PM_{10})				
Particulate from conversion of SO_2 = SO_2 emissions (lb/hr) x conversion of SO_2 to SO_3 in CT and in SCR x lb SO_3/lb SO_2 x conversion of SO_3 to $(NH_4)_2SO_4$ x lb $(NH_4)_2SO_4$/ lb SO_3				
SO_2 emission rate (lb/hr)	4.0	3.7	3.6	3.4
Conversion (%) from SO_2 to SO_3	10.0	10.0	10.0	10.0
Remaining SO_2 (lb/hr) in CT after conversion	3.6	3.4	3.2	3.1
Conversion (%) from SO_2 to SO_3 in SCR	3.0	3.0	3.0	3.0
MW SO_3/ SO_2 (80/64)	1.3	1.3	1.3	1.3
Conversion (%) from SO_3 to $(NH_4)_2(SO_4)$	100	100	100	100
MW $(NH_4)_2$ SO_4/ SO_3 (132/80)	1.7	1.7	1.7	1.7
HRSG Particulate as $(NH_4)_2(SO_4)$ (lb/hr)	1.04	0.98	0.94	0.90
Total HRSG stack emission rate (lb/hr) [a + b]	20.8	19.8	19.2	18.4
(lb/mmBtu, HHV)	NA	NA	NA	NA
Sulfur Dioxide				
SO_2 (lb/hr)= Fuel oil (lb/hr) x sulfur content(% weight) x (lb SO_2 /lb S) /100				
Fuel oil Sulfur Content	0.0015%	0.0015%	0.0015%	0.0015%
Fuel oil use (lb/hr)	132,518	124,659	119,731	114,021
lb SO_2 / lb S (64/32)	2	2	2	2
HRSG Stack emission rate (lb/hr)	4.0	3.7	3.6	3.4
Nitrogen Oxides				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]				
NO_x (ppm actual) = NO_x (ppmd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
NO_x (lb/hr) = NO_x (ppm actual) x Volume flow (acfm) x 46 (mole. wgt NO_x) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr				
Basis, ppm actual	50.7	49.9	49.5	48.8
CT/DB, ppmvd @15% O_2	42	42	42	42
Moisture (%)	8.22	8.70	9.32	10.77
Oxygen (%)	12.06	12.08	12.00	11.79
Oxygen (%) dry	13.15	13.23	13.23	13.21
Turbine Flow (acfm)	3,097,943	2,986,968	2,923,623	2,842,769
Turbine Flow (acfm), dry	2,843,152	2,727,119	2,651,021	2,536,589
Turbine Exhaust Temperature (°F)	982	1,000	1,014	1,033
CT Emission rate (lb/hr) - calculated	410.6	385.0	370.5	350.7
HRSG Stack emission rate, ppmvd @ 15% O_2	8.0	8.0	8.0	8.0
HRSG Stack emission rate (lb/hr)	78.2	73.3	70.6	66.8
Carbon Monoxide				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]				
CO (ppmv wet or actual) = CO (ppmvd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
CO (lb/hr) = CO (ppm actual) x Volume flow (acfm) x 28 (mole. wgt CO) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr				
Basis, ppm actual	42.2	41.6	41.3	40.7
Basis, ppmvd @ 15% O_2	35	35	35	35
Moisture (%)	8.22	8.70	9.32	10.77
Oxygen (%)	12.06	12.08	12.00	11.79
Oxygen (%) dry	13.15	13.23	13.23	13.21
Turbine Flow (acfm)	3,097,943	2,986,968	2,923,623	2,842,769
Turbine Flow (acfm), dry	2,843,152	2,727,119	2,651,021	2,536,589
Turbine Exhaust Temperature (°F)	982	1,000	1,014	1,033
CT Emission rate (lb/hr)	208.3	195.3	187.9	177.9
HRSG Stack emission rate, ppmvd @ 15% O_2	35.0	35.0	35.0	35.0
HRSG Stack emission rate (lb/hr)	208.3	195.3	187.9	177.9
Volatile Organic Compounds				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]				
VOC (ppmv wet or actual) = VOC (ppmvd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
VOC (lb/hr) = VOC (ppm actual) x Volume flow (acfm) x 16 (mole. wgt CH_4) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr				
Basis, ppm actual	12.1	11.9	11.8	11.6
Basis, ppmvd @ 15% O_2	10.0	10.0	10.0	10.0
Moisture (%)	8.22	8.70	9.32	10.77
Oxygen (%)	12.06	12.08	12.00	11.79
Oxygen (%-dry)	13.15	13.23	13.23	13.21
Turbine Flow (acfm)	3,097,943	2,986,968	2,923,623	2,842,769
Turbine Flow (acfm), dry	2,843,152	2,727,119	2,651,021	2,536,589
Turbine Exhaust Temperature (°F)	982	1,000	1,014	1,033
CT Emission rate (lb/hr)	34.0	31.9	30.7	29.0
HRSG Stack emission rate, ppmvd @ 15% O_2	10.0	10.0	10.0	10.0
HRSG Stack emission rate (lb/hr)	34.0	31.9	30.7	29.0
Sulfuric Acid Mist				
Sulfuric Acid Mist (lb/hr)= SO_2 emission (lb/hr) x Conversion to H_2SO_4 (% by weight)/100				
CT SO_2 emission rate (lb/hr)	4.0	3.7	3.6	3.4
CT Conversion to H_2SO_4 (% by weight)	10	10	10	10
DB SO_2 emission rate (lb/hr)	0	0	0	0
DB Conversion to H_2SO_4 (%)	20	20	20	20
SCR SO_2 emission rate (lb/hr) - calculated (remaining SO_2 after conversio	3.6	3.4	3.2	3.1
SCR Conversion to H_2SO_4 (% by weight)	3	3	3	3
HRSG Stack emission rate (lb/hr)	0.77	0.73	0.70	0.67
Lead				
Lead (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Emission Rate Basis (lb/10^{12} Btu)	14	14	14	14
HRSG Stack emission rate (lb/hr)- calculated	0.0362	0.0340	0.0327	0.0311

Note: Universal gas constant = 1,545.4 ft-lb(force)/°R; atmospheric pressure = 2,112.5 lb(force)/ft² (@14.67 psia).
Source: MPS, 2011; CT Performance Data; Golder, 2011.

TABLE A-9-501J
DESIGN INFORMATION AND STACK PARAMETERS
FOR THE PEEC PROJECT
MPS 501J CT, DRY LOW NO_x COMBUSTOR, DISTILLATE OIL, 75% LOAD

	Turbine Inlet Temperature			
Parameter	**35 °F**	**59 °F**	**75 °F**	**95 °F**
Combustion Turbine Performance				
Heat Input (MMBtu/hr, LHV)	1,987.1	1,877.5	1,806.9	1,723.2
(MMBtu/hr, HHV)	2,106.3	1,990.2	1,915.3	1,826.6
Relative Humidity (%)	60	60	60	60
Fuel heating value (Btu/lb, LHV)	18,387	18,387	18,387	18,387
(Btu/lb, HHV)	19,490	19,490	19,490	19,490
(HHV/LHV)	1.060	1.060	1.060	1.060
CT/DB Exhaust Flow				
Volume flow (acfm) = [Mass flow (lb/hr) x 1545.4 x Temp (°F + 460 K)] / [2112.5 x 60 min/hr x MW]				
Mass Flow (lb/hr)	4,117,900	3,931,700	3,800,500	3,626,200
Temperature (°F)	1,034	1,054	1,069	1,091
Moisture (% Vol.)	8.19	8.67	9.32	10.79
Oxygen (% Vol.)	12.11	12.09	12.01	11.76
Molecular Weight	28.66	28.60	28.52	28.41
Volume flow (acfm)	2,617,238	2,537,658	2,484,229	2,413,711
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)	1,987	1,878	1,807	1,723
Heat content (Btu/lb, LHV)	18,387	18,387	18,387	18,387
Fuel usage (lb/hr)	108,071	102,110	98,271	93,718
HRSG Stack				
HRSG - Stack Height (feet)	149	149	149	149
Diameter (feet)	22	22	22	22
HRSG Stack Flow Conditions				
Velocity (ft/sec) = Volume flow (acfm) / [((diameter)^2 /4) x 3.14159] / 60 sec/min				
Mass flow (lb/hr)	4,117,900	3,931,700	3,800,500	3,626,200
HRSG Stack Temperature (°F)	359	357	355	354
Molecular weight	28.66	28.60	28.52	28.41
Volume flow (acfm)	1,434,751	1,369,397	1,324,164	1,266,770
Diameter (feet)	22	22	22	22
Velocity (ft/sec)	62.9	60.0	58.1	55.5

Note: Universal gas constant = 1,545.4 ft-lb(force)/°R; atmospheric pressure = 2,112.5 lb(force)/ft^2 (@14.67 psia).
Source: MPS, 2011; CT Performance Data; Golder, 2011.

TABLE A-10-501J
MAXIMUM EMISSIONS FOR CRITERIA POLLUTANTS FOR THE PEEC PROJECT
MPS 501J CT, DRY LOW NO_x COMBUSTOR, DISTILLATE OIL, 75% LOAD

Parameter	Turbine Inlet Temperature 35 °F	59 °F	75 °F	95 °F
Particulate (including $PM_{2.5}$) from CT and SCR				
Total PM_{10} = PM_{10} (front half) + PM_{10} [$(NH_4)_2SO_4$] in HRSG only (back-half)				
a. PM_{10} (front half) (lb/hr)				
Particulate from CT (lbhr)= Emission (mg/m^3 N) x Flow rate (acfm) x 60 min/hr x (1 m^3 /(3.283 ft)^3) x (273.15 K/ CT Temp (K)) x 2.2046 x 10^{-6} lb/mg)				
Emission (mg/m^3 N)	5	5	5	5
Turbine Flow (acfm)	2,617,238	2,537,658	2,484,229	2,413,711
(m^3/hr)	4,450,132	4,314,822	4,223,975	4,104,072
Temperature (°F)	1,034	1,054	1,069	1,091
(K)	830	841	849	861
Emission (lb/hr)	16.15	15.45	14.98	14.34
b. PM_{10} ($(NH_4)_2SO_4$) from HRSG only (back half) = Sulfur trioxide from conversion of SO_2 converts to ammonium sulfate (= PM_{10})				
Particulate from conversion of SO_2 = SO_2 emissions (lb/hr) x conversion of SO_2 to SO_3 in CT and in SCR x lb SO_3 /lb SO_2 x conversion of SO_3 to $(NH_4)_2SO_4$ x lb $(NH_4)_2SO_4$ / lb SO_3				
SO_2 emission rate (lb/hr)	3.2	3.1	2.9	2.8
Conversion (%) from SO_2 to SO_3	10.0	10.0	10.0	10.0
Remaining SO_2 (lb/hr) in CT after conversion	2.9	2.8	2.7	2.5
Conversion (%) from SO_2 to SO_3 in SCR	3.0	3.0	3.0	3.0
MW SO_3/ SO_2 (80/64)	1.3	1.3	1.3	1.3
Conversion (%) from SO_3 to $(NH_4)_2(SO_4)$	100	100	100	100
MW $(NH_4)_2$ SO_4/ SO_3 (132/80)	1.7	1.7	1.7	1.7
HRSG Particulate as $(NH_4)_2(SO_4)$ (lb/hr)	0.85	0.80	0.77	0.74
Total HRSG stack emission rate (lb/hr) [a + b]	17.0	16.3	15.7	15.1
(lb/mmBtu, HHV)	NA	NA	NA	NA
Sulfur Dioxide				
SO_2 (lb/hr)= Fuel oil (lb/hr) x sulfur content(% weight) x (lb SO_2 /lb S) /100				
Fuel oil Sulfur Content	0.0015%	0.0015%	0.0015%	0.0015%
Fuel oil use (lb/hr)	108,071	102,110	98,271	93,718
lb SO_2 / lb S (64/32)	2	2	2	2
HRSG Stack emission rate (lb/hr)	3.2	3.1	2.9	2.8
Nitrogen Oxides				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]				
NO_x (ppm actual) = NO_x (ppmd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
NO_x (lb/hr) = NO_x (ppm actual) x Volume flow (acfm) x 46 (mole. wgt NO_x) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr				
Basis, ppm actual	50.4	49.8	49.4	49.0
CT/DB, ppmvd @15% O_2	42	42	42	42
Moisture (%)	8.19	8.67	9.32	10.79
Oxygen (%)	12.11	12.09	12.01	11.76
Oxygen (%) dry	13.19	13.24	13.24	13.19
Turbine Flow (acfm)	2,617,238	2,537,658	2,484,229	2,413,711
Turbine Flow (acfm), dry	2,402,815	2,317,703	2,252,597	2,153,362
Turbine Exhaust Temperature (°F)	1,034	1,054	1,069	1,091
CT Emission rate (lb/hr)	333.0	314.9	303.1	287.6
HRSG Stack emission rate, ppmvd @ 15% O_2	8.0	8.0	8.0	8.0
HRSG Stack emission rate (lb/hr)	63.4	60.0	57.7	54.8
Carbon Monoxide				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]				
CO (ppmv wet or actual) = CO (ppmvd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
CO (lb/hr) = CO (ppm actual) x Volume flow (acfm) x 28 (mole. wgt CO) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr				
Basis, ppm actual	42.0	41.5	41.2	40.8
Basis, ppmvd @ 15% O_2	35	35	35	35
Moisture (%)	8.19	8.67	9.32	10.79
Oxygen (%)	12.11	12.09	12.01	11.76
Oxygen (%) dry	13.19	13.24	13.24	13.19
Turbine Flow (acfm)	2,617,238	2,537,658	2,484,229	2,413,711
Turbine Flow (acfm), dry	2,402,815	2,317,703	2,252,597	2,153,362
Turbine Exhaust Temperature (°F)	1,034	1,054	1,069	1,091
CT Emission rate (lb/hr)	168.9	159.7	153.7	145.9
HRSG Stack emission rate, ppmvd @ 15% O_2	35.0	35.0	35.0	35.0
HRSG Stack emission rate (lb/hr)	168.9	159.7	153.7	145.9
Volatile Organic Compounds				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]				
VOC (ppmv wet or actual) = VOC (ppmvd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
VOC (lb/hr) = VOC (ppm actual) x Volume flow (acfm) x 16 (mole. wgt CH_4) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr				
Basis, ppm actual	12.0	11.9	11.8	11.7
Basis, ppmvd @ 15% O_2	10.0	10.0	10.0	10.0
Moisture (%)	8.19	8.67	9.32	10.79
Oxygen (%)	12.11	12.09	12.01	11.76
Oxygen (%-dry)	13.19	13.24	13.24	13.19
Turbine Flow (acfm)	2,617,238	2,537,658	2,484,229	2,413,711
Turbine Flow (acfm), dry	2,402,815	2,317,703	2,252,597	2,153,362
Turbine Exhaust Temperature (°F)	1,034	1,054	1,069	1,091
CT Emission rate (lb/hr)	27.6	26.1	25.1	23.8
HRSG Stack emission rate, ppmvd @ 15% O_2	10.0	10.0	10.0	10.0
HRSG Stack emission rate (lb/hr)	27.6	26.1	25.1	23.8
Sulfuric Acid Mist				
Sulfuric Acid Mist (lb/hr)= SO_2 emission (lb/hr) x Conversion to H_2SO_4 (% by weight)/100				
CT SO_2 emission rate (lb/hr)	3.2	3.1	2.9	2.8
CT Conversion to H_2SO_4 (% by weight)	10	10	10	10
DB SO_2 emission rate (lb/hr)	0	0	0	0
DB Conversion to H_2SO_4 (%)	20	20	20	20
SCR SO_2 emission rate (lb/hr) - calculated (remaining SO_2 after conversion	2.9	2.8	2.7	2.5
SCR Conversion to H_2SO_4 (% by weight)	3	3	3	3
HRSG Stack emission rate (lb/hr)	0.63	0.60	0.57	0.55
Lead				
Lead (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Emission Rate Basis (lb/10^{12} Btu)	14	14	14	14
HRSG Stack emission rate (lb/hr)	0.0295	0.0279	0.0268	0.0256

Note: Universal gas constant = 1,545.4 ft-lb(force)/°R; atmospheric pressure = 2,112.5 lb(force)/ft² (@14.67 psia).
Source: MPS, 2011; CT Performance Data; Golder, 2011.

TABLE A-11-501J
DESIGN INFORMATION AND STACK PARAMETERS
FOR THE PEEC PROJECT
MPS 501J CT, DRY LOW NO_x COMBUSTOR, DISTILLATE OIL, 50% LOAD

Parameter	Turbine Inlet Temperature 35 °F	59 °F	75 °F	95 °F
Combustion Turbine Performance				
Heat Input (MMBtu/hr, LHV)	1,723.0	1,634.1	1,576.3	1,507.2
(MMBtu/hr, HHV)	1,826.4	1,732.1	1,670.9	1,597.6
Relative Humidity (%)	60	60	60	60
Fuel heating value (Btu/lb, LHV)	18,387	18,387	18,387	18,387
(Btu/lb, HHV)	19,490	19,490	19,490	19,490
(HHV/LHV)	1.060	1.060	1.060	1.060
CT/DB Exhaust Flow				
Volume flow (acfm) = [Mass flow (lb/hr) x 1545.4 x Temp (°F + 460 K)] / [2112.5 x 60 min/hr x MW]				
Mass Flow (lb/hr)	3,514,800	3,369,200	3,264,800	3,124,000
Temperature (°F)	1,099	1,118	1,133	1,153
Moisture (% Vol.)	8.32	8.79	9.43	10.90
Oxygen (% Vol.)	11.97	11.97	11.88	11.64
Molecular Weight	28.66	28.60	28.52	28.41
Volume flow (acfm)	2,331,114	2,266,526	2,223,391	2,162,555
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)	1,723	1,634	1,576	1,507
Heat content (Btu/lb, LHV)	18,387	18,387	18,387	18,387
Fuel usage (lb/hr)	93,708	88,873	85,729	81,971
HRSG Stack				
HRSG - Stack Height (feet)	149	149	149	149
Diameter (feet)	22	22	22	22
HRSG Stack Flow Conditions				
Velocity (ft/sec) = Volume flow (acfm) / [((diameter)^2 /4) x 3.14159] / 60 sec/min				
Mass flow (lb/hr)	3,514,800	3,369,200	3,264,800	3,124,000
HRSG Stack Temperature (°F)	359	357	355	354
Molecular weight	28.66	28.60	28.52	28.41
Volume flow (acfm)	1,224,620	1,173,480	1,137,516	1,091,333
Diameter (feet)	22	22	22	22
Velocity (ft/sec)	53.7	51.5	49.9	47.8

Note: Universal gas constant = 1,545.4 ft-lb(force)/°R; atmospheric pressure = 2,112.5 lb(force)/ft^2 (@14.67 psia).
Source: MPS, 2011; CT Performance Data; Golder, 2011.

TABLE A-12 501J
MAXIMUM EMISSIONS FOR CRITERIA POLLUTANTS FOR THE PEEC PROJECT
MPS 501J CT, DRY LOW NO_x COMBUSTOR, DISTILLATE OIL, 50% LOAD

Parameter	Turbine Inlet Temperature 35 °F	59 °F	75 °F	95 °F
Particulate (including $PM_{2.5}$) from CT and SCR				
Total PM_{10} = PM_{10} (front half) + PM_{10} [$(NH_4)_2SO_4$] in HRSG only (back-half)				
a. PM_{10} (front half) (lb/hr)				
Particulate from CT (lbhr)= Emission (mg/m³ N) x Flow rate (acfm) x 60 min/hr x (1 m³ /(3.283 ft)³) x (273.15 K/ CT Temp (K)) x 2.2046 x 10^{-6} lb/mg)				
Emission (mg/m³ N)	5	5	5	5
Turbine Flow (acfm)	2,331,114	2,266,526	2,223,391	2,162,555
(m³/hr)	3,963,631	3,853,811	3,780,467	3,677,027
Temperature (°F)	1,099	1,118	1,133	1,153
(K)	866	876	885	896
Emission (lb/hr)	13.78	13.24	12.86	12.36
b. PM_{10} ($(NH_4)_2SO_4$) from HRSG only (back half) = Sulfur trioxide from conversion of SO_2 converts to ammonium sulfate (= PM_{10})				
Particulate from conversion of SO_2 = SO_2 emissions (lb/hr) x conversion of SO_2 to SO_3 in CT and in SCR x lb SO_3/lb SO_2 x conversion of SO_3 to $(NH_4)_2SO_4$ x lb $(NH_4)_2SO_4$/ lb SO_3				
SO_2 emission rate (lb/hr)	2.8	2.7	2.6	2.5
Conversion (%) from SO_2 to SO_3	10.0	10.0	10.0	10.0
Remaining SO_2 (lb/hr) in CT after conversion	2.5	2.4	2.3	2.2
Conversion (%) from SO_2 to SO_3 in SCR	3.0	3.0	3.0	3.0
MW SO_3/ SO_2 (80/64)	1.3	1.3	1.3	1.3
Conversion (%) from SO_3 to $(NH_4)_2(SO_4)$	100	100	100	100
MW $(NH_4)_2$ SO_4/ SO_3 (132/80)	1.7	1.7	1.7	1.7
HRSG Particulate as $(NH_4)_2(SO_4)$ (lb/hr)	0.74	0.70	0.67	0.64
Total HRSG stack emission rate (lb/hr) [a + b]	14.5	13.9	13.5	13.0
(lb/mmBtu, HHV)	NA	NA	NA	NA
Sulfur Dioxide				
SO_2 (lb/hr)= Fuel oil (lb/hr) x sulfur content(% weight) x (lb SO_2 /lb S) /100				
Fuel oil Sulfur Content	0.0015%	0.0015%	0.0015%	0.0015%
Fuel oil use (lb/hr)	93,708	88,873	85,729	81,971
lb SO_2 / lb S (64/32)	2	2	2	2
HRSG Stack emission rate (lb/hr)	2.8	2.7	2.6	2.5
Nitrogen Oxides				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]				
NO_x (ppm actual) = NO_x (ppmd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
NO_x (lb/hr) = NO_x (ppm actual) x Volume flow (acfm) x 46 (mole. wgt NO_x) x 2112.5 lb/ft² (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr				
Basis, ppm actual	51.2	50.5	50.2	49.7
CT/DB, ppmvd @15% O_2	42	42	42	42
Moisture (%)	8.32	8.79	9.43	10.90
Oxygen (%)	11.97	11.97	11.88	11.64
Oxygen (%) dry	13.06	13.12	13.12	13.06
Turbine Flow (acfm)	2,331,114	2,266,526	2,223,391	2,162,555
Turbine Flow (acfm), dry	2,137,166	2,067,193	2,013,615	1,926,909
Turbine Exhaust Temperature (°F)	1,099	1,118	1,133	1,153
CT Emission rate (lb/hr) - calculated	288.6	273.7	264.2	251.4
HRSG Stack emission rate, ppmvd @ 15% O_2	8.0	8.0	8.0	8.0
HRSG Stack emission rate (lb/hr)	55.0	52.1	50.3	47.9
Carbon Monoxide				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]				
CO (ppmv wet or actual) = CO (ppmvd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
CO (lb/hr) = CO (ppm actual) x Volume flow (acfm) x 28 (mole. wgt CO) x 2112.5 lb/ft² (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr				
Basis, ppm actual	42.6	42.1	41.8	41.4
Basis, ppmvd @ 15% O_2	35	35	35	35
Moisture (%)	8.32	8.79	9.43	10.90
Oxygen (%)	11.97	11.97	11.88	11.64
Oxygen (%) dry	13.06	13.12	13.12	13.06
Turbine Flow (acfm)	2,331,114	2,266,526	2,223,391	2,162,555
Turbine Flow (acfm), dry	2,137,166	2,067,193	2,013,615	1,926,909
Turbine Exhaust Temperature (°F)	1,099	1,118	1,133	1,153
CT Emission rate (lb/hr)	146.4	138.8	134.0	127.5
HRSG Stack emission rate, ppmvd @ 15% O_2	35.0	35.0	35.0	35.0
HRSG Stack emission rate (lb/hr)	146.4	138.8	134.0	127.5
Volatile Organic Compounds				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]				
VOC (ppmv wet or actual) = VOC (ppmvd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
VOC (lb/hr) = VOC (ppm actual) x Volume flow (acfm) x 16 (mole. wgt CH_4) x 2112.5 lb/ft² (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr				
Basis, ppm actual	12.2	12.0	11.9	11.8
Basis, ppmvd @ 15% O_2	10.0	10.0	10.0	10.0
Moisture (%)	8.32	8.79	9.43	10.90
Oxygen (%)	11.97	11.97	11.88	11.64
Oxygen (%-dry)	13.06	13.12	13.12	13.06
Turbine Flow (acfm)	2,331,114	2,266,526	2,223,391	2,162,555
Turbine Flow (acfm), dry	2,137,166	2,067,193	2,013,615	1,926,909
Turbine Exhaust Temperature (°F)	1,099	1,118	1,133	1,153
CT Emission rate (lb/hr)	23.9	22.7	21.9	20.8
HRSG Stack emission rate, ppmvd @ 15% O_2	10.0	10.0	10.0	10.0
HRSG Stack emission rate (lb/hr)	23.9	22.7	21.9	20.8
Sulfuric Acid Mist				
Sulfuric Acid Mist (lb/hr)= SO_2 emission (lb/hr) x Conversion to H_2SO_4 (% by weight)/100				
CT SO_2 emission rate (lb/hr)	2.8	2.7	2.6	2.5
CT Conversion to H_2SO_4 (% by weight)	10	10	10	10
DB SO_2 emission rate (lb/hr)	0	0	0	0
DB Conversion to H_2SO_4 (%)	20	20	20	20
SCR SO_2 emission rate (lb/hr) - calculated (remaining SO_2 after conversion)	2.5	2.4	2.3	2.2
SCR Conversion to H_2SO_4 (% by weight)	3	3	3	3
HRSG Stack emission rate (lb/hr)	0.55	0.52	0.50	0.48
Lead				
Lead (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Emission Rate Basis (lb/10^{12} Btu)	14	14	14	14
HRSG Stack emission rate (lb/hr)- calculated	0.0256	0.0243	0.0234	0.0224

Note: Universal gas constant = 1,545.4 ft-lb(force)/°R; atmospheric pressure = 2,112.5 lb(force)/ft² (@14.67 psia).
Source: MPS, 2011; CT Performance Data; Golder, 2011.

TABLE A-13-501J
REGULATED AND HAZARDOUS AIR POLLUTANT EMISSION FACTORS AND EMISSIONS FOR THE PEEC PROJECT WHEN FIRING NATURAL GAS, MPS 501J CT

Parameter	Emission Rate (lb/hr) firing Natural Gas - Base Load [a]	Maximum Annual Emission (TPY) [b]	
Ambient Temperature (°F):	75 °F	1	3
HIR (MMBtu/hr):	2,819	CT/HRSG	CTs/HRSGs
Sulfuric acid mist	2.10	9.2	27.6
HAPs [Section 112(b) of Clean Air Act]			
1,3-Butadiene	0.001212	0.005	0.016
Acetaldehyde	0.1127	0.49	1.48
Acrolein	0.0180	0.08	0.24
Benzene	0.0338	0.15	0.44
Ethylbenzene	0.0902	0.40	1.19
Formaldehyde	0.610	2.67	8.02
Naphthalene	0.00366	0.02	0.05
Polycyclic Aromatic Hydrocarbons (PAH) [c]	0.00620	0.03	0.08
Propylene Oxide	0.0817	0.36	1.07
Toluene	0.0930	0.41	1.22
Xylene	0.180	0.79	2.37
Antimony	0.0	0.0	0.0
Arsenic	0.0	0.0	0.0
Beryllium	0.0	0.0	0.0
Cadmium	0.0	0.0	0.0
Chromium	0.0	0.0	0.0
Lead	0.0	0.0	0.0
Manganese	0.0	0.0	0.0
Mercury	0.0000028	0.0	0.000037
Nickel	0.0	0.0	0.0
Selenium	0.0	0.0	0.0
HAPs (Total)	1.231	5.39	16.2

[a] Emissions based on the following emission factors and conversion factors for firing natural gas:

Emission Factors		Value	Reference
Sulfuric acid mist		10	%; Conversion of SO_2 to SO_3 in gas turbine
1,3-Butadiene	(a)	0.43	lb/10^{12} Btu; AP-42,Table 3.1-3. EPA 2000
Acetaldehyde		40	lb/10^{12} Btu; AP-42,Table 3.1-3. EPA 2000
Acrolein		6.4	lb/10^{12} Btu; AP-42,Table 3.1-3. EPA 2000
Benzene		12	lb/10^{12} Btu; AP-42,Table 3.1-3. EPA 2000
Ethylbenzene		32	lb/10^{12} Btu; AP-42,Table 3.1-3. EPA 2000
Formaldehyde		0.091	ppmvd @15% O_2 (see Table 9a)
Naphthalene		1.3	lb/10^{12} Btu; AP-42,Table 3.1-3. EPA 2000
Polycyclic Aromatic Hydrocarbons (PAH)		2.2	lb/10^{12} Btu; AP-42,Table 3.1-3. EPA 2000
Propylene Oxide	(a)	29	lb/10^{12} Btu; AP-42,Table 3.1-3. EPA 2000
Toluene		33	lb/10^{12} Btu; AP-42,Table 3.1-3. EPA 2000. Database
Xylene		64	lb/10^{12} Btu; AP-42,Table 3.1-3. EPA 2000
Antimony		0.00E+00	
Arsenic		0.00E+00	
Beryllium		0.00E+00	
Cadmium		0.00E+00	
Chromium		0.00E+00	
Lead		0.00E+00	
Manganese		0.00E+00	
Mercury		1.00E-03	
Nickel		0.00E+00	
Selenium		0.00E+00	

(a) Based on 1/2 the detection limit; expected emissions are lower.

[b] Annual emissions based on firing natural gas for : 8760 hours.

[c] Assumed to be representative of Polycyclic Organic Matter (POM) emissions, a regulated HAP.

TABLE A-13a-501J
MAXIMUM FORMALDEHYDE EMISSIONS
FOR THE PEEC PROJECT
WHEN FIRING NATURAL GAS, MPS 501J CT

Parameter	CT Only at Baseload Turbine Inlet Temperature 35 °F	59 °F	75 °F	95 °F
Formaldehyde (CH_2O) MW = 30				
CH_2O (lb/hr) = CH_2O (ppm actual) x Volume flow (acfm) x 46 (mole. wgt NO_x) x 2116.8 lb/ft^2 (pressure) / [1545.7 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr				
CH_2O (ppm actual) = CH_2O (ppmd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x (1- Moisture(%)/100)				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisure (%)]				
Basis, ppm actual- calculated	0.121	0.121	0.121	0.119
CT, ppmvd @15% O_2	0.091	0.091	0.091	0.091
Moisture (%)	9.086353529	9.828102225	9.82	12.11211849
Oxygen (%)	11.14	11.03	11.02	10.65
Oxygen (%) dry	12.25	12.23	12.22	12.12
Exhaust Flow (acfm)	1,392,804	1,344,133	1,324,878	1,261,331
Exhaust Temperature (°F)	196	195	185	195
CT Emission rate (lb/hr)	0.634	0.609	0.610	0.564
CT Emission rate (lb/10^{12} Btu) (HHV)	208.9	209.0	209.5	208.2

Note: ppmvd= parts per million, volume dry; O_2= oxygen.
Source: MPS, 2011; CT Performance Data; Golder, 2011.

TABLE A-14-501J
REGULATED AND HAZARDOUS AIR POLLUTANT EMISSION FACTORS AND EMISSIONS FOR THE PEEC PROJECT
WHEN FIRING DISTILLATE FUEL OIL, MPS 501J CT

Parameter	Emission Rate (lb/hr) Distillate Fuel Oil [a] 1 CT/HRSG - Base Load	Emission Rate (lb/hr) Natural Gas [b] 1 CT/HRSG - Base Load	Maximum Annual Emissions (TPY) 3 CTs/HRSGs - Hours on Distillate Fuel Oil Only			Maximum Annual Emissions (TPY) 3 CTs/HRSGs Natural Gas and Fuel Oil - Hours on Distillate Fuel Oil		
Ambient Temperature (°F):	75 °F	75 °F						
HIR (MMBtu/hr):	2,334	2,819	500	1,000	1,500	500	1,000	1,500
Sulfuric acid mist	0.70	2.10	0.52	1.05	1.57	26.5	25.5	24.4
HAPs [Section 112(b) of Clean Air Act]								
1,3-Butadiene	0.0373	0.0012	0.028	0.056	0.084	0.04	0.07	0.10
Acetaldehyde	0.00	0.113	0.00	0.00	0.00	1.40	1.31	1.23
Acrolein	0.00	0.018	0.00	0.00	0.00	0.22	0.21	0.20
Benzene	0.128	0.034	0.10	0.19	0.29	0.52	0.59	0.66
Ethylbenzene	0.00	0.090	0.00	0.00	0.00	1.12	1.05	0.98
Formaldehyde	0.544	0.610	0.41	0.82	1.22	7.97	7.92	7.87
Naphthalene	0.0817	0.004	0.06	0.12	0.18	0.11	0.17	0.22
Polycyclic Aromatic Hydrocarbons (PAH) c	0.0933	0.006	0.07	0.14	0.21	0.15	0.21	0.28
Propylene Oxide	0.00	0.082	0.00	0.00	0.00	1.01	0.95	0.89
Toluene	0.00	0.093	0.00	0.00	0.00	1.15	1.08	1.01
Xylene	0.00	0.180	0.00	0.00	0.00	2.24	2.10	1.96
Antimony	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arsenic	0.0257	0.00	0.019	0.039	0.058	0.02	0.04	0.06
Beryllium	0.000723	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cadmium	0.01120	0.00	0.008	0.017	0.025	0.01	0.02	0.03
Chromium	0.0257	0.00	0.019	0.039	0.058	0.02	0.04	0.06
Lead	0.0327	0.00	0.025	0.049	0.074	0.02	0.05	0.07
Manganese	1.84	0.00	1.38	2.77	4.15	1.38	2.77	4.15
Mercury	0.00280	0.00	0.002	0.00420	0.006	0.00	0.00423	0.01
Nickel	0.01073	0.00	0.008	0.016	0.024	0.01	0.02	0.02
Selenium	0.0583	0.00	0.04	0.09	0.13	0.04	0.09	0.13
HAPs (Total)	2.90	1.2	2.17	4.34	6.52	17.4	18.7	19.9

[a] Emissions based on the following emission factors and conversion factors for firing distillate fuel oil:

Emission Factors		Value	Reference
Sulfuric acid mist		5	%; Conversion of SO_2 to SO_3 in gas turbine
1,3-Butadiene	(a)	16	lb/10^{12} Btu; AP-42,Table 3.1-4. EPA 2000
Acetaldehyde		0.0	
Acrolein		0.0	
Benzene		55	lb/10^{12} Btu; AP-42,Table 3.1-4. EPA 2000
Ethylbenzene		0.0	
Formaldehyde		0.091	ppmvd @15% O2 (see Table 10a)
Naphthalene		35	lb/10^{12} Btu; AP-42,Table 3.1-4. EPA 2000
Polycyclic Aromatic Hydrocarbons (PAH)		40	lb/10^{12} Btu; AP-42,Table 3.1-4. EPA 2000
Propylene Oxide		0.0	
Toluene		0.0	
Xylene		0.0	
Antimony		0.0	
Arsenic	(a)	11	lb/10^{12} Btu; AP-42,Table 3.1-5. EPA 2000
Beryllium	(a)	0.31	lb/10^{12} Btu; AP-42,Table 3.1-5. EPA 2000
Cadmium		4.8	lb/10^{12} Btu; AP-42,Table 3.1-5. EPA 2000
Chromium		11	lb/10^{12} Btu; AP-42,Table 3.1-5. EPA 2000
Lead		14	lb/10^{12} Btu; AP-42,Table 3.1-5. EPA 2000
Manganese		790	lb/10^{12} Btu; AP-42,Table 3.1-5. EPA 2000
Mercury		1.2	lb/10^{12} Btu; AP-42,Table 3.1-5. EPA 2000
Nickel	(a)	4.6	lb/10^{12} Btu; AP-42,Table 3.1-5. EPA 2000
Selenium	(a)	25	lb/10^{12} Btu; AP-42,Table 3.1-5. EPA 2000

(a) Based on 1/2 the detection limit; expected emissions are lower.

[b] Natural gas firing emission rates based on Table A-13.

[c] Assumed to be representative of Polycyclic Organic Matter (POM) emissions, a regulated HAP

TABLE A-14a-501G
MAXIMUM FORMALDEHYDE EMISSIONS
FOR THE PEEC PROJECT
MPS 501J CT, DRY LOW NO_x COMBUSTOR, DISTILLATE OIL, BASE LOAD

Parameter	CT Only Turbine Inlet Temperature 35 °F	59 °F	75 °F	95 °F
Formaldehyde (CH_2O) MW = 30				
CH_2O (lb/hr) = CH_2O (ppm actual) x Volume flow (acfm) x 46 (mole. wgt NO_x) x 2116.8 lb/ft^2 (pressure) / [1545.7 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr				
CH_2O (ppm actual) = CH_2O (ppmd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisure (%)]				
Basis, ppmvw - calculated	0.110	0.108	0.107	0.106
CT, ppmvd @15% O_2	0.091	0.091	0.091	0.091
Moisture (%)	8.22	8.70	9.324120751	10.77047881
Oxygen (%)	12.06	12.08	12.00	11.79
Oxygen (%) dry	13.15	13.23	13.23	13.21
Exhaust Flow (acfm)	1,759,511	1,671,474	1,616,522	1,549,909
Exhaust Temperature (°F)	359	357	355	354
CT Emission rate (lb/hr)	0.580	0.544	0.523	0.496
CT Emission rate (lb/10^{12} Btu) (HHV)	224.6	223.9	224.3	223.0

Note: ppmvd = parts per million, volume dry; O_2 = oxygen.

Source: MPS, 2011; CT Performance Data; Golder, 2011.

TABLE A-15
HAZARDOUS AIR POLLUTANT EMISSIONS
FOR ADDITIONAL PEEC EMISSION UNITS- OIL-FIRING

			Annual Emission Basis	
Parameter	**Units**	**Value**	**Fire Pump Engine**	**Emergency Generators**
Number			1	2
Heat Input Rate	MMBtu/hr	per unit	2.32	21.0
Maximum operation/yr	hours	per unit	100	100
Heat Input Rate/annual	MMBtu/yr	all units	232.0	4,202.0
HAPs [Section 112(b) of Clean Air Act]	Emission Factor [a, b]		Emissions (TPY)	
Acrolein	lb/MMBtu	7.88E-06	9.14E-07	1.66E-05
Acetaldehyde	lb/MMBtu	2.52E-05	2.92E-06	5.29E-05
Benzene	lb/MMBtu	7.76E-04	9.00E-05	1.63E-03
Formaldehyde	lb/MMBtu	7.89E-05	9.15E-06	1.66E-04
Naphthalene	lb/MMBtu	1.30E-04	1.51E-05	2.73E-04
Toluene	lb/MMBtu	2.81E-04	3.26E-05	5.90E-04
Xylene	lb/MMBtu	1.93E-04	2.24E-05	4.05E-04
Acenaphthene	lb/MMBtu	4.68E-06	5.43E-07	9.83E-06
Acenaphthylene	lb/MMBtu	9.23E-06	1.07E-06	1.94E-05
Anthracene	lb/MMBtu	1.23E-06	1.43E-07	2.58E-06
Benzo(a)anthracene	lb/MMBtu	6.22E-07	7.22E-08	1.31E-06
Benzo(b)fluoranthene	lb/MMBtu	1.11E-06	1.29E-07	2.33E-06
Benzo(k)fluoranthene	lb/MMBtu	2.18E-07	2.53E-08	4.58E-07
Benzo(g,h,i)perylene	lb/MMBtu	5.56E-07	6.45E-08	1.17E-06
Benzo(a)pyrene	lb/MMBtu	2.57E-07	2.98E-08	5.40E-07
Chrysene	lb/MMBtu	1.53E-06	1.77E-07	3.21E-06
Dibenzo(a,h)anthracene	lb/MMBtu	3.46E-07	4.01E-08	7.27E-07
Fluoanthene	lb/MMBtu	4.03E-06	4.67E-07	8.47E-06
Fluorene	lb/MMBtu	4.47E-06	5.19E-07	9.39E-06
Indo(1,2,3-cd)pyrene	lb/MMBtu	4.14E-07	4.80E-08	8.70E-07
Phenanthrene	lb/MMBtu	1.05E-06	1.22E-07	2.21E-06
Pyrene	lb/MMBtu	3.71E-06	4.30E-07	7.79E-06
Arsenic	$lb/10^{12}$ Btu	4.0	4.64E-07	8.40E-06
Beryllium	$lb/10^{12}$ Btu	3.0	3.48E-07	6.30E-06
Cadmium	$lb/10^{12}$ Btu	3.0	3.48E-07	6.30E-06
Chromium	$lb/10^{12}$ Btu	3.0	3.48E-07	6.30E-06
Lead	$lb/10^{12}$ Btu	9.0	1.04E-06	1.89E-05
Mercury	$lb/10^{12}$ Btu	3.0	3.48E-07	6.30E-06
Manganese	$lb/10^{12}$ Btu	6.0	6.96E-07	1.26E-05
Nickel	$lb/10^{12}$ Btu	3.0	3.48E-07	6.30E-06
Selenium	$lb/10^{12}$ Btu	15.0	1.74E-06	3.15E-05
HAPs (Total)			1.83E-04	3.31E-03

[a] EPA AP-42, Section 3.4, Large Stationary Diesel And All Stationary Dual-fuel Engines (October 1996)

[b] EPA AP-42, Section 1.3, Fuel Oil Combustion for metals (September 1998).

TABLE A-16
HAZARDOUS AIR POLLUTANT EMISSIONS
FOR ADDITIONAL PEEC EMISSION UNITS- NATURAL GAS-FIRING

Parameter/Pollutant	Fuel Heater Units	Fuel Heater Value	Fuel Heater Annual Emission Basis	Auxiliary Boiler Units	Auxiliary Boiler Value	Auxiliary Boiler Annual Emission Basis	Compressor Station Units	Compressor Station Value	Compressor Station Annual Emission Basis
Number			1			1			2
Heat Input Rate	MMBtu/hr	per unit	9.90	MMBtu/hr	per unit	99.77	MMBtu/hr	per unit	53.98
Fuel use	scf/hr	per unit	9,706	scf/hr	per unit	97,814	scf/hr	per unit	NA
Maximum operation/yr	hours	per unit	8,760	hours	per unit	2,000	hours	per unit	8,760
Heat Input Rate/annual	MMBtu/yr	all units	NA	MMBtu/yr	all units	NA	MMBtu/yr	all units	945,760
Fuel use/annual	MMscf/yr	all units	85.02	MMscf/yr	all units	195.63	MMscf/yr	all units	NA
HAPs [Section 112(b) of Clean Air Act]	Emission Factor[a]		Emissions (TPY)	Emission Factor[a]		Emissions (TPY)	Emission Factor[b]		Emissions (TPY)
Benzene	lb/10^6 scf	2.10E-03	8.93E-05	lb/10^6 scf	2.10E-03	2.05E-04	lb/10^{12} Btu	1.20E+01	5.67E-03
Formaldehyde	lb/10^6 scf	7.50E-02	3.19E-03	lb/10^6 scf	7.50E-02	7.34E-03	lb/10^{12} Btu	7.10E+02	3.36E-01
Naphthalene	lb/10^6 scf	6.10E-04	2.59E-05	lb/10^6 scf	6.10E-04	5.97E-05	lb/10^{12} Btu	1.30E+00	6.15E-04
Toluene	lb/10^6 scf	3.40E-03	1.45E-04	lb/10^6 scf	3.40E-03	3.33E-04	lb/10^{12} Btu	3.30E+01	1.56E-02
Dichlorobenzene	lb/10^6 scf	1.20E-03	5.10E-05	lb/10^6 scf	1.20E-03	1.17E-04	--	NA	NA
Acenaphthene	lb/10^6 scf	1.80E-06	7.65E-08	lb/10^6 scf	1.80E-06	1.76E-07	--	NA	NA
Acenaphthylene	lb/10^6 scf	1.80E-06	7.65E-08	lb/10^6 scf	1.80E-06	1.76E-07	--	NA	NA
Acetaldehyde	--	NA	NA	--	NA	NA	lb/10^{12} Btu	4.00E+01	1.89E-02
Acrolein	--	NA	NA	--	NA	NA	lb/10^{12} Btu	6.40E+00	3.03E-03
Anthracene	lb/10^6 scf	2.40E-06	1.02E-07	lb/10^6 scf	2.40E-06	2.35E-07	--	NA	NA
Benzo(a)anthracene	lb/10^6 scf	1.80E-06	7.65E-08	lb/10^6 scf	1.80E-06	1.76E-07	--	NA	NA
Benzene	lb/10^6 scf	2.10E-03	8.93E-05	lb/10^6 scf	2.10E-03	2.05E-04	lb/10^{12} Btu	1.20E+01	5.67E-03
Benzo(g,h,i)perylene	lb/10^6 scf	1.20E-06	5.10E-08	lb/10^6 scf	1.20E-06	1.17E-07	--	NA	NA
Chrysene	lb/10^6 scf	1.80E-06	7.65E-08	lb/10^6 scf	1.80E-06	1.76E-07	--	NA	NA
Dibenzo(a,h)anthracene	lb/10^6 scf	1.20E-06	5.10E-08	lb/10^6 scf	1.20E-06	1.17E-07	--	NA	NA
Ethylbenzene	--	NA	NA	--	NA	NA	lb/10^{12} Btu	3.20E+01	1.51E-02
Fluoanthene	lb/10^6 scf	3.00E-06	1.28E-07	lb/10^6 scf	3.00E-06	2.93E-07	--	NA	NA
Fluorene	lb/10^6 scf	2.80E-06	1.19E-07	lb/10^6 scf	2.80E-06	2.74E-07	--	NA	NA
Indeno(1,2,3-cd)pyrene	lb/10^6 scf	1.80E-06	7.65E-08	lb/10^6 scf	1.80E-06	1.76E-07	--	NA	NA
Phenanthrene	lb/10^6 scf	1.70E-05	7.23E-07	lb/10^6 scf	1.70E-05	1.66E-06	--	NA	NA
Phenol	--	NA	NA	--	NA	NA	--	NA	NA
Pyrene	lb/10^6 scf	5.00E-06	2.13E-07	lb/10^6 scf	5.00E-06	4.89E-07	--	NA	NA
Xylene	--	NA	NA	--	NA	NA	lb/10^{12} Btu	6.40E+01	3.03E-02
1,3-Butadiene	--	NA	NA	--	NA	NA	lb/10^{12} Btu	4.30E-01	2.03E-04
Polycyclic Aromatic Hydrocarbons (PAH)	--	NA	NA	--	NA	NA	lb/10^{12} Btu	2.20E+00	1.04E-03
Propylene Oxide	--	NA	NA	--	NA	NA	lb/10^{12} Btu	2.90E+01	1.37E-02
Arsenic	lb/10^6 scf	2.00E-04	8.50E-06	lb/10^6 scf	2.00E-04	1.96E-05	--	NA	NA
Beryllium	lb/10^6 scf	1.20E-05	5.10E-07	lb/10^6 scf	1.20E-05	1.17E-06	--	NA	NA
Cadmium	lb/10^6 scf	1.10E-03	4.68E-05	lb/10^6 scf	1.10E-03	1.08E-04	--	NA	NA
Chromium	lb/10^6 scf	1.40E-03	5.95E-05	lb/10^6 scf	1.40E-03	1.37E-04	--	NA	NA
Cobalt	lb/10^6 scf	8.40E-05	3.57E-06	lb/10^6 scf	8.40E-05	8.22E-06	--	NA	NA
Mercury	lb/10^6 scf	2.60E-04	1.11E-05	lb/10^6 scf	2.60E-04	2.54E-05	--	NA	NA
Manganese	lb/10^6 scf	3.80E-04	1.62E-05	lb/10^6 scf	3.80E-04	3.72E-05	--	NA	NA
Nickel	lb/10^6 scf	2.10E-03	8.93E-05	lb/10^6 scf	2.10E-03	2.05E-04	--	NA	NA
Selenium	lb/10^6 scf	2.40E-05	1.02E-06	lb/10^6 scf	2.40E-05	2.35E-06	--	NA	NA
HAPs (Total)			3.83E-03			8.80E-03			0.45

[a] EPA AP-42, Section 1.4, Natural Gas Combustion (March 1998).

[b] EPA AP-42, Section 3.2, Stationary Gas Turbines (April 2000).

TABLE A-17
GREENHOUSE GAS (GHG) EMISSIONS
MPS 501J CT, DRY LOW NO_x COMBUSTOR, BASE LOAD

	Maximum Heat Input at 75 ^{0}F (MMBtu/hr)		Emission Factor [a] (lb/MMBtu)		Hourly GHG Emissions (lb/hr)		Operating Hours		Annual GHG Emissions (TPY)		CO_2e Emission Rate [b] (TPY)		
Pollutant	Natural Gas	Distillate Fuel Oil	Natural Gas	Distillate Fuel Oil	Natural Gas	Distillate Fuel Oil	Natural Gas	Distillate Fuel Oil	Natural Gas	Distillate Fuel Oil	Natural Gas	Distillate Fuel Oil	Total
Natural Gas Only													
CO_2	2,818.7	0.0	116.9	163.0	329,386.2	0.0	8760	0	1,442,711.6	0	1,442,711.6	0	1,442,711.6
CH_4	2,818.7	0.0	0.002204	0.006612	6.2	0.0	8760	0	27.2	0	571.4	0	571.4
N_2O	2,818.7	0.0	0.0002204	0.001322	0.6	0.0	8760	0	2.7	0	843.5	0	843.5
										Total	1,444,126.5	0.0	1,444,126.5
Natural Gas & Distillate Fuel Oil													
CO_2	2,818.7	2,333.6	116.9	163.0	329,386.2	380,393.5	7760	1000	1,278,018.5	190,196.7	1,278,018.5	190,196.7	1,468,215.2
CH_4	2,818.7	2,333.6	0.002204	0.006612	6.2125	15.4297	7760	1000	24.1	7.7	506.19	162.01	668.2
N_2O	2,818.7	2,333.6	0.0002204	0.001322	0.6212	3.0859	7760	1000	2.4	1.5	747.24	478	1225.6
										Total	1,279,271.9	190,837.1	1,470,109.0
										Maximum Total	1,444,126.5	190,837.1	1,470,109.0

[a] Table C-2, Subpart C, 40 CFR 98. Emission factors in kg/MMBtu

Pollutant	Natural Gas	Distillate Fuel Oil
CO_2	53.02	73.96
CH_4	0.001	0.003
N_2O	0.0001	0.0006

Conversion factor from kg/MMBtu to lb/MMBtu: 2.204

[b] CH_4 and N_2O are multiplied by CO_2e factor

Pollutant	CO_{2e} Factor
CH_4	21
N_2O	310

TABLE A-18
GREENHOUSE GAS (GHG) EMISSIONS FOR ADDITIONAL PEEC EMISSION UNITS

Emission Unit/ Pollutant	Maximum Heat Input (MMBtu/hr)	Emission Factor [a] (lb/MMBtu)	Hourly GHG Emissions (lb/hr)	Operating Hours	Annual GHG Emissions (TPY)	CO2e Emissions Rate [b] (TPY)
Auxilliary Boiler (Natural Gas)						
CO_2	99.77	116.9	11,658.7	2,000	11,658.7	11,658.7
CH_4	99.77	0.002204	0.220	2,000	0.220	4.618
N_2O	99.77	0.0002204	0.0220	2,000	0.022	6.817
						11,670.2
Emergency Generator (Fuel Oil)						
CO_2	21.01	163.0	3,424.8	200	342.5	342.5
CH_4	21.01	0.006612	0.139	200	0.014	0.29
N_2O	21.01	0.001322	0.028	200	0.0028	0.86
						343.6
Natural Gas Heater (Natural Gas)						
CO_2	9.90	116.9	1,156.9	8,760	5,067.1	5067.1
CH_4	9.90	0.002204	0.022	8,760	0.096	2.01
N_2O	9.90	0.0002204	0.0022	8,760	0.0096	2.96
						5,072.1
Fire Pump Engine (Fuel Oil)						
CO_2	2.32	163.0	378.2	80	15.1	15.1
CH_4	2.32	0.006612	0.0153	80	0.00061	0.01
N_2O	2.32	0.001322	0.0031	80	0.00012	0.04
						15.2
Gas Compressor (Natural Gas)						
CO_2	53.98	116.9	6,308.1	8,760	27,629.5	27,629.5
CH_4	53.98	0.002204	0.119	8,760	0.521	10.94
N_2O	53.98	0.0002204	0.012	8,760	0.0521	16.15
						27,656.6

[a] Table C-2, Subpart C, 40 CFR 98. Emission factors in kg/MMBtu

Pollutant	Natural Gas	Distillate Fuel Oil
CO_2	53.02	73.96
CH_4	0.001	0.003
N_2O	0.0001	0.0006

Conversion factor from kg/MMBtu to lb/MMBtu: 2.204

[b] CH_4 and N_2O are multiplied by CO_{2e} factor

Pollutant	CO_{2e} Factor
CH_4	21
N_2O	310

ATTACHMENT

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	165,000 BBL - No. 2 Fuel Oil; PEEC
City:	West Palm Beach
State:	Florida
Company:	FPL
Type of Tank:	Vertical Fixed Roof Tank
Description:	ULSD Oil

Tank Dimensions

Shell Height (ft):		36.40
Diameter (ft):		180.00
Liquid Height (ft) :		36.40
Avg. Liquid Height (ft):		36.40
Volume (gallons):		6,930,000.00
Turnovers:		8.37
Net Throughput(gal/yr):		58,000,000.00
Is Tank Heated (y/n):	N	

Paint Characteristics

Shell Color/Shade:	Gray/Light
Shell Condition	Good
Roof Color/Shade:	Gray/Light
Roof Condition:	Good

Roof Characteristics

Type:	Dome	
Height (ft)		0.00
Radius (ft) (Dome Roof)		90.00

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Miami, Florida (Avg Atmospheric Pressure = 14.75 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

165,000 BBL - No. 2 Fuel Oil; PEEC - Vertical Fixed Roof Tank
West Palm Beach, Florida

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Distillate fuel oil no. 2	All	83.70	75.41	92.00	78.13	0.0135	0.0106	0.0172	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

165,000 BBL - No. 2 Fuel Oil; PEEC - Vertical Fixed Roof Tank
West Palm Beach, Florida

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	2,420.29	9,225.59	11,645.88

APPENDIX B

TABLE B-1-SH
DESIGN INFORMATION AND STACK PARAMETERS FOR THE PEEC PROJECT
SIEMENS H CT, DRY LOW NO_x COMBUSTOR, NATURAL GAS, BASE LOAD

Parameter	CT Only Turbine Inlet Temperature 35 °F	59 °F	75 °F	95 °F
Combustion Turbine Performance				
Heat Input (MMBtu/hr, LHV)	2,503	2,389	2,291	2,193
(MMBtu/hr, HHV)	2,774	2,648	2,539	2,431
Evaporative Cooler	Off	On	On	On
Relative Humidity (%)	60	60	60	50
Fuel heating value (Btu/lb, LHV)	20,940	20,940	20,940	20,940
(Btu/lb, HHV)	23,208	23,208	23,208	23,208
(HHV/LHV)	1.108	1.108	1.108	1.108
Steam Flow (lb/hr)	NA	NA	NA	NA
CT/DB Exhaust Flow				
Volume flow (acfm) = [Mass flow (lb/hr) x 1545.4 x Temp (°F + 460 K)] / [2112.5 x 60 min/hr x MW]				
Mass Flow (lb/hr)	5,114,187	4,887,432	4,696,101	4,489,671
Temperature (°F)	1,136	1,149	1,161	1,176
Moisture (% Vol.)	13.08	14.25	15.38	17.11
Oxygen (% Vol.)	10.63	10.48	10.35	10.11
Molecular Weight	28.42	28.33	28.25	28.12
Volume flow (acfm)	3,501,695	3,384,750	3,285,451	3,184,751
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)	2,503	2,389	2,291	2,193
Heat content (Btu/lb, LHV)	20,940	20,940	20,940	20,940
Fuel usage (lb/hr)	119,532	114,088	109,408	104,728
Heat content (Btu/cf, LHV)	918	918	918	918
Fuel density (lb/ft^3)	0.0438	0.0438	0.0438	0.0438
Fuel usage (cf/hr)	2,726,580	2,602,397	2,495,643	2,388,889
			2.19E+10	
Fuel Usage - Duct Burner Only				
Fuel usage (lb/hr)- calculated	0	0	0	0
Fuel usage (cf/hr)- calculated	0	0	0	0
HRSG Stack				
HRSG - Stack Height (feet)	149	149	149	149
Diameter (feet)	22	22	22	22
HRSG Stack Flow Conditions				
Velocity (ft/sec) = Volume flow (acfm) / [((diameter)² /4) x 3.14159] / 60 sec/min				
Mass flow (lb/hr)	5,114,187	4,887,432	4,696,101	4,489,671
HRSG Stack Temperature (°F)	196	195	195	195
Molecular weight	28.42	28.33	28.25	28.12
Volume flow (acfm)	1,439,293	1,377,881	1,327,557	1,275,068
Diameter (feet)	22	22	22	22
Velocity (ft/sec)- calculated	63.1	60.4	58.2	55.9

Note: Universal gas constant = 1,545.4 ft-lb(force)/°R; atmospheric pressure = 2,112.5 lb(force)/ft² (@14.67 psia).
Source: Siemens, 2011; CT Performance Data; Golder, 2011.

TABLE B-2-SH
MAXIMUM EMISSIONS FOR CRITERIA POLLUTANTS FOR THE PEEC PROJECT
SIEMENS H CT, DRY LOW NO_x COMBUSTOR, NATURAL GAS, BASE LOAD

Parameter	CT Only Turbine Inlet Temperature 35 °F	59 °F	75 °F	95 °F	
Particulate (including $PM_{2.5}$) from CT and SCR					
Total PM_{10} = PM_{10} (front half) + PM_{10} [$(NH_4)_2SO_4$] in HRSG only (back-half)					
a. PM_{10} (front half) (lb/hr)					
CT	11	10	10	9	9
DB (lb/hr)	0.0	0.0	0.0	0.0	
Total CT/DB emission rate (lb/hr)	11.0	10.0	10.0	9.0	
b. PM_{10} [$(NH_4)_2SO_4$] from HRSG only (back half) = Sulfur trioxide from conversion of SO_2 converts to ammonium sulfate (= PM_{10}					
Particulate from conversion of SO_2 = SO_2 emissions (lb/hr) x conversion of SO_2 to SO_3 in CT and in SCR x lb SO_3/lb SO_2 conversion of SO_3 to $(NH_4)_2SO_4$ x lb $(NH_4)_2SO_4$/ lb SO_3					
CT SO_2 emission rate (lb/hr)	15.6	14.9	14.3	13.7	
Conversion (%) from SO_2 to SO_3 in CT	10.0	10.0	10.0	10.0	
DB SO_2 emission rate (lb/hr)	--	--	--	--	
Conversion (%) from SO_2 to SO_3 in DB	--	--	--	--	
Remaining SO_2 (lb/hr) after conversion	14.0	13.4	12.8	12.3	
Conversion (%) from SO_2 to SO_3 in SCR	3.0	3.0	3.0	3.0	
MW SO_3/ SO_2 (80/64)	1.3	1.3	1.3	1.3	
Conversion (%) from SO_3 to $(NH_4)_2(SO_4)$	100	100	100	100	
MW $(NH_4)_2SO_4$/ SO_3 (132/80)	1.7	1.7	1.7	1.7	
HRSG Particulate as $(NH_4)_2(SO_4)$ (lb/hr)	4.08	3.90	3.74	3.58	
Total HRSG stack emission rate (lb/hr) [a + b]	15.1	13.9	13.7	12.6	#
(lb/mmBtu, HHV)	NA	NA	NA	NA	
Sulfur Dioxide					
SO_2 (lb/hr)= Natural gas (scf/hr) x sulfur content(gr/100 scf) x 1 lb/7000 gr x (lb SO_2 /lb S) /100					
Fuel use (cf/hr)	2,726,580	2,602,397	2,495,643	2,388,889	
Sulfur content (grains/ 100 cf)	2	2	2	2	
lb SO_2 /lb S (64/32)	2	2	2	2	
HRSG stack emission rate (lb/hr)	15.6	14.9	14.3	13.7	
Nitrogen Oxides					
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]					
NO_x (ppmv actual) = NO_x (ppmd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]					
NO_x (lb/hr) = NO_x (ppm actual) x Volume flow (acfm) x 46 (mole. wgt NO_x) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr					
Basis, ppm actual	31.9	31.5	31.1	30.6	
CT/DB, ppmvd @15% O_2	25	25	25	25	
Moisture (%)	13.08	14.25	15.38	17.11	
Oxygen (%)	10.63	10.48	10.35	10.11	
Oxygen (%) dry	12.23	12.22	12.23	12.20	
Turbine Flow (acfm)	3,501,695	3,384,750	3,285,451	3,184,751	
Turbine Flow (acfm), dry	3,043,764	2,902,531	2,780,062	2,639,942	
Turbine Exhaust Temperature (°F)	1,136	1,149	1,161	1,176	
CT/DB emission rate (lb/hr)	264.3	250.2	237.8	224.4	
	265	253	243	233	
HRSG Stack emission rate, ppmvd @ 15% O_2	2.0	2.0	2.0	2.0	
HRSG stack emission rate (lb/hr) (maximum)	21.2	20.2	19.4	18.6	
Carbon Monoxide					
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]					
CO (ppmv wet or actual) = CO (ppmvd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]					
CO (lb/hr) = CO (ppm actual) x Volume flow (acfm) x 28 (mole. wgt CO) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr					
Basis, ppm actual	6.39	6.31	6.22	6.11	
Basis, ppmvd @ 15% O_2	5.00	5.00	5.00	5.00	
Moisture (%)	13.08	14.25	15.38	17.11	
Oxygen (%)	10.63	10.48	10.35	10.11	
Oxygen (%) dry	12.23	12.22	12.23	12.20	
Turbine Flow (acfm)	3,501,695	3,384,750	3,285,451	3,184,751	
Turbine Flow (acfm), dry	3,043,764	2,902,531	2,780,062	2,639,942	
Turbine Exhaust Temperature (°F)	1,136	1,149	1,161	1,176	
CT/DB emission rate (lb/hr)	32.2	30.5	28.9	27.3	
	32	31	30	28	
HRSG Stack emission rate, ppmvd @ 15% O_2	5.0	5.0	5.0	5.0	
HRSG Stack emission rate (lb/hr) (maximum)	32.2	31.0	30.0	28.0	
Volatile Organic Compounds					
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]					
VOC (ppmv wet or actual) = VOC (ppmvd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]					
VOC (lb/hr) = VOC (ppm actual) x Volume flow (acfm) x 16 (mole. wgt CH_4) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr					
Basis, ppm actual	1.28	1.26	1.24	1.22	
Basis, ppmvd @ 15% O_2	1.00	1.00	1.00	1.00	
Moisture (%)	13.08	14.25	15.38	17.11	
Oxygen (%) wet	10.63	10.48	10.35	10.11	
Oxygen (%) dry	12.23	12.22	12.23	12.20	
Turbine Flow (acfm)	3,501,695	3,384,750	3,285,451	3,184,751	
Turbine Flow (acfm), dry	3,043,764	2,902,531	2,780,062	2,639,942	
Turbine Exhaust Temperature (°F)	1,136	1,149	1,161	1,176	
CT/DB emission rate (lb/hr)	3.68	3.48	3.31	3.12	
	3.7	3.5	3.4	3.2	
HRSG Stack emission rate, ppmvd @ 15% O_2	1.0	1.0	1.0	1.0	
HRSG Stack emission rate (lb/hr) (maximum)	3.7	3.5	3.4	3.2	
Sulfuric Acid Mist					
Sulfuric Acid Mist (lb/hr)= SO_2 emission (lb/hr) x Conversion to H_2SO_4 (% by weight)/100					
CT SO_2 emission rate (lb/hr)	15.6	14.9	14.3	13.7	
CT Conversion to H_2SO_4 (% by weight)	10	10	10	10	
DB SO_2 emission rate (lb/hr)	0	0	0	0	
DB Conversion to H_2SO_4 (%)	20	20	20	20	
SCR SO_2 (lb/hr)(remaining SO_2 after conversion)	14.0	13.4	12.8	12.3	
SCR Conversion to H_2SO_4 (% by weight)	3	3	3	3	
HRSG Stack emission rate (lb/hr)	3.03	2.89	2.77	2.65	
Lead					
Lead (lb/hr) = NA					
Emission Rate Basis	NA	NA	NA	NA	
Emission rate (lb/hr)	NA	NA	NA	NA	

Note: ppmvd= parts per million, volume dry; O_2= oxygen.
Source: Siemens, 2011; CT Performance Data; Golder, 2011.

TABLE B-3-SH
DESIGN INFORMATION AND STACK PARAMETERS
FOR THE PEEC PROJECT
SIEMENS H CT, DRY LOW NO_x COMBUSTOR, NATURAL GAS, 80% LOAD

Parameter	Turbine Inlet Temperature 35 °F	59 °F	75 °F	95 °F
Combustion Turbine Performance				
Heat Input (MMBtu/hr, LHV)	2,075	1,935	1,864	1,757
(MMBtu/hr, HHV)	2,300	2,145	2,066	1,947
Relative Humidity (%)	60	60	60	50
Fuel heating value (Btu/lb, LHV)	20,940	20,940	20,940	20,940
(Btu/lb, HHV)	23,208	23,208	23,208	23,208
(HHV/LHV)	1.108	1.108	1.108	1.108
CT/DB Exhaust Flow				
Volume flow (acfm) = [Mass flow (lb/hr) x 1545.4 x Temp (°F + 460 K)] / [2112.5 x 60 min/hr x MW]				
Mass flow (lb/hr)	4,219,577	3,998,317	3,927,207	3,762,809
Temperature (°F)	1,165	1,172	1,177	1,185
Moisture (% Vol.)	13.13	13.80	14.67	15.86
Oxygen (% Vol.)	10.60	10.62	10.65	10.57
Molecular Weight	28.44	28.39	28.38	28.20
Volume flow (acfm)	2,939,582	2,802,860	2,761,508	2,676,221
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)	2,075	1,935	1,864	1,757
Heat content (Btu/lb, LHV)	20,940	20,940	20,940	20,940
Fuel usage (lb/hr)	99,093	92,407	89,016	83,906
Heat content (Btu/cf, LHV)	918	918	918	918
Fuel density (lb/ft^3)	0.0438	0.0438	0.0438	0.0438
Fuel usage (cf/hr)	2,260,349	2,107,843	2,030,501	1,913,943
HRSG Stack				
HRSG - Stack Height (feet)	149	149	149	149
Diameter (feet)	22	22	22	22
HRSG Stack Flow Conditions				
Velocity (ft/sec) = Volume flow (acfm) / [((diameter)^2 /4) x 3.14159] / 60 sec/min				
Mass flow (lb/hr)	4,219,577	3,998,317	3,927,207	3,762,809
HRSG Stack Temperature (°F)	184	185	186	187
Molecular weight	28.44	28.39	28.38	28.20
Volume flow (acfm)	1,164,979	1,107,748	1,089,758	1,052,593
Diameter (feet)	22	22	22	22
Velocity (ft/sec)	51.1	48.6	47.8	46.2

Note: Universal gas constant = 1,545.4 ft-lb(force)/°R; atmospheric pressure = 2,112.5 lb(force)/ft^2 (@14.67 psia).
Source: Siemens, 2011; CT Performance Data; Golder, 2011.

TABLE B-4 SH
MAXIMUM EMISSIONS FOR CRITERIA POLLUTANTS FOR THE PEEC PROJECT
SIEMENS H CT, DRY LOW NO_x COMBUSTOR, NATURAL GAS, 80% LOAD

	Turbine Inlet Temperature			
Parameter	**35 °F**	**59 °F**	**75 °F**	**95 °F**
Particulate (including $PM_{2.5}$) from CT and SCR				
Total PM_{10} = PM_{10} (front half) + PM_{10} [$(NH_4)_2SO_4$] in HRSG only (back-half)				
a. PM_{10} (front half) (lb/hr)				
CT	9	8	8	8
DB (lb/hr)	0.0	0.0	0.0	0.0
Total CT/DB emission rate (lb/hr)	9.0	8.0	8.0	8.0
b. PM_{10} [$(NH_4)_2SO_4$] from HRSG only (back half) = Sulfur trioxide from conversion of SO_2 converts to ammonium sulfate (= PM_{10})				
Particulate from conversion of SO_2 = SO_2 emissions (lb/hr) x conversion of SO_2 to SO_3 in CT and in SCR x lb SO_3/lb SO_2 x conversion of SO_3 to $(NH_4)_2SO_4$ x lb $(NH_4)_2SO_4$/ lb SO_3				
CT SO_2 emission rate (lb/hr)	12.9	12.0	11.6	10.9
Conversion (%) from SO_2 to SO_3 in CT	10.0	10.0	10.0	10.0
Remaining SO_2 (lb/hr) in CT after conversion	11.6	10.8	10.4	9.8
Conversion (%) from SO_2 to SO_3 in SCR	3.0	3.0	3.0	3.0
MW SO_3/ SO_2 (80/64)	1.3	1.3	1.3	1.3
Conversion (%) from SO_3 to $(NH_4)_2(SO_4)$	100	100	100	100
MW $(NH_4)_2$ SO_4/ SO_3 (132/80)	1.7	1.7	1.7	1.7
HRSG Particulate as $(NH_4)_2(SO_4)$ (lb/hr)	3.38	3.15	3.04	2.86
Total HRSG stack emission rate (lb/hr) [a + b]	12.4	11.2	11.0	10.9
(lb/mmBtu, HHV)	NA	NA	NA	NA
Sulfur Dioxide				
SO_2 (lb/hr)= Natural gas (scf/hr) x sulfur content(gr/100 scf) x 1 lb/7000 gr x (lb SO_2 /lb S) /100				
Fuel use (cf/hr)	2,260,349	2,107,843	2,030,501	1,913,943
Sulfur content (grains/ 100 cf)	2	2	2	2
lb SO_2 /lb S (64/32)	2	2	2	2
HRSG Stack emission rate (lb/hr)	12.9	12.0	11.6	10.9
Nitrogen Oxides				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisure (%)]				
NO_x (ppm actual) = NO_x (ppmd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
NO_x (lb/hr) = NO_x (ppm actual) x Volume flow (acfm) x 46 (mole. wgt NO_x) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] :				
Basis, ppm actual	32.0	31.3	30.4	29.7
CT / DB, ppmvd @15% O_2	25	25	25	25
Moisture (%)	13.13	13.80	14.67	15.86
Oxygen (%)	10.60	10.62	10.65	10.57
Oxygen (%) dry	12.21	12.32	12.48	12.56
Turbine Flow (acfm)	2,939,582	2,802,860	2,761,508	2,676,221
Turbine Flow (acfm), dry	2,553,499	2,416,015	2,356,440	2,251,871
Turbine Exhaust Temperature (°F)	1,165	1,172	1,177	1,185
CT Emission rate (lb/hr)	218.4	203.1	193.6	182.6
	220	205	198	186
HRSG Stack emission rate, ppmvd @ 15% O_2	2.0	2.0	2.0	2.0
HRSG stack emission rate (lb/hr) (maximum)	17.6	16.4	15.8	14.9
Carbon Monoxide				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisure (%)]				
CO (ppmv wet or actual) = CO (ppmvd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
CO (lb/hr) = CO (ppm actual) x Volume flow (acfm) x 28 (mole. wgt CO) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 :				
Basis, ppm actual	12.8	12.5	12.2	11.9
Basis, ppmvd @ 15% O_2	10	10	10	10
Moisture (%)	13.13	13.80	14.67	15.86
Oxygen (%)	10.60	10.62	10.65	10.57
Oxygen (%) dry	12.21	12.32	12.48	12.56
Turbine Flow (acfm)	2,939,582	2,802,860	2,761,508	2,676,221
Turbine Flow (acfm), dry	2,553,499	2,416,015	2,356,440	2,251,871
Turbine Exhaust Temperature (°F)	1,165	1,172	1,177	1,185
CT Emission rate (lb/hr)	53.2	49.4	47.1	44.5
	54	50	48	45
HRSG Stack emission rate, ppmvd @ 15% O_2	10	10	10	10
HRSG Stack emission rate (lb/hr) (maximum)	54.0	50.0	48.0	45.0
Volatile Organic Compounds				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisure (%)]				
VOC (ppmv wet or actual) = VOC (ppmvd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
VOC (lb/hr) = VOC (ppm actual) x Volume flow (acfm) x 16 (mole. wgt CH_4) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] .				
Basis, ppmvd	1.28	1.25	1.22	1.19
Basis, ppmvd @ 15% O_2	1	1	1	1
Moisture (%)	13.13	13.80	14.67	15.86
Oxygen (%)	10.60	10.62	10.65	10.57
Oxygen (%) dry	12.21	12.32	12.48	12.56
Turbine Flow (acfm)	2,939,582	2,802,860	2,761,508	2,676,221
Turbine Flow (acfm), dry	2,553,499	2,416,015	2,356,440	2,251,871
Turbine Exhaust Temperature (°F)	1,165	1,172	1,177	1,185
CT Emission rate (lb/hr)	3.04	2.83	2.69	2.54
	3.1	2.9	2.8	2.6
HRSG Stack emission rate, ppmvd @ 15% O_2	1	1	1	1
HRSG Stack emission rate (lb/hr) (maximum)	3.1	2.9	2.8	2.6
Sulfuric Acid Mist				
Sulfuric Acid Mist (lb/hr)= SO_2 emission (lb/hr) x Conversion to H_2SO_4 (% by weight)/100				
CT SO_2 emission rate (lb/hr)	12.9	12.0	11.6	10.9
CT Conversion to H_2SO_4 (% by weight)	10	10	10	10
DB SO_2 emission rate (lb/hr)	0	0	0	0
DB Conversion to H_2SO_4 (%)	20	20	20	20
SCR SO_2 emission rate (lb/hr) - calculated (remaining SO_2 after coı	11.6	10.8	10.4	9.8
HRSG Stack emission rate (lb/hr)	2.51	2.34	2.26	2.13
Lead				
Lead (lb/hr) = NA				
Emission Rate Basis	NA	NA	NA	NA
HRSG Stack emission rate (lb/hr)	NA	NA	NA	NA

Note: ppmvd= parts per million, volume dry; O2= oxygen.
Source: Siemens, 2011; CT Performance Data; Golder, 2011.

TABLE B-5-SH
DESIGN INFORMATION AND STACK PARAMETERS
FOR THE PEEC PROJECT
SIEMENS CT, DRY LOW NO_x COMBUSTOR, NATURAL GAS, 60% LOAD

Parameter	**Turbine Inlet Temperature**			
	35 °F	**59 °F**	**75 °F**	**95 °F**
Combustion Turbine Performance				
Heat Input (MMBtu/hr, LHV)	1,679	1,589	1,531	1,446
(MMBtu/hr, HHV)	1,880	1,761	1,697	1,602
Relative Humidity (%)	60	60	60	50
Fuel heating value (Btu/lb, LHV)	20,940	20,940	20,940	20,940
(Btu/lb, HHV)	23,208	23,208	23,208	23,208
(HHV/LHV)	1.108	1.108	1.108	1.108
CT/DB Exhaust Flow				
Volume flow (acfm) = [Mass flow (lb/hr) x 1545.4 x Temp (°F + 460 K)] / [2112.5 x 60 min/hr x MW]				
Mass flow (lb/hr)	3,570,347	3,422,619	3,374,870	3,259,377
Temperature (°F)	1,185	1,185	1,185	1,185
Moisture (% Vol.)	12.72	13.31	14.15	15.29
Oxygen (% Vol.)	10.87	10.93	10.98	10.93
Molecular Weight	28.44	28.38	28.38	28.20
Volume flow (acfm)	2,517,907	2,418,644	2,384,718	2,318,165
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)	1,679	1,589	1,531	1,446
Heat content (Btu/lb, LHV)	20,940	20,940	20,940	20,940
Fuel usage (lb/hr)	80,181	75,883	73,114	69,054
Heat content (Btu/cf, LHV)	918	918	918	918
Fuel density (lb/ft^3)	0.0438	0.0438	0.0438	0.0438
Fuel usage (cf/hr)	1,828,976	1,730,937	1,667,756	1,575,163
HRSG Stack				
HRSG - Stack Height (feet)	149	149	149	149
Diameter (feet)	22	22	22	22
HRSG Stack Flow Conditions				
Velocity (ft/sec) = Volume flow (acfm) / [((diameter)² /4) x 3.14159] / 60 sec/min				
Mass flow (lb/hr)	3,570,347	3,422,619	3,374,870	3,259,377
HRSG Stack Temperature (°F)	184	185	186	187
Molecular weight	28.44	28.38	28.38	28.20
Volume flow (acfm)	985,734	948,344	936,491	911,765
Diameter (feet)	22	22	22	22
Velocity (ft/sec)	43.2	41.6	41.1	40.0

Note: Universal gas constant = 1,545.4 ft-lb(force)/°R; atmospheric pressure = 2,112.5 lb(force)/ft² (@14.67 psia).
Source: Siemens, 2011; CT Performance Data; Golder, 2011.

TABLE B-6-SH
MAXIMUM EMISSIONS FOR CRITERIA POLLUTANTS FOR THE PEEC PROJECT
SIEMENS H CT, DRY LOW NO_x COMBUSTOR, NATURAL GAS, 60% LOAD

Parameter	Turbine Inlet Temperature 35 °F	59 °F	75 °F	95 °F
Particulate (including $PM_{2.5}$) from CT and SCR				
Total PM_{10} = PM_{10} (front half) + PM_{10} [$(NH_4)_2SO_4$] in HRSG only (back-half)				
a. PM_{10} (front half) (lb/hr)				
CT	8	8	8	8
DB (lb/hr)	0.0	0.0	0.0	0.0
Total CT/DB emission rate (lb/hr)	8.0	8.0	8.0	8.0
b. PM_{10} [$(NH_4)_2SO_4$] from HRSG only (back half) = Sulfur trioxide from conversion of SO_2 converts to ammonium sulfate (= PM_{10})				
Particulate from conversion of SO_2 = SO_2 emissions (lb/hr) x conversion of SO_2 to SO_3 in CT and in SCR x lb SO_3/lb SO_2 x conversion of SO_3 to $(NH_4)_2SO_4$ x lb $(NH_4)_2SO_4$/ lb SO_3				
CT SO_2 emission rate (lb/hr)	10.5	9.9	9.5	9.0
Conversion (%) from SO_2 to SO_3 in CT	10.0	10.0	10.0	10.0
Remaining SO_2 (lb/hr) in CT after conversion	9.4	8.9	8.6	8.1
Conversion (%) from SO_2 to SO_3 in SCR	3.0	3.0	3.0	3.0
MW SO_3/ SO_2 (80/64)	1.3	1.3	1.3	1.3
Conversion (%) from SO_3 to $(NH_4)_2(SO_4)$	100	100	100	100
MW $(NH_4)_2$ SO_4/ SO_3 (132/80)	1.7	1.7	1.7	1.7
HRSG Particulate as $(NH_4)_2(SO_4)$ (lb/hr)	2.74	2.59	2.50	2.36
Total HRSG stack emission rate (lb/hr) [a + b]	10.7	10.6	10.5	10.4
(lb/mmBtu, HHV)	NA	NA	NA	NA
Sulfur Dioxide				
SO_2 (lb/hr)= Natural gas (scf/hr) x sulfur content(gr/100 scf) x 1 lb/7000 gr x (lb SO_2 /lb S) /100				
Fuel use (cf/hr)	1,828,976	1,730,937	1,667,756	1,575,163
Sulfur content (grains/ 100 cf)	2	2	2	2
lb SO_2 /lb S (64/32)	2	2	2	2
HRSG Stack emission rate (lb/hr)	10.5	9.9	9.5	9.0
Nitrogen Oxides				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]				
NO_x (ppm actual) = NO_x (ppmd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
NO_x (lb/hr) = NO_x (ppm actual) x Volume flow (acfm) x 46 (mole. wgt NO_x) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x				
Basis, ppm actual	31.2	30.5	29.5	28.7
CT / DB, ppmvd @15% O_2	25	25	25	25
Moisture (%)	12.72	13.31	14.15	15.29
Oxygen (%)	10.87	10.93	10.98	10.93
Oxygen (%) dry	12.45	12.61	12.79	12.90
Turbine Flow (acfm)	2,517,907	2,418,644	2,384,718	2,318,165
Turbine Flow (acfm), dry	2,197,540	2,096,640	2,047,318	1,963,653
Turbine Exhaust Temperature (°F)	1,185	1,185	1,185	1,185
CT Emission rate (lb/hr)	180.4	169.0	161.3	152.7
	180	168	162	153
HRSG Stack emission rate, ppmvd @ 15% O_2	2.0	2.0	2.0	2.0
HRSG stack emission rate (lb/hr) (maximum)	14.4	13.5	13.0	12.2
Carbon Monoxide				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]				
CO (ppmv wet or actual) = CO (ppmvd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
CO (lb/hr) = CO (ppm actual) x Volume flow (acfm) x 28 (mole. wgt CO) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 x				
Basis, ppm actual	12.5	12.2	11.8	11.5
Basis, ppmvd @ 15% O_2	10	10	10	10
Moisture (%)	12.72	13.31	14.15	15.29
Oxygen (%)	10.87	10.93	10.98	10.93
Oxygen (%) dry	12.45	12.61	12.79	12.90
Turbine Flow (acfm)	2,517,907	2,418,644	2,384,718	2,318,165
Turbine Flow (acfm), dry	2,197,540	2,096,640	2,047,318	1,963,653
Turbine Exhaust Temperature (°F)	1,185	1,185	1,185	1,185
CT Emission rate (lb/hr)	43.9	41.1	39.3	37.2
	44	41	40	37
HRSG Stack emission rate, ppmvd @ 15% O_2	10	10	10	10
HRSG Stack emission rate (lb/hr) (maximum)	44.0	41.1	40.0	37.2
Volatile Organic Compounds				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]				
VOC (ppmv wet or actual) = VOC (ppmvd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
VOC (lb/hr) = VOC (ppm actual) x Volume flow (acfm) x 16 (mole. wgt CH_4) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x				
Basis, ppmvd	1.25	1.22	1.18	1.15
Basis, ppmvd @ 15% O_2	1	1	1	1
Moisture (%)	12.72	13.31	14.15	15.29
Oxygen (%)	10.87	10.93	10.98	10.93
Oxygen (%) dry	12.45	12.61	12.79	12.90
Turbine Flow (acfm)	2,517,907	2,418,644	2,384,718	2,318,165
Turbine Flow (acfm), dry	2,197,540	2,096,640	2,047,318	1,963,653
Turbine Exhaust Temperature (°F)	1,185	1,185	1,185	1,185
CT Emission rate (lb/hr)	2.51	2.35	2.24	2.12
	2.5	2.4	2.3	2.1
HRSG Stack emission rate, ppmvd @ 15% O_2	1	1	1	1
HRSG Stack emission rate (lb/hr) (maximum)	2.5	2.4	2.3	2.1
Sulfuric Acid Mist				
Sulfuric Acid Mist (lb/hr)= SO_2 emission (lb/hr) x Conversion to H_2SO_4 (% by weight)/100				
CT SO_2 emission rate (lb/hr)	10.5	9.9	9.5	9.0
CT Conversion to H_2SO_4 (% by weight)	10	10	10	10
DB SO_2 emission rate (lb/hr)	0	0	0	0
DB Conversion to H_2SO_4 (%)	20	20	20	20
SCR SO_2 emission rate (lb/hr) - calculated (remaining SO_2 after coı	9.4	8.9	8.6	8.1
SCR Conversion to H_2SO_4 (% by weight)	3	3	3	3
HRSG Stack emission rate (lb/hr)	2.03	1.92	1.85	1.75
Lead				
Lead (lb/hr) = NA				
Emission Rate Basis	NA	NA	NA	NA
HRSG Stack emission rate (lb/hr)	NA	NA	NA	NA

Note: ppmvd= parts per million, volume dry; O2= oxygen.
Source: Siemens, 2011; CT Performance Data; Golder, 2011.

TABLE B-7-SH
DESIGN INFORMATION AND STACK PARAMETERS
FOR THE PEEC PROJECT
SIEMENS CT, DRY LOW NO_x COMBUSTOR, DISTILLATE OIL, BASE LOAD

Parameter	Turbine Inlet Temperature 35 °F	59 °F	75 °F	95 °F
Combustion Turbine Performance				
Heat Input (MMBtu/hr, LHV)	2,522	2,406	2,300	2,201
(MMBtu/hr, HHV)	2,690	2,567	2,453	2,347
Relative Humidity (%)	60	60	60	50
Fuel heating value (Btu/lb, LHV)	18,387	18,387	18,387	18,387
(Btu/lb, HHV)	19,613	19,613	19,613	19,613
(HHV/LHV)	1.067	1.067	1.067	1.067
CT/DB Exhaust Flow				
Volume flow (acfm) = [Mass flow (lb/hr) x 1545.4 x Temp (°F + 460 K)] / [2112.5 x 60 min/hr x MW]				
Mass Flow (lb/hr)	5,193,512	4,963,007	4,767,933	4,458,381
Temperature (°F)	1,080	1,093	1,102	1,117
Moisture (% Vol.)	12.84	14.03	15.12	16.86
Oxygen (% Vol.)	10.56	10.42	10.31	10.09
Molecular Weight	28.64	28.60	28.52	28.41
Volume flow (acfm)	3,404,546	3,285,816	3,184,183	3,017,384
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)	2,522	2,406	2,300	2,201
Heat content (Btu/lb, LHV)	18,387	18,387	18,387	18,387
Fuel usage (lb/hr)	137,162	130,853	125,088	119,704
HRSG Stack				
HRSG - Stack Height (feet)	149	149	149	149
Diameter (feet)	22	22	22	22
HRSG Stack Flow Conditions				
Velocity (ft/sec) = Volume flow (acfm) / [((diameter)^2 /4) x 3.14159] / 60 sec/min				
Mass flow (lb/hr)	5,193,512	4,963,007	4,767,933	4,458,381
HRSG Stack Temperature (°F)	359	357	355	354
Molecular weight	28.64	28.60	28.52	28.41
Volume flow (acfm)	1,810,600	1,728,597	1,661,402	1,557,483
Diameter (feet)	22	22	22	22
Velocity (ft/sec)	79.4	75.8	72.8	68.3

Note: Universal gas constant = 1,545.4 ft-lb(force)/°R; atmospheric pressure = 2,112.5 lb(force)/ft^2 (@14.67 psia).
Source: Siemens, 2011; CT Performance Data; Golder, 2011.

TABLE B-8-SH
MAXIMUM EMISSIONS FOR CRITERIA POLLUTANTS FOR THE PEEC PROJECT
SIEMENS H CT, DRY LOW NO_x COMBUSTOR, DISTILLATE OIL, BASE LOAD

Parameter	Turbine Inlet Temperature			
	35 °F	59 °F	75 °F	95 °F
Particulate (including $PM_{2.5}$) from CT and SCR				
Total PM_{10} = PM_{10} (front half) + PM_{10} [$(NH_4)_2SO_4$] in HRSG only (back-half)				
a. PM_{10} (front half) (lb/hr)				
CT	59	56	54	51
DB (lb/hr)	0.0	0.0	0.0	0.0
Total CT/DB emission rate (lb/hr)	59.0	56.0	54.0	51.0
b. PM_{10} ($(NH_4)_2SO_4$) from HRSG only (back half) = Sulfur trioxide from conversion of SO_2 converts to ammonium sulfate (= PM_{10})				
Particulate from conversion of SO_2 = SO_2 emissions (lb/hr) x conversion of SO_2 to SO_3 in CT and in SCR x lb SO_3/lb SO_2 x conversion of SO_3 to $(NH_4)_2SO_4$ x lb $(NH_4)_2SO_4$/ lb SO_3				
SO_2 emission rate (lb/hr)	4.1	3.9	3.8	3.6
Conversion (%) from SO_2 to SO_3	10.0	10.0	10.0	10.0
Remaining SO_2 (lb/hr) in CT after conversion	3.7	3.5	3.4	3.2
Conversion (%) from SO_2 to SO_3 in SCR	3.0	3.0	3.0	3.0
MW SO_3/ SO_2 (80/64)	1.3	1.3	1.3	1.3
Conversion (%) from SO_3 to $(NH_4)_2(SO_4)$	100	100	100	100
MW $(NH_4)_2$ SO_4/ SO_3 (132/80)	1.7	1.7	1.7	1.7
HRSG Particulate as $(NH_4)_2(SO_4)$ (lb/hr)	1.08	1.03	0.98	0.94
Total HRSG stack emission rate (lb/hr) [a + b]	60.1	57.0	55.0	51.9
(lb/mmBtu, HHV)	NA	NA	NA	NA
Sulfur Dioxide				
SO_2 (lb/hr)= Fuel oil (lb/hr) x sulfur content(% weight) x (lb SO_2 /lb S) /100				
Fuel oil Sulfur Content	0.0015%	0.0015%	0.0015%	0.0015%
Fuel oil use (lb/hr)	137,162	130,853	125,088	119,704
lb SO_2 / lb S (64/32)	2	2	2	2
HRSG Stack emission rate (lb/hr)	4.1	3.9	3.8	3.6
Nitrogen Oxides				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]				
NO_x (ppm actual) = NO_x (ppmd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
NO_x (lb/hr) = NO_x (ppm actual) x Volume flow (acfm) x 46 (mole. wgt NO_x) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr				
Basis, ppm actual	54.5	53.7	52.9	51.9
CT/DB, ppmvd @15% O_2	42	42	42	42
Moisture (%)	12.84	14.03	15.12	16.86
Oxygen (%)	10.56	10.42	10.31	10.09
Oxygen (%) dry	12.12	12.12	12.15	12.13
Turbine Flow (acfm)	3,404,546	3,285,816	3,184,183	3,017,384
Turbine Flow (acfm), dry	2,967,475	2,824,706	2,702,796	2,508,730
Turbine Exhaust Temperature (°F)	1,080	1,093	1,102	1,117
CT Emission rate (lb/hr)	454.6	428.8	406.7	374.7
	466	444	425	406.0
HRSG Stack emission rate, ppmvd @ 15% O_2	8.0	8.0	8.0	8.0
HRSG Stack emission rate (lb/hr) (maximum)	88.8	84.6	81.0	77.3
Carbon Monoxide				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]				
CO (ppmv wet or actual) = CO (ppmvd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
CO (lb/hr) = CO (ppm actual) x Volume flow (acfm) x 28 (mole. wgt CO) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr				
Basis, ppm actual	13.0	12.8	12.6	12.4
Basis, ppmvd @ 15% O_2	10	10	10	10
Moisture (%)	12.84	14.03	15.12	16.86
Oxygen (%)	10.56	10.42	10.31	10.09
Oxygen (%) dry	12.12	12.12	12.15	12.13
Turbine Flow (acfm)	3,404,546	3,285,816	3,184,183	3,017,384
Turbine Flow (acfm), dry	2,967,475	2,824,706	2,702,796	2,508,730
Turbine Exhaust Temperature (°F)	1,080	1,093	1,102	1,117
CT Emission rate (lb/hr)	65.9	62.1	58.9	54.3
	68	64	62	59
HRSG Stack emission rate, ppmvd @ 15% O_2	10	10	10	10
HRSG Stack emission rate (lb/hr) (maximum)	68.0	64.0	62.0	59.0
Volatile Organic Compounds				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]				
VOC (ppmv wet or actual) = VOC (ppmvd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
VOC (lb/hr) = VOC (ppm actual) x Volume flow (acfm) x 16 (mole. wgt CH_4) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr				
Basis, ppm actual	1.3	1.3	1.3	1.2
Basis, ppmvd @ 15% O_2	1.0	1.0	1.0	1.0
Moisture (%)	12.84	14.03	15.12	16.86
Oxygen (%)	10.56	10.42	10.31	10.09
Oxygen (%-dry)	12.12	12.12	12.15	12.13
Turbine Flow (acfm)	3,404,546	3,285,816	3,184,183	3,017,384
Turbine Flow (acfm), dry	2,967,475	2,824,706	2,702,796	2,508,730
Turbine Exhaust Temperature (°F)	1,080	1,093	1,102	1,117
CT Emission rate (lb/hr)	3.8	3.6	3.4	3.1
	3.9	3.7	3.5	3.4
HRSG Stack emission rate, ppmvd @ 15% O_2	10.0	10.0	10.0	10.0
HRSG Stack emission rate (lb/hr) (maximum)	39.0	37.0	35.0	34.0
Sulfuric Acid Mist				
Sulfuric Acid Mist (lb/hr)= SO_2 emission (lb/hr) x Conversion to H_2SO_4 (% by weight)/100				
CT SO_2 emission rate (lb/hr)	4.1	3.9	3.8	3.6
CT Conversion to H_2SO_4 (% by weight)	10	10	10	10
DB SO_2 emission rate (lb/hr)	0	0	0	0
DB Conversion to H_2SO_4 (%)	20	20	20	20
SCR SO_2 emission rate (lb/hr) - calculated (remaining SO_2 after conversion	3.7	3.5	3.4	3.2
SCR Conversion to H_2SO_4 (% by weight)	3	3	3	3
HRSG Stack emission rate (lb/hr)	0.80	0.76	0.73	0.70
Lead				
Lead (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Emission Rate Basis (lb/10^{12} Btu)	14	14	14	14
HRSG Stack emission rate (lb/hr)- calculated	0.0377	0.0359	0.0343	0.0329

Note: Universal gas constant = 1,545.4 ft-lb(force)/°R; atmospheric pressure = 2,112.5 lb(force)/ft^2 (@14.67 psia).
Source: Siemens, 2011; CT Performance Data; Golder, 2011.

TABLE B-9-SH
DESIGN INFORMATION AND STACK PARAMETERS
FOR THE PEEC PROJECT
SIEMENS H CT, DRY LOW NO_x COMBUSTOR, DISTILLATE OIL, 80% LOAD

Parameter	Turbine Inlet Temperature 35 °F	59 °F	75 °F	95 °F
Combustion Turbine Performance				
Heat Input (MMBtu/hr, LHV)	2,101	1,976	1,883	1,774
(MMBtu/hr, HHV)	2,242	2,108	2,008	1,893
Relative Humidity (%)	60	60	60	50
Fuel heating value (Btu/lb, LHV)	18,387	18,387	18,387	18,387
(Btu/lb, HHV)	19,613	19,613	19,613	19,613
(HHV/LHV)	1.060	1.060	1.060	1.060
CT/DB Exhaust Flow				
Volume flow (acfm) = [Mass flow (lb/hr) x 1545.4 x Temp (°F + 460 K)] / [2112.5 x 60 min/hr x MW]				
Mass Flow (lb/hr)	4,195,327	4,031,921	3,902,311	3,738,668
Temperature (°F)	1,141	1,148	1,152	1,160
Moisture (% Vol.)	12.95	13.54	14.42	15.64
Oxygen (% Vol.)	10.32	10.39	10.38	10.33
Molecular Weight	28.66	28.60	28.52	28.41
Volume flow (acfm)	2,857,705	2,764,193	2,688,976	2,599,283
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)	2,101	1,976	1,883	1,774
Heat content (Btu/lb, LHV)	18,387	18,387	18,387	18,387
Fuel usage (lb/hr)	114,266	107,467	102,409	96,481
HRSG Stack				
HRSG - Stack Height (feet)	149	149	149	149
Diameter (feet)	22	22	22	22
HRSG Stack Flow Conditions				
Velocity (ft/sec) = Volume flow (acfm) / [((diameter)² /4) x 3.14159] / 60 sec/min				
Mass flow (lb/hr)	4,195,327	4,031,921	3,902,311	3,738,668
HRSG Stack Temperature (°F)	359	357	355	354
Molecular weight	28.66	28.60	28.52	28.41
Volume flow (acfm)	1,461,874	1,404,444	1,359,501	1,306,060
Diameter (feet)	22	22	22	22
Velocity (ft/sec)	64.1	61.6	59.6	57.3

Note: Universal gas constant = 1,545.4 ft-lb(force)/°R; atmospheric pressure = 2,112.5 lb(force)/ft² (@14.67 psia).
Source: Siemens, 2011; CT Performance Data; Golder, 2011.

TABLE B-10-SH
MAXIMUM EMISSIONS FOR CRITERIA POLLUTANTS FOR THE PEEC PROJECT
SIEMENS H CT, DRY LOW NO_x COMBUSTOR, DISTILLATE OIL, 80% LOAD

Parameter	Turbine Inlet Temperature 35 °F	59 °F	75 °F	95 °F
Particulate (including $PM_{2.5}$) from CT and SCR				
Total PM_{10} = PM_{10} (front half) + PM_{10} [$(NH_4)_2SO_4$] in HRSG only (back-half)				
a. PM_{10} (front half) (lb/hr)				
CT	48	46	44	42
DB (lb/hr)	0.0	0.0	0.0	0.0
Total CT/DB emission rate (lb/hr)	48.0	46.0	44.0	42.0
b. PM_{10} ($(NH_4)_2SO_4$) from HRSG only (back half) = Sulfur trioxide from conversion of SO_2 converts to ammonium sulfate (= PM_{10})				
Particulate from conversion of SO_2 = SO_2 emissions (lb/hr) x conversion of SO_2 to SO_3 in CT and in SCR x lb SO_3/lb SO_2 x conversion of SO_3 to $(NH_4)_2SO_4$ x lb $(NH_4)_2SO_4$/ lb SO_3				
SO_2 emission rate (lb/hr)	3.4	3.2	3.1	2.9
Conversion (%) from SO_2 to SO_3	10.0	10.0	10.0	10.0
Remaining SO_2 (lb/hr) in CT after conversion	3.1	2.9	2.8	2.6
Conversion (%) from SO_2 to SO_3 in SCR	3.0	3.0	3.0	3.0
MW SO_3/ SO_2 (80/64)	1.3	1.3	1.3	1.3
Conversion (%) from SO_3 to $(NH_4)_2(SO_4)$	100	100	100	100
MW $(NH_4)_2$ SO_4/ SO_3 (132/80)	1.7	1.7	1.7	1.7
HRSG Particulate as $(NH_4)_2(SO_4)$ (lb/hr)	0.90	0.84	0.80	0.76
Total HRSG stack emission rate (lb/hr) [a + b]	48.9	46.8	44.8	42.8
(lb/mmBtu, HHV)	NA	NA	NA	NA
Sulfur Dioxide				
SO_2 (lb/hr)= Fuel oil (lb/hr) x sulfur content(% weight) x (lb SO_2 /lb S) /100				
Fuel oil Sulfur Content	0.0015%	0.0015%	0.0015%	0.0015%
Fuel oil use (lb/hr)	114,266	107,467	102,409	96,481
lb SO_2 / lb S (64/32)	2	2	2	2
HRSG Stack emission rate (lb/hr)	3.4	3.2	3.1	2.9
Nitrogen Oxides				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]				
NO_x (ppm actual) = NO_x (ppmd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
NO_x (lb/hr) = NO_x (ppm actual) x Volume flow (acfm) x 46 (mole. wgt NO_x) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr				
Basis, ppm actual	56.1	54.6	53.4	51.9
CT/DB, ppmvd @15% O_2	42	42	42	42
Moisture (%)	12.95	13.54	14.42	15.64
Oxygen (%)	10.32	10.39	10.38	10.33
Oxygen (%) dry	11.85	12.02	12.13	12.25
Turbine Flow (acfm)	2,857,705	2,764,193	2,688,976	2,599,283
Turbine Flow (acfm), dry	2,487,654	2,389,887	2,301,185	2,192,672
Turbine Exhaust Temperature (°F)	1,141	1,148	1,152	1,160
CT Emission rate (lb/hr)	377.5	354.4	336.1	314.4
	388	365	348	327
HRSG Stack emission rate, ppmvd @ 15% O_2	8.0	8.0	8.0	8.0
HRSG Stack emission rate (lb/hr) (maximum)	73.9	69.5	66.3	62.3
Carbon Monoxide				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]				
CO (ppmv wet or actual) = CO (ppmvd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
CO (lb/hr) = CO (ppm actual) x Volume flow (acfm) x 28 (mole. wgt CO) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr				
Basis, ppm actual	13.3	13.0	12.7	12.4
Basis, ppmvd @ 15% O_2	10	10	10	10
Moisture (%)	12.95	13.54	14.42	15.64
Oxygen (%)	10.32	10.39	10.38	10.33
Oxygen (%) dry	11.85	12.02	12.13	12.25
Turbine Flow (acfm)	2,857,705	2,764,193	2,688,976	2,599,283
Turbine Flow (acfm), dry	2,487,654	2,389,887	2,301,185	2,192,672
Turbine Exhaust Temperature (°F)	1,141	1,148	1,152	1,160
CT Emission rate (lb/hr)	54.7	51.4	48.7	45.6
	56.0	53	50	47
HRSG Stack emission rate, ppmvd @ 15% O_2	10.0	10.0	10.0	10.0
HRSG Stack emission rate (lb/hr) (maximum)	56.0	53.0	50.0	47.0
Volatile Organic Compounds				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]				
VOC (ppmv wet or actual) = VOC (ppmvd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
VOC (lb/hr) = VOC (ppm actual) x Volume flow (acfm) x 16 (mole. wgt CH_4) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr				
Basis, ppm actual	1.3	1.3	1.3	1.2
Basis, ppmvd @ 15% O_2	1.0	1.0	1.0	1.0
Moisture (%)	12.95	13.54	14.42	15.64
Oxygen (%)	10.32	10.39	10.38	10.33
Oxygen (%-dry)	11.85	12.02	12.13	12.25
Turbine Flow (acfm)	2,857,705	2,764,193	2,688,976	2,599,283
Turbine Flow (acfm), dry	2,487,654	2,389,887	2,301,185	2,192,672
Turbine Exhaust Temperature (°F)	1,141	1,148	1,152	1,160
CT-Emission rate (lb/hr)	3.1	2.9	2.8	2.6
	3.2	3.0	2.9	2.7
HRSG Stack emission rate, ppmvd @ 15% O_2	10.0	10.0	10.0	10.0
HRSG Stack emission rate (lb/hr) (maximum)	32.0	30.0	29.0	27.0
Sulfuric Acid Mist				
Sulfuric Acid Mist (lb/hr)= SO_2 emission (lb/hr) x Conversion to H_2SO_4 (% by weight)/100				
CT SO_2 emission rate (lb/hr)	3.4	3.2	3.1	2.9
CT Conversion to H_2SO_4 (% by weight)	10	10	10	10
DB SO_2 emission rate (lb/hr)	0	0	0	0
DB Conversion to H_2SO_4 (%)	20	20	20	20
SCR SO_2 emission rate (lb/hr) - calculated (remaining SO_2 after conversion)	3.1	2.9	2.8	2.6
SCR Conversion to H_2SO_4 (% by weight)	3	3	3	3
HRSG Stack emission rate (lb/hr)	0.67	0.63	0.60	0.56
Lead				
Lead (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Emission Rate Basis (lb/10^{12} Btu)	14	14	14	14
HRSG Stack emission rate (lb/hr)	0.0314	0.0295	0.0281	0.0265

Note: Universal gas constant = 1,545.4 ft-lb(force)/°R; atmospheric pressure = 2,112.5 lb(force)/ft² (@14.67 psia).
Source: Siemens, 2011; CT Performance Data; Golder, 2011.

TABLE B-11-SH
DESIGN INFORMATION AND STACK PARAMETERS
FOR THE PEEC PROJECT
SIEMENS H CT, DRY LOW NO_x COMBUSTOR, DISTILLATE OIL, 70% LOAD

Parameter	Turbine Inlet Temperature 35 °F	59 °F	75 °F	95 °F
Combustion Turbine Performance				
Heat Input (MMBtu/hr, LHV)	1,920	1,808	1,724	1,626
(MMBtu/hr, HHV)	2,048	1,928	1,839	1,734
Relative Humidity (%)	60	60	60	50
Fuel heating value (Btu/lb, LHV)	18,387	18,387	18,387	18,387
(Btu/lb, HHV)	19,613	19,613	19,613	19,613
(HHV/LHV)	1.060	1.060	1.060	1.060
CT/DB Exhaust Flow				
Volume flow (acfm) = [Mass flow (lb/hr) x 1545.4 x Temp (°F + 460 K)] / [2112.5 x 60 min/hr x MW]				
Mass Flow (lb/hr)	3,792,624	3,669,929	3,569,152	3,443,853
Temperature (°F)	1,182	1,182	1,182	1,182
Moisture (% Vol.)	12.95	13.48	14.31	15.47
Oxygen (% Vol.)	10.26	10.37	10.38	10.39
Molecular Weight	28.66	28.60	28.52	28.41
Volume flow (acfm)	2,649,291	2,568,962	2,505,426	2,426,588
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)	1,920	1,808	1,724	1,626
Heat content (Btu/lb, LHV)	18,387	18,387	18,387	18,387
Fuel usage (lb/hr)	104,422	98,330	93,762	88,432
HRSG Stack				
HRSG - Stack Height (feet)	149	149	149	149
Diameter (feet)	22	22	22	22
HRSG Stack Flow Conditions				
Velocity (ft/sec) = Volume flow (acfm) / [((diameter)^2 /4) x 3.14159] / 60 sec/min				
Mass flow (lb/hr)	3,792,624	3,669,929	3,569,152	3,443,853
HRSG Stack Temperature (°F)	359	357	355	354
Molecular weight	28.66	28.60	28.52	28.41
Volume flow (acfm)	1,321,419	1,278,223	1,243,558	1,202,949
Diameter (feet)	22	22	22	22
Velocity (ft/sec)	57.9	56.0	54.5	52.7

Note: Universal gas constant = 1,545.4 ft-lb(force)/°R; atmospheric pressure = 2,112.5 lb(force)/ft^2 (@14.67 psia).
Source: Siemens, 2011; CT Performance Data; Golder, 2011.

TABLE B-12 SH
MAXIMUM EMISSIONS FOR CRITERIA POLLUTANTS FOR THE PEEC PROJECT
SIEMENS H CT, DRY LOW NO_x COMBUSTOR, DISTILLATE OIL, 70% LOAD

Parameter	Turbine Inlet Temperature 35 °F	59 °F	75 °F	95 °F
Particulate (including $PM_{2.5}$) from CT and SCR				
Total PM_{10} = PM_{10} (front half) + PM_{10} [$(NH_4)_2SO_4$] in HRSG only (back-half)				
a. PM_{10} (front half) (lb/hr)				
CT	43	42	40	39
DB (lb/hr)	0.0	0.0	0.0	0.0
Total CT/DB emission rate (lb/hr)	43.0	42.0	40.0	39.0
b. PM_{10} ($(NH_4)_2SO_4$) from HRSG only (back half) = Sulfur trioxide from conversion of SO_2 converts to ammonium sulfate (= PM_{10})				
Particulate from conversion of SO_2 = SO_2 emissions (lb/hr) x conversion of SO_2 to SO_3 in CT and in SCR x lb SO_3/lb SO_2 x conversion of SO_3 to $(NH_4)_2SO_4$ x lb $(NH_4)_2SO_4$/ lb SO_3				
SO_2 emission rate (lb/hr)	3.1	2.9	2.8	2.7
Conversion (%) from SO_2 to SO_3	10.0	10.0	10.0	10.0
Remaining SO_2 (lb/hr) in CT after conversion	2.8	2.7	2.5	2.4
Conversion (%) from SO_2 to SO_3 in SCR	3.0	3.0	3.0	3.0
MW SO_3/ SO_2 (80/64)	1.3	1.3	1.3	1.3
Conversion (%) from SO_3 to $(NH_4)_2(SO_4)$	100	100	100	100
MW $(NH_4)_2$ SO_4/ SO_3 (132/80)	1.7	1.7	1.7	1.7
HRSG Particulate as $(NH_4)_2(SO_4)$ (lb/hr)	0.82	0.77	0.74	0.69
Total HRSG stack emission rate (lb/hr) [a + b]	43.8	42.8	40.7	39.7
(lb/mmBtu, HHV)	NA	NA	NA	NA
Sulfur Dioxide				
SO_2 (lb/hr)= Fuel oil (lb/hr) x sulfur content(% weight) x (lb SO_2 /lb S) /100				
Fuel oil Sulfur Content	0.0015%	0.0015%	0.0015%	0.0015%
Fuel oil use (lb/hr)	104,422	98,330	93,762	88,432
lb SO_2 / lb S (64/32)	2	2	2	2
HRSG Stack emission rate (lb/hr)	3.1	2.9	2.8	2.7
Nitrogen Oxides				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]				
NO_x (ppm actual) = NO_x (ppmd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
NO_x (lb/hr) = NO_x (ppm actual) x Volume flow (acfm) x 46 (mole. wgt NO_x) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr				
Basis, ppm actual	56.5	54.9	53.6	51.8
CT/DB, ppmvd @15% O_2	42	42	42	42
Moisture (%)	12.95	13.48	14.31	15.47
Oxygen (%)	10.26	10.37	10.38	10.39
Oxygen (%) dry	11.78	11.98	12.12	12.29
Turbine Flow (acfm)	2,649,291	2,568,962	2,505,426	2,426,588
Turbine Flow (acfm), dry	2,306,229	2,222,724	2,146,882	2,051,201
Turbine Exhaust Temperature (°F)	1,182	1,182	1,182	1,182
CT Emission rate (lb/hr) - calculated	344.0	324.2	308.4	288.9
	355	334	318	300
HRSG Stack emission rate, ppmvd @ 15% O_2	8.0	8.0	8.0	8.0
HRSG Stack emission rate (lb/hr) (maximum)	67.6	63.6	60.6	57.1
Carbon Monoxide				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]				
CO (ppmv wet or actual) = CO (ppmvd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
CO (lb/hr) = CO (ppm actual) x Volume flow (acfm) x 28 (mole. wgt CO) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr				
Basis, ppm actual	13.5	13.1	12.8	12.3
Basis, ppmvd @ 15% O_2	10	10	10	10
Moisture (%)	12.95	13.48	14.31	15.47
Oxygen (%)	10.26	10.37	10.38	10.39
Oxygen (%) dry	11.78	11.98	12.12	12.29
Turbine Flow (acfm)	2,649,291	2,568,962	2,505,426	2,426,588
Turbine Flow (acfm), dry	2,306,229	2,222,724	2,146,882	2,051,201
Turbine Exhaust Temperature (°F)	1,182	1,182	1,182	1,182
CT Emission rate (lb/hr)	49.9	47.0	44.7	41.9
	51	48	46	43
HRSG Stack emission rate, ppmvd @ 15% O_2	10.0	10.0	10.0	10.0
HRSG Stack emission rate (lb/hr) (maximum)	51.0	48.0	46.0	43.0
Volatile Organic Compounds				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisture (%)]				
VOC (ppmv wet or actual) = VOC (ppmvd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
VOC (lb/hr) = VOC (ppm actual) x Volume flow (acfm) x 16 (mole. wgt CH_4) x 2112.5 lb/ft^2 (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr				
Basis, ppm actual	1.3	1.3	1.3	1.2
Basis, ppmvd @ 15% O_2	1.0	1.0	1.0	1.0
Moisture (%)	12.95	13.48	14.31	15.47
Oxygen (%)	10.26	10.37	10.38	10.39
Oxygen (%-dry)	11.78	11.98	12.12	12.29
Turbine Flow (acfm)	2,649,291	2,568,962	2,505,426	2,426,588
Turbine Flow (acfm), dry	2,306,229	2,222,724	2,146,882	2,051,201
Turbine Exhaust Temperature (°F)	1,182	1,182	1,182	1,182
CT Emission rate (lb/hr)	2.8	2.7	2.6	2.4
	2.9	2.8	2.6	2.5
HRSG Stack emission rate, ppmvd @ 15% O_2	10.0	10.0	10.0	10.0
HRSG Stack emission rate (lb/hr) (maximum)	29.0	28.0	26.0	25.0
Sulfuric Acid Mist				
Sulfuric Acid Mist (lb/hr)= SO_2 emission (lb/hr) x Conversion to H_2SO_4 (% by weight)/100				
CT SO_2 emission rate (lb/hr)	3.1	2.9	2.8	2.7
CT Conversion to H_2SO_4 (% by weight)	10	10	10	10
DB SO_2 emission rate (lb/hr)	0	0	0	0
DB Conversion to H_2SO_4 (%)	20	20	20	20
SCR SO_2 emission rate (lb/hr) - calculated (remaining SO_2 after conversion	2.8	2.7	2.5	2.4
SCR Conversion to H_2SO_4 (% by weight)	3	3	3	3
HRSG Stack emission rate (lb/hr)	0.61	0.57	0.55	0.52
Lead				
Lead (lb/hr) = Basis (lb/10^{12} Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10^{12} Btu				
Emission Rate Basis (lb/10^{12} Btu)	14	14	14	14
HRSG Stack emission rate (lb/hr)- calculated	0.0287	0.0270	0.0257	0.0243

Note: Universal gas constant = 1,545.4 ft-lb(force)/°R; atmospheric pressure = 2,112.5 lb(force)/ft² (@14.67 psia).
Source: Siemens, 2011; CT Performance Data; Golder, 2011.

TABLE B-13a-SH
MAXIMUM FORMALDEHYDE EMISSIONS
FOR THE PEEC PROJECT
WHEN FIRING NATURAL GAS, SIEMENS H CT

Parameter	CT Only at Baseload Turbine Inlet Temperature 35 °F	59 °F	75 °F	95 °F
Formaldehyde (CH_2O)				
CH_2O (lb/hr) = CH_2O (ppm actual) x Volume flow (acfm) x 30 (mole. wgt CH_2O) x 2116.8 lb/ft^2 (pressure) / [1545.7 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr				
CH_2O (ppm actual) = CH_2O (ppmd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x (1- Moisture(%)/100)				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisure (%)]				
Basis, ppm actual- calculated	0.116	0.115	0.139	0.111
CT, ppmvd @15% O_2	0.091	0.091	0.091	0.091
Moisture (%)	13.08	14.25	15.12	17.11
Oxygen (%)	10.63	10.48	8.72	10.11
Oxygen (%) dry	12.23	12.22	10.27	12.20
Exhaust Flow (acfm)	1,439,293	1,377,881	1,406,457	1,275,068
Exhaust Temperature (°F)	196	195	185	195
Molecular weight	30	30	30	30
CT Emission rate (lb/hr)	0.627	0.594	0.747	0.533
CT Emission rate (lb/10^{12} Btu) (HHV)	226.2	224.3	282.0	219.1

Note: ppmvd= parts per million, volume dry; O_2= oxygen.
Source: Siemens, 2011; CT Performance Data; Golder, 2011.

TABLE B-13-SH
REGULATED AND HAZARDOUS AIR POLLUTANT EMISSION FACTORS AND EMISSIONS FOR THE PEEC PROJECT WHEN FIRING NATURAL GAS, SIEMENS H CT

Parameter	Emission Rate (lb/hr) firing Natural Gas - Base Load [a]	Maximum Annual Emission (TPY) [b]	
Ambient Temperature (°F):	75 °F	1	3
HIR (MMBtu/hr):	2,539	CT/HRSG	CTs/HRSGs
Sulfuric acid mist	2.10	9.2	27.6
HAPs [Section 112(b) of Clean Air Act]			
1,3-Butadiene	0.0011	0.0048	0.014
Acetaldehyde	0.10	0.44	1.33
Acrolein	0.016	0.07	0.21
Benzene	0.030	0.13	0.40
Ethylbenzene	0.081	0.36	1.07
Formaldehyde	0.59	2.60	7.80
Naphthalene	0.0033	0.01	0.04
Polycyclic Aromatic Hydrocarbons (PAH) [c]	0.0056	0.02	0.07
Propylene Oxide	0.074	0.32	0.97
Toluene	0.084	0.37	1.10
Xylene	0.16	0.71	2.14
Antimony	0.0	0.00	0.00
Arsenic	0.0	0.00	0.00
Beryllium	0.0	0.00	0.00
Cadmium	0.0	0.00	0.00
Chromium	0.0	0.00	0.00
Lead	0.0	0.00	0.00
Manganese	0.0	0.00	0.00
Mercury	0.0000025	0.00	0.00
Nickel	0.0	0.00	0.00
Selenium	0.0	0.00	0.00
HAPs (Total)	1.15	5.05	15.2

[a] Emissions based on the following emission factors and conversion factors for firing natural gas:

Emission Factors		Value	Reference
Sulfuric acid mist		10	%; Conversion of SO_2 to SO_3 in gas turbine
1,3-Butadiene	(a)	0.43	$lb/10^{12}$ Btu; AP-42,Table 3.1-3. EPA 2000
Acetaldehyde		40	$lb/10^{12}$ Btu; AP-42,Table 3.1-3. EPA 2000
Acrolein		6.4	$lb/10^{12}$ Btu; AP-42,Table 3.1-3. EPA 2000
Benzene		12	$lb/10^{12}$ Btu; AP-42,Table 3.1-3. EPA 2000
Ethylbenzene		32	$lb/10^{12}$ Btu; AP-42,Table 3.1-3. EPA 2000
Formaldehyde		0.091	ppmvd @15% O_2 (see Table 9a)
Naphthalene		1.3	$lb/10^{12}$ Btu; AP-42,Table 3.1-3. EPA 2000
Polycyclic Aromatic Hydrocarbons (PAH)		2.2	$lb/10^{12}$ Btu; AP-42,Table 3.1-3. EPA 2000
Propylene Oxide	(a)	29	$lb/10^{12}$ Btu; AP-42,Table 3.1-3. EPA 2000
Toluene		33	$lb/10^{12}$ Btu; AP-42,Table 3.1-3. EPA 2000. Database
Xylene		64	$lb/10^{12}$ Btu; AP-42,Table 3.1-3. EPA 2000
Antimony		0.00E+00	
Arsenic		0.00E+00	
Beryllium		0.00E+00	
Cadmium		0.00E+00	
Chromium		0.00E+00	
Lead		0.00E+00	
Manganese		0.00E+00	
Mercury		1.00E-03	
Nickel		0.00E+00	
Selenium		0.00E+00	

(a) Based on 1/2 the detection limit; expected emissions are lower.

[b] Annual emissions based on firing natural gas for : 8760 hours.

[c] Assumed to be representative of Polycyclic Organic Matter (POM) emissions, a regulated HAP.

TABLE B-14a-SH
MAXIMUM FORMALDEHYDE EMISSIONS
FOR THE PEEC PROJECT
SIEMENS H CT, DRY LOW NO_x COMBUSTOR, DISTILLATE OIL, BASE LOAD

Parameter	CT Only Turbine Inlet Temperature 35 °F	59 °F	75 °F	95 °F
Formaldehyde (CH_2O)				
CH_2O (lb/hr) = CH_2O (ppm actual) x Volume flow (acfm) x 30 (mole. wgt CH_2O) x 2116.8 lb/ft^2 (pressure) / [1545.7 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr				
CH_2O (ppm actual) = CH_2O (ppmd @ 15%O_2) x [(20.9 - O_2 dry)/(20.9 - 15)] x [1- Moisture(%)/100]				
Oxygen (%, dry)(O_2 dry) = Oxygen (%)/[1-Moisure (%)]				
Basis, ppmvw - calculated	0.118	0.116	0.115	0.112
CT, ppmvd @15% O_2	0.091	0.091	0.091	0.091
Moisture (%)	12.84	14.03	15.11805657	16.85745512
Oxygen (%)	10.56	10.42	10.31	10.09
Oxygen (%) dry	12.12	12.12	12.15	12.13
Exhaust Flow (acfm)	1,810,600	1,728,597	1,661,402	1,557,483
Exhaust Temperature (°F)	359	357	355	354
Molecular weight	30	30	30	30
CT Emission rate (lb/hr)	0.642	0.606	0.575	0.529
CT Emission rate (lb/10^{12} Btu) (HHV)	238.8	236.0	234.3	225.6

Note: ppmvd= parts per million, volume dry; O_2= oxygen.

Source: Siemens, 2011; CT Performance Data; Golder, 2011.

TABLE B-14-SH
REGULATED AND HAZARDOUS AIR POLLUTANT EMISSION FACTORS AND EMISSIONS FOR THE PEEC PROJECT
WHEN FIRING DISTILLATE FUEL OIL, SIEMENS H CT

Parameter	Emission Rate (lb/hr) Distillate Fuel Oil [a] 1 CT/HRSG - Base Load	Emission Rate (lb/hr) Natural Gas [b] 1 CT/HRSG - Base Load	Maximum Annual Emissions (TPY) 3 CTs/HRSGs - Hours on Distillate Fuel Oil Only			Maximum Annual Emissions (TPY) 3 CTs/HRSGs Natural Gas and Fuel Oil - Hours on Distillate Fuel Oil		
Ambient Temperature (°F):	75 °F	75 °F						
HIR (MMBtu/hr):	2,453	2,539	500	1,000	1,500	500	1,000	1,500
Sulfuric acid mist	0.73	2.10	0.55	1.09	1.64	26.6	25.5	24.5
HAPs [Section 112(b) of Clean Air Act]								
1,3-Butadiene	0.0392	0.001	0.029	0.059	0.088	0.043	0.072	0.100
Acetaldehyde	0.00	0.102	0.000	0.000	0.000	1.26	1.18	1.11
Acrolein	0.00	0.016	0.00	0.00	0.00	0.20	0.19	0.18
Benzene	0.135	0.030	0.10	0.20	0.30	0.48	0.56	0.64
Ethylbenzene	0.00	0.081	0.00	0.00	0.00	1.01	0.95	0.88
Formaldehyde	0.606	0.594	0.45	0.91	1.36	7.81	7.82	7.83
Naphthalene	0.0859	0.003	0.064	0.129	0.193	0.11	0.17	0.23
Polycyclic Aromatic Hydrocarbons (PAH) [c]	0.098	0.006	0.074	0.147	0.221	0.14	0.21	0.28
Propylene Oxide	0.00	0.074	0.00	0.00	0.00	0.91	0.86	0.80
Toluene	0.00	0.084	0.00	0.00	0.00	1.04	0.98	0.91
Xylene	0.00	0.162	0.00	0.00	0.00	2.01	1.89	1.77
Antimony	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arsenic	0.0270	0.00	0.020	0.040	0.061	0.02	0.04	0.06
Beryllium	0.000760	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cadmium	0.01177	0.00	0.01	0.02	0.03	0.01	0.02	0.03
Chromium	0.0270	0.00	0.02	0.04	0.06	0.02	0.04	0.06
Lead	0.0343	0.00	0.026	0.052	0.077	0.03	0.05	0.08
Manganese	1.94	0.00	1.45	2.91	4.36	1.45	2.91	4.36
Mercury	0.00294	0.00	0.002	0.004	0.007	0.00	0.00	0.01
Nickel	0.01128	0.00	0.008	0.017	0.025	0.01	0.02	0.03
Selenium	0.0613	0.00	0.05	0.09	0.14	0.05	0.09	0.14
HAPs (Total)	3.08	1.2	2.31	4.62	6.93	16.6	18.0	19.5

[a] Emissions based on the following emission factors and conversion factors for firing distillate fuel oil:

Emission Factors		Value	Reference
Sulfuric acid mist		5	%; Conversion of SO_2 to SO_3 in gas turbine
1,3-Butadiene	(a)	16	lb/10^{12} Btu; AP-42,Table 3.1-4. EPA 2000
Acetaldehyde		0.0	
Acrolein		0.0	
Benzene		55	lb/10^{12} Btu; AP-42,Table 3.1-4. EPA 2000
Ethylbenzene		0.0	
Formaldehyde		0.091	ppmvd @15% O2 (see Table 10a)
Naphthalene		35	lb/10^{12} Btu; AP-42,Table 3.1-4. EPA 2000
Polycyclic Aromatic Hydrocarbons (PAH)		40	lb/10^{12} Btu; AP-42,Table 3.1-4. EPA 2000
Propylene Oxide		0.0	
Toluene		0.0	
Xylene		0.0	
Antimony		0.0	
Arsenic	(a)	11	lb/10^{12} Btu; AP-42,Table 3.1-5. EPA 2000
Beryllium	(a)	0.31	lb/10^{12} Btu; AP-42,Table 3.1-5. EPA 2000
Cadmium		4.8	lb/10^{12} Btu; AP-42,Table 3.1-5. EPA 2000
Chromium		11	lb/10^{12} Btu; AP-42,Table 3.1-5. EPA 2000
Lead		14	lb/10^{12} Btu; AP-42,Table 3.1-5. EPA 2000
Manganese		790	lb/10^{12} Btu; AP-42,Table 3.1-5. EPA 2000
Mercury		1.2	lb/10^{12} Btu; AP-42,Table 3.1-5. EPA 2000
Nickel	(a)	4.6	lb/10^{12} Btu; AP-42,Table 3.1-5. EPA 2000
Selenium	(a)	25	lb/10^{12} Btu; AP-42,Table 3.1-5. EPA 2000

(a) Based on 1/2 the detection limit; expected emissions are lower.

[b] Natural gas firing emission rates based on Table B-13.

[c] Assumed to be representative of Polycyclic Organic Matter (POM) emissions, a regulated HAP

TABLE B-15
HAZARDOUS AIR POLLUTANT EMISSIONS
FOR ADDITIONAL PEEC EMISSION UNITS- OIL-FIRING

Parameter	Units	Value	Annual Emission Basis: Fire Pump Engine	Annual Emission Basis: Emergency Generators
Number			1	2
Heat Input Rate	MMBtu/hr	per unit	2.32	21.0
Maximum operation/yr	hours	per unit	100	100
Heat Input Rate/annual	MMBtu/yr	all units	232.4	4,202.0
HAPs [Section 112(b) of Clean Air Act]	Emission Factor[a, b]		Emissions (TPY)	
Acrolein	lb/MMBtu	7.88E-06	9.16E-07	1.66E-05
Acetaldehyde	lb/MMBtu	2.52E-05	2.93E-06	5.29E-05
Benzene	lb/MMBtu	7.76E-04	9.02E-05	1.63E-03
Formaldehyde	lb/MMBtu	7.89E-05	9.17E-06	1.66E-04
Naphthalene	lb/MMBtu	1.30E-04	1.51E-05	2.73E-04
Toluene	lb/MMBtu	2.81E-04	3.26E-05	5.90E-04
Xylene	lb/MMBtu	1.93E-04	2.24E-05	4.05E-04
Acenaphthene	lb/MMBtu	4.68E-06	5.44E-07	9.83E-06
Acenaphthylene	lb/MMBtu	9.23E-06	1.07E-06	1.94E-05
Anthracene	lb/MMBtu	1.23E-06	1.43E-07	2.58E-06
Benzo(a)anthracene	lb/MMBtu	6.22E-07	7.23E-08	1.31E-06
Benzo(b)fluoranthene	lb/MMBtu	1.11E-06	1.29E-07	2.33E-06
Benzo(k)fluoranthene	lb/MMBtu	2.18E-07	2.53E-08	4.58E-07
Benzo(g,h,i)perylene	lb/MMBtu	5.56E-07	6.46E-08	1.17E-06
Benzo(a)pyrene	lb/MMBtu	2.57E-07	2.99E-08	5.40E-07
Chrysene	lb/MMBtu	1.53E-06	1.78E-07	3.21E-06
Dibenzo(a,h)anthracene	lb/MMBtu	3.46E-07	4.02E-08	7.27E-07
Fluoanthene	lb/MMBtu	4.03E-06	4.68E-07	8.47E-06
Fluorene	lb/MMBtu	4.47E-06	5.19E-07	9.39E-06
Indo(1,2,3-cd)pyrene	lb/MMBtu	4.14E-07	4.81E-08	8.70E-07
Phenanthrene	lb/MMBtu	1.05E-06	1.22E-07	2.21E-06
Pyrene	lb/MMBtu	3.71E-06	4.31E-07	7.79E-06
Arsenic	$lb/10^{12}$ Btu	4.0	4.65E-07	8.40E-06
Beryllium	$lb/10^{12}$ Btu	3.0	3.49E-07	6.30E-06
Cadmium	$lb/10^{12}$ Btu	3.0	3.49E-07	6.30E-06
Chromium	$lb/10^{12}$ Btu	3.0	3.49E-07	6.30E-06
Lead	$lb/10^{12}$ Btu	9.0	1.05E-06	1.89E-05
Mercury	$lb/10^{12}$ Btu	3.0	3.49E-07	6.30E-06
Manganese	$lb/10^{12}$ Btu	6.0	6.97E-07	1.26E-05
Nickel	$lb/10^{12}$ Btu	3.0	3.49E-07	6.30E-06
Selenium	$lb/10^{12}$ Btu	15.0	1.74E-06	3.15E-05
HAPs (Total)			1.83E-04	3.31E-03

[a] EPA AP-42, Section 3.4, Large Stationary Diesel And All Stationary Dual-fuel Engines (October 1996)

[b] EPA AP-42, Section 1.3, Fuel Oil Combustion for metals (September 1998).

TABLE B-16
HAZARDOUS AIR POLLUTANT EMISSIONS
FOR ADDITIONAL PEEC EMISSION UNITS- NATURAL GAS-FIRING

	Fuel Heater			Compressor Station		
Parameter/Pollutant	**Units**	**Value**	**Annual Emission Basis**	**Units**	**Value**	**Annual Emission Basis**
Number			1			2
Heat Input Rate	MMBtu/hr	per unit	9.90	MMBtu/hr	per unit	53.98
Fuel use	scf/hr	per unit	9,706	scf/hr	per unit	NA
Maximum operation/yr	hours	per unit	8,760	hours	per unit	8,760
Heat Input Rate/annual	MMBtu/yr	all units	NA	MMBtu/yr	all units	945,760
Fuel use/annual	MMscf/yr	all units	85.02	MMscf/yr	all units	NA
HAPs [Section 112(b) of Clean Air Act]	Emission Factor [a]		Emissions (TPY)	Emission Factor [b]		Emissions (TPY)
Benzene	$lb/10^6$ scf	2.10E-03	8.93E-05	$lb/10^{12}$ Btu	1.20E+01	5.67E-03
Formaldehyde	$lb/10^6$ scf	7.50E-02	3.19E-03	$lb/10^{12}$ Btu	7.10E+02	3.36E-01
Naphthalene	$lb/10^6$ scf	6.10E-04	2.59E-05	$lb/10^{12}$ Btu	1.30E+00	6.15E-04
Toluene	$lb/10^6$ scf	3.40E-03	1.45E-04	$lb/10^{12}$ Btu	3.30E+01	1.56E-02
Dichlorobenzene	$lb/10^6$ scf	1.20E-03	5.10E-05	--	NA	NA
Acenaphthene	$lb/10^6$ scf	1.80E-06	7.65E-08	--	NA	NA
Acenaphthylene	$lb/10^6$ scf	1.80E-06	7.65E-08	--	NA	NA
Acetaldehyde	--	NA	NA	$lb/10^{12}$ Btu	4.00E+01	1.89E-02
Acrolein	--	NA	NA	$lb/10^{12}$ Btu	6.40E+00	3.03E-03
Anthracene	$lb/10^6$ scf	2.40E-06	1.02E-07	--	NA	NA
Benzo(a)anthracene	$lb/10^6$ scf	1.80E-06	7.65E-08	--	NA	NA
Benzene	$lb/10^6$ scf	2.10E-03	8.93E-05	$lb/10^{12}$ Btu	1.20E+01	5.67E-03
Benzo(g,h,i)perylene	$lb/10^6$ scf	1.20E-06	5.10E-08	--	NA	NA
Chrysene	$lb/10^6$ scf	1.80E-06	7.65E-08	--	NA	NA
Dibenzo(a,h)anthracene	$lb/10^6$ scf	1.20E-06	5.10E-08	--	NA	NA
Ethylbenzene	--	NA	NA	$lb/10^{12}$ Btu	3.20E+01	1.51E-02
Fluoanthene	$lb/10^6$ scf	3.00E-06	1.28E-07	--	NA	NA
Fluorene	$lb/10^6$ scf	2.80E-06	1.19E-07	--	NA	NA
Indeno(1,2,3-cd)pyrene	$lb/10^6$ scf	1.80E-06	7.65E-08	--	NA	NA
Phenanthrene	$lb/10^6$ scf	1.70E-05	7.23E-07	--	NA	NA
Phenol	--	NA	NA	--	NA	NA
Pyrene	$lb/10^6$ scf	5.00E-06	2.13E-07	--	NA	NA
Xylene	--	NA	NA	$lb/10^{12}$ Btu	6.40E+01	3.03E-02
1,3-Butadiene	--	NA	NA	$lb/10^{12}$ Btu	4.30E-01	2.03E-04
Polycyclic Aromatic Hydrocarbons (PAH)	--	NA	NA	$lb/10^{12}$ Btu	2.20E+00	1.04E-03
Propylene Oxide	--	NA	NA	$lb/10^{12}$ Btu	2.90E+01	1.37E-02
Arsenic	$lb/10^6$ scf	2.00E-04	8.50E-06	--	NA	NA
Beryllium	$lb/10^6$ scf	1.20E-05	5.10E-07	--	NA	NA
Cadmium	$lb/10^6$ scf	1.10E-03	4.68E-05	--	NA	NA
Chromium	$lb/10^6$ scf	1.40E-03	5.95E-05	--	NA	NA
Cobalt	$lb/10^6$ scf	8.40E-05	3.57E-06	--	NA	NA
Mercury	$lb/10^6$ scf	2.60E-04	1.11E-05	--	NA	NA
Manganese	$lb/10^6$ scf	3.80E-04	1.62E-05	--	NA	NA
Nickel	$lb/10^6$ scf	2.10E-03	8.93E-05	--	NA	NA
Selenium	$lb/10^6$ scf	2.40E-05	1.02E-06	--	NA	NA
HAPs (Total)			3.83E-03			0.45

[a] EPA AP-42, Section 1.4, Natural Gas Combustion (March 1998).

[b] EPA AP-42, Section 3.2, Stationary Gas Turbines (April 2000).

TABLE B-17
GREENHOUSE GAS (GHG) EMISSIONS
SIEMENS H CT, DRY LOW NOx COMBUSTOR, BASE LOAD

	Maximum Heat Input at 75 ^{0}F (MMBtu/hr)		Emission Factor [a] (lb/MMBtu)		Hourly GHG Emissions (lb/hr)		Operating Hours		Annual GHG Emissions (TPY)		CO_2e Emission Rate [b] (TPY)		
Pollutant	**Natural Gas**	**Distillate Fuel Oil**	**Natural Gas**	**Distillate Fuel Oil**	**Natural Gas**	**Distillate Fuel Oil**	**Natural Gas**	**Distillate Fuel Oil**	**Natural Gas**	**Distillate Fuel Oil**	**Natural Gas**	**Distillate Fuel Oil**	**Total**
Natural Gas Only													
CO_2	2,539.0	0.0	116.9	163.0	296,697.6	0.0	8760	0	1,299,535.4	0	1,299,535.4	0	1,299,535.4
CH_4	2,539.0	0.0	0.002204	0.006612	5.6	0.0	8760	0	24.5	0	514.7	0	514.7
N_2O	2,539.0	0.0	0.0002204	0.001322	0.6	0.0	8760	0	2.5	0	759.8	0	759.8
										Total	1,300,810.0	0.0	1,300,810.0
Natural Gas & Distillate Fuel Oil													
CO_2	2,539.0	2,453.0	116.9	163.0	296,697.6	399,858.2	7760	1000	1,151,186.6	199,929.1	1,151,186.6	199,929.1	1,351,115.8
CH_4	2,539.0	2,453.0	0.002204	0.006612	5.5960	16.2192	7760	1000	21.7	8.1	455.96	170.30	626.3
N_2O	2,539.0	2,453.0	0.0002204	0.001322	0.5596	3.2438	7760	1000	2.2	1.6	673.08	503	1175.9
										Total	1,152,315.7	200,602.2	1,352,917.9
										Maximum Total	1,300,810.0	200,602.2	1,352,917.9

[a] Table C-2, Subpart C, 40 CFR 98. Emission factors in kg/MMBtu

Pollutant	Natural Gas	Distillate Fuel Oil
CO_2	53.02	73.96
CH_4	0.001	0.003
N_2O	0.0001	0.0006

Conversion factor from kg/MMBtu to lb/MMBtu: 2.204

[b] CH_4 and N_2O are multiplied by CO_2e factor

Pollutant	CO_{2e} Factor
CH_4	21
N_2O	310

TABLE B-18

GREENHOUSE GAS (GHG) EMISSIONS FOR ADDITIONAL PEEC EMISSION UNITS

Emission Unit/ Pollutant	Maximum Heat Input (MMBtu/hr)	Emission Factor [a] (lb/MMBtu)	Hourly GHG Emissions (lb/hr)	Operating Hours	Annual GHG Emissions (TPY)	CO_2e Emissions Rate [b] (TPY)
Emergency Generator (Fuel Oil)						
CO_2	21.01	163.0	3,424.8	200	342.5	342.5
CH_4	21.01	0.006612	0.139	200	0.014	0.29
N_2O	21.01	0.001322	0.028	200	0.0028	0.86
						343.6
Natural Gas Heater (Natural Gas)						
CO_2	9.90	116.9	1,156.9	8,760	5,067.1	5067.1
CH_4	9.90	0.002204	0.022	8,760	0.096	2.01
N_2O	9.90	0.0002204	0.0022	8,760	0.0096	2.96
						5,072.1
Fire Pump Engine (Fuel Oil)						
CO_2	2.32	163.0	378.8	80	15.2	15.2
CH_4	2.32	0.006612	0.0154	80	0.00061	0.01
N_2O	2.32	0.001322	0.0031	80	0.00012	0.04
						15.2
Gas Compressor (Natural Gas)						
CO_2	53.98	116.9	6,308.1	8,760	27,629.5	27,629.5
CH_4	53.98	0.002204	0.119	8,760	0.521	10.94
N_2O	53.98	0.0002204	0.012	8,760	0.0521	16.15
						27,656.6

[a] Table C-2, Subpart C, 40 CFR 98. Emission factors in kg/MMBtu

Pollutant	Natural Gas	Distillate Fuel Oil
CO_2	53.02	73.96
CH_4	0.001	0.003
N_2O	0.0001	0.0006

Conversion factor from kg/MMBtu to lb/MMBtu: 2.204

[b] CH_4 and N_2O are multiplied by CO_2e factor

Pollutant	CO_{2e} Factor
CH_4	21
N_2O	310

APPENDIX C

TABLE C-1
SUMMARY OF MAXIMUM ANNUAL SO2, PM, NOx, CO, VOC EMISSIONS
FOR THE EXISTING UNITS 1 THROUGH 4 AT PORT EVERGLADES PLANT USING AOR DATA

Pollutant	Unit	Annual Emissions (tons/year) 2006	2007	2008	2009	2010	2-Year Average Annual Emissions (tons/year) 2006 2007	2007 2008	2008 2009	2009 2010	Maximum 2-Year Average (tons/year)
SO_2	1	1,290.6	1,436.3	400.7	570.8	11.6	1,363.5	918.5	485.7	291.2	
	2	1,262.1	1,166.5	719.1	595.9	55.4	1,214.3	942.8	657.5	325.7	
	3	3,918.1	3,061.8	2,066.4	2,058.7	1,797.6	3,489.9	2,564.1	2,062.6	1,928.2	
	4	2,616.1	4,237.2	2,182.3	2,159.6	2,002.7	3,426.7	3,209.8	2,171.0	2,081.2	
		9,086.9	9,901.8	5,368.5	5,385.0	3,867.3	9,494.3	7,635.1	5,376.7	4,626.2	9,494.3
PM	1	57.4	8.5	59.1	1.1	0.04	33.0	33.8	30.1	0.6	
	2	9.5	6.5	76.5	19.5	0.5	8.0	41.5	48.0	10.0	
	3	337.0	337.0	175.1	5.0	1.3	337.0	256.0	90.0	3.1	
	4	228.9	222.2	136.4	45.2	7.7	225.6	179.3	90.8	26.4	
		632.8	574.2	447.1	70.8	9.6	603.5	510.7	258.9	40.2	603.5
PM_{10}	1	57.4	8.5	59.1	1.1	0.04	33.0	33.8	30.1	0.6	
	2	9.5	6.5	76.5	19.5	0.5	8.0	41.5	48.0	10.0	
	3	337.0	337.0	175.1	5.0	1.3	337.0	256.0	90.0	3.1	
	4	228.9	222.2	136.4	45.2	7.7	225.6	179.3	90.8	26.4	
		632.8	574.2	447.1	70.8	9.6	603.5	510.7	258.9	40.2	603.5
NO_x	1	710.8	428.6	201.8	229.0	11.6	569.7	315.2	215.4	120.3	
	2	712.6	344.0	280.4	228.5	14.1	528.3	312.2	254.4	121.3	
	3	2,148.5	1,156.1	1,998.6	1,898.4	1,525.6	1,652.3	1,577.3	1,948.5	1,712.0	
	4	1,577.5	1,442.9	1,905.0	1,651.8	1,493.8	1,510.2	1,674.0	1,778.4	1,572.8	
		5,149.3	3,371.5	4,385.8	4,007.8	3,045.1	4,260.4	3,878.7	4,196.8	3,526.5	4,260.4
CO	1	136.9	74.2	74.2	69.9	1.6	105.6	74.2	72.0	35.7	
	2	139.2	57.8	94.9	83.6	2.1	98.5	76.4	89.3	42.8	
	3	412.9	303.8	390.6	320.8	286.0	358.4	347.2	355.7	303.4	
	4	318.6	326.1	361.8	313.8	228.9	322.4	343.9	337.8	271.3	
		1,007.6	761.9	921.5	788.0	518.6	884.8	841.7	854.8	653.3	884.8
VOC	1	10.0	9.0	6.0	6.2	0.2	9.5	7.5	6.1	3.2	
(as methane)	2	10.0	7.2	8.2	7.1	0.3	8.6	7.7	7.7	3.7	
	3	30.2	28.8	31.3	26.3	23.6	29.5	30.0	28.8	25.0	
	4	21.8	33.6	29.8	26.5	20.3	27.7	31.7	28.1	23.4	
		72.0	78.6	75.3	66.2	44.5	75.3	76.9	70.7	55.3	76.9
Lead	1	0.013	0.015	0.004	0.006	0.0004	0.014	0.009	0.005	0.003	
	2	0.013	0.012	0.007	0.006	0.0005	0.012	0.010	0.007	0.003	
	3	0.040	0.032	0.022	0.020	0.018	0.036	0.027	0.021	0.019	
	4	0.027	0.044	0.023	0.022	0.020	0.036	0.033	0.023	0.021	
		0.093	0.103	0.057	0.055	0.039	0.098	0.080	0.056	0.047	0.098
SAM [a]	1	57.4	63.9	17.8	25.4	0.5	60.6	40.8	21.6	13.0	
	2	56.1	51.9	32.0	26.5	2.5	54.0	41.9	29.2	14.5	
	3	174.3	136.2	91.9	91.6	79.9	155.2	114.0	91.7	85.8	
	4	116.3	188.4	97.1	96.0	89.1	152.4	142.8	96.6	92.6	
		404.1	440.4	238.8	239.5	172.0	422.3	339.6	239.1	205.7	422.3

[a] Estimated from SO_2 emissions and based on ratio of AP-42 emission factors for fuel oil combustion (Table 1.3-1) for SO_3 and SO_2. SO_3 is assumed to be converted to H_2SO_4.

SO_3 emission factor	5.7 S lb/1000 gal (S = sulfur content)
SO_2 emission factor	157 S lb/1000 gal (S = sulfur content)
Ratio SO_3/SO_2 emissions	0.036 fraction
SO_3 molecular wgt (MW)	80
H_2SO_4 MW	98
Ratio H_2SO_4/SO_2 MW	1.225
Ratio H_2SO_4/SO_2 emissions	0.044

Source: FPL, 2011

TABLE C-2
SUMMARY OF CO_2 EMISSIONS FOR THE EXISTING UNITS 1 THROUGH 4 AT PORT EVERGLADES PLANT BASED ON ACID RAIN PROGRAM DATA

Unit ID	Operating Year	Operation Time (hrs)	Months Reported	Gross Load (MWh)	CO_2 Emissions (TPY)	Heat Input(mmBtu)	Primary Fuel	Secondary Fuel	Maximum Heat input capacity (MMBtu/hr)
Unit 1	2010	58.59	12	8,068.30	7,269.89	81,243.34	Residual Oil	Pipeline Natural Gas	2475
Unit 2	2010	78.96	12	11,418.42	9,685.68	110,216.93	Residual Oil	Pipeline Natural Gas	2475
Unit 3	2010	5,646.15	12	816,717.75	651,953.52	8,671,770.00	Residual Oil	Pipeline Natural Gas	4180
Unit 4	2010	4,863.70	12	703,514.81	592,940.71	7,620,377.43	Residual Oil	Pipeline Natural Gas	4180
Unit 1	2009	2,352.73	12	218,983.50	176,410.18	2,311,759.73	Residual Oil	Pipeline Natural Gas	2475
Unit 2	2009	2,581.57	12	253,878.27	200,338.53	2,657,008.68	Residual Oil	Pipeline Natural Gas	2475
Unit 3	2009	5,992.95	12	936,274.52	766,171.73	10,191,575.58	Residual Oil	Pipeline Natural Gas	4180
Unit 4	2009	6,051.82	12	915,856.15	748,031.50	9,901,521.02	Residual Oil	Pipeline Natural Gas	4180
Unit 1	2008	912.91	5	76,175.22	62,258.08	822,342.76	Residual Oil	Pipeline Natural Gas	2400
Unit 2	2008	1,384.32	5	129,071.73	108,435.70	1,387,612.06	Residual Oil	Pipeline Natural Gas	2400
Unit 3	2008	3,132.55	5	534,797.16	415,737.09	5,537,674.70	Residual Oil	Pipeline Natural Gas	4180
Unit 4	2008	3,245.35	5	605,729.60	468,171.89	6,208,456.77	Residual Oil	Pipeline Natural Gas	4180
Unit 1	2007	3,128.77	12	318,360.20	288,111.64	3,393,060.91	Residual Oil	Pipeline Natural Gas	2400
Unit 2	2007	2,607.50	12	257,766.53	233,711.48	2,744,636.30	Residual Oil	Pipeline Natural Gas	2400
Unit 3	2007	5,573.87	12	1,086,955.26	859,762.61	10,941,432.19	Residual Oil	Pipeline Natural Gas	4180
Unit 4	2007	6,414.33	12	1,297,789.65	1,040,523.23	12,857,134.88	Residual Oil	Pipeline Natural Gas	4180
Unit 1	2006	3,792.97	12	468,698.42	371,454.59	4,777,247.08	Residual Oil	Pipeline Natural Gas	2400
Unit 2	2006	3,826.16	12	464,109.13	370,538.89	4,784,052.94	Residual Oil	Pipeline Natural Gas	2400
Unit 3	2006	7,130.62	12	1,393,401.45	1,113,274.71	14,310,310.05	Residual Oil	Pipeline Natural Gas	4180
Unit 4	2006	5,234.70	12	1,033,553.37	812,679.47	10,593,474.53	Residual Oil	Pipeline Natural Gas	4180

TABLE C-3
ESTIMATED ANNUAL EMISSIONS OF N_2O AND CH_4
FOR THE EXISTING UNITS 1 THROUGH 4 AT PORT EVERGLADES PLANT USING AOR DATA

Year	Actual Annual Heat Input [a] (MMBtu/yr)	N_2O Emissions: Emission Factor [b] (lb/MMBtu)	N_2O Annual Emissions (lb/yr)	N_2O Annual Emissions (TPY)	CO_2e [c] Rate (TPY)	CH_4 Emissions: Emission Factor [b] (lb/MMBtu)	CH_4 Annual Emissions (lb/yr)	CH_4 Annual Emissions (TPY)	CO_2e [c] Rate (TPY)
No.6 Fuel Oil									
2010	7,386,440	1.32E-03	9,767.8	4.9	1,514.0	6.6E-03	48,839.1	24.4	512.8
2009	10,249,512	1.32E-03	13,554.0	6.8	2,100.9	6.6E-03	67,769.8	33.9	711.6
2008	10,489,520	1.32E-03	13,871.3	6.9	2,150.1	6.6E-03	69,356.7	34.7	728.2
2007	20,175,720	1.32E-03	26,680.4	13.3	4,135.5	6.6E-03	133,401.9	66.7	1,400.7
2006	17,944,056	1.32E-03	23,729.2	11.9	3,678.0	6.6E-03	118,646.1	59.3	1,245.8
Natural Gas									
2010	9,454,000	2.20E-04	2,083.7	1.042	323.0	2.2E-03	20,836.6	10.418	218.8
2009	14,748,000	2.20E-04	3,250.5	1.625	503.8	2.2E-03	32,504.6	16.252	341.3
2008	17,833,000	2.20E-04	3,930.4	1.965	609.2	2.2E-03	39,303.9	19.652	412.7
2007	10,239,000	2.20E-04	2,256.7	1.128	349.8	2.2E-03	22,566.8	11.283	237.0
2006	16,955,000	2.20E-04	3,736.9	1.868	579.2	2.2E-03	37,368.8	18.684	392.4
LPG									
2010	365	1.32E-03	0.5	0.0	0.1	6.6E-03	2.4	0.0	0.0
2009	669	1.32E-03	0.9	0.0	0.1	6.6E-03	4.4	0.0	0.0
2008	684	1.32E-03	0.9	0.0	0.1	6.6E-03	4.5	0.0	0.0
2007	706	1.32E-03	0.9	0.0	0.1	6.6E-03	4.7	0.0	0.0
2006	604	1.32E-03	0.8	0.0	0.1	6.6E-03	4.0	0.0	0.0
Total									
2010	--	--	--	5.9	1,837.1	--	--	34.8	731.6
2009	--	--	--	8.4	2,604.8	--	--	50.1	1,052.9
2008	--	--	--	8.9	2,759.4	--	--	54.3	1,141.0
2007	--	--	--	14.5	4,485.4	--	--	78.0	1,637.7
2006	--	--	--	13.7	4,257.4	--	--	78.0	1,638.2

[a] Based on AOR data for the period 2006-2010 shown below:

	Heat Input (MMBtu)				Total
No.6 Fuel Oil	Unit 1	Unit 2	Unit 3	Unit 4	
2010	79,040	107,160	3,442,800	3,757,440	7,386,440
2009	1,117,048	1,174,352	3,743,760	4,214,352	10,249,512
2008	782,800	1,405,392	4,037,120	4,264,208	10,489,520
2007	2,927,064	2,377,280	6,237,624	8,633,752	20,175,720
2006	2,548,736	2,492,344	7,737,408	5,165,568	17,944,056
Natural Gas					
2010	7,000	7,000	5,461,000	3,979,000	9,454,000
2009	1,226,000	1,530,000	6,172,000	5,820,000	14,748,000
2008	1,460,000	1,710,000	7,720,000	6,943,000	17,833,000
2007	620,000	445,000	4,790,000	4,384,000	10,239,000
2006	2,261,000	2,336,000	6,798,000	5,560,000	16,955,000
LPG					
2010	2	2	183	178	365
2009	72	74	260	263	669
2008	81	113	250	240	684
2007	115	99	219	274	706
2006	121	124	359	0	604

[b] Table C-2, Subpart C, 40 CFR 98. Emission factors in kg/MMBtu

Pollutant	No.6.Fuel Oil	Natural Gas	LPG
CH_4	0.003	0.001	0.003
N_2O	0.0006	0.0001	0.0006

Conversion factor from kg/MMBtu to lb/MMBtu: 2.204

[c] N_2O and CH_4 emissions are multiplied by CO_2e factor

Pollutant	CO_{2e} Factor
N_2O	310
CH_4	21

TABLE C-4
SUMMARY OF MAXIMUM ANNUAL GHG EMISSIONS FOR THE EXISTING UNITS 1 THROUGH 4 AT PORT EVERGLADES PLANT

Pollutant	Unit	Annual CO_2 Equivalent Emissions (TPY)					2-Year Average Annual CO_2e Emissions (TPY)				Maximum 2-Year Average (TPY)
		2006	2007	2008	2009	2010	2006 2007	2007 2008	2008 2009	2009 2010	
CO_2[a]	1	371,454.6	288,111.6	62,258.1	176,410.2	7,269.9	329,783.1	175,184.9	119,334.1	91,840.0	
	2	370,538.9	233,711.5	108,435.7	200,338.5	9,685.7	302,125.2	171,073.6	154,387.1	105,012.1	
	3	1,113,274.7	859,762.6	415,737.1	766,171.7	651,953.5	986,518.7	637,749.9	590,954.4	709,062.6	
	4	812,679.5	1,040,523.2	468,171.9	748,031.5	592,940.7	926,601.3	754,347.6	608,101.7	670,486.1	
		2,667,947.7	2,422,109.0	1,054,602.8	1,890,951.9	1,261,849.8	2,545,028.3	1,738,355.9	1,472,777.4	1,576,400.9	2,545,028.3
N_2O[b]		4,257.4	4,485.4	2,759.4	2,604.8	1,837.1	4,371.4	3,622.4	2,682.1	2,220.9	4,371.4
CH_4[b]		1,638.2	1,637.7	1,141.0	1,052.9	731.6	1,638.0	1,389.4	1,097.0	892.3	1,638.0
										TOTAL	2,551,037.7

[a] Annual Emissions based on CEMS data obtained from EPA Acid Rain database.

[b] N_2O and CH_4 emissions based on actual annual heat input from Annual Operating Reports

Source: FPL, 2011

APPENDIX D

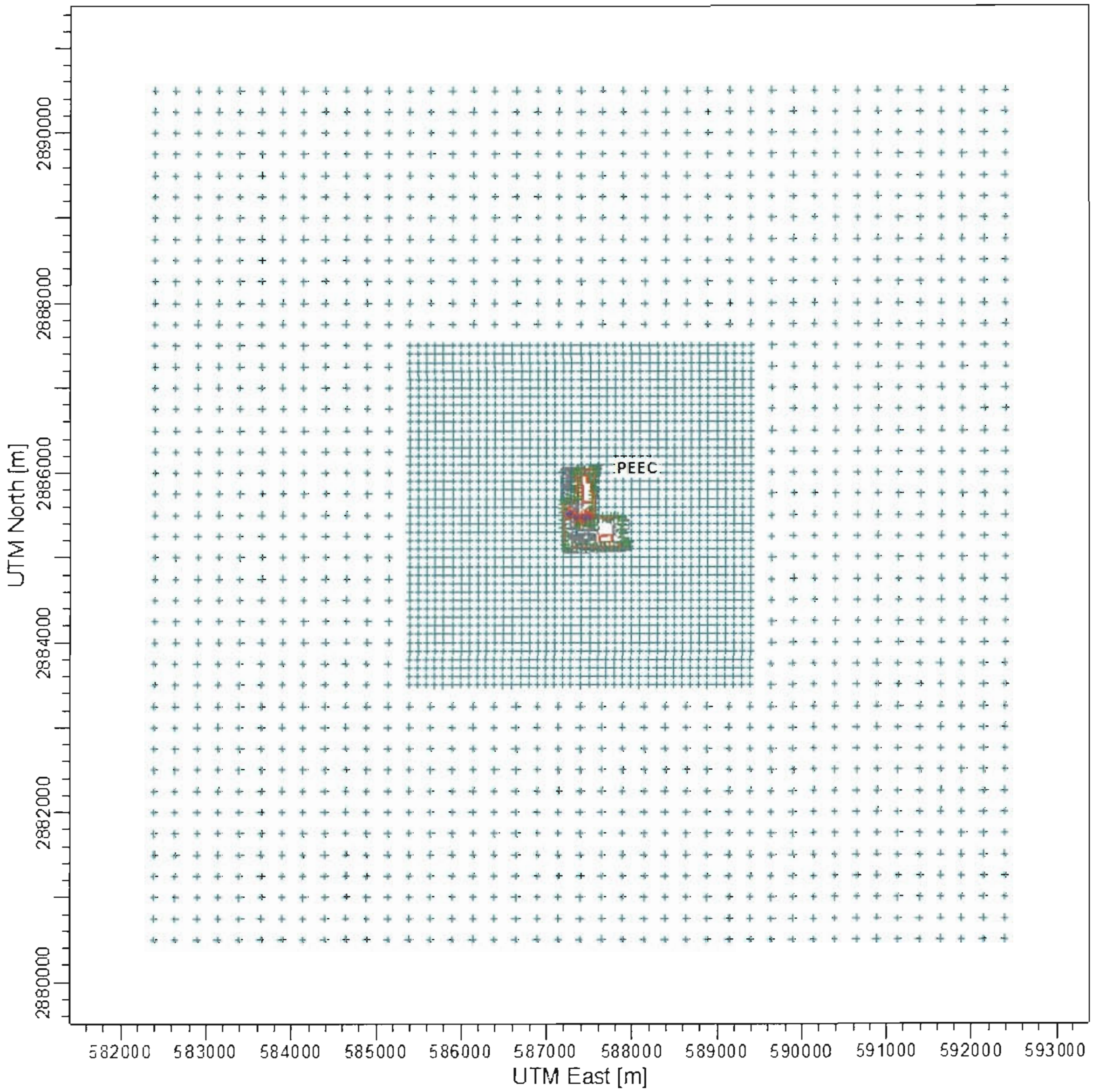


Figure D-1
Receptor Grid Used in Air Modeling Analyses for PEEC

Source: Golder, 2011.

Y:\Projects\2011\113-87618 FPL PEEC SCA\Appx (10.1-10.11)\Appx 10.2.5 AC Pmt (PSD)\Figures\Appendix D-1.docx

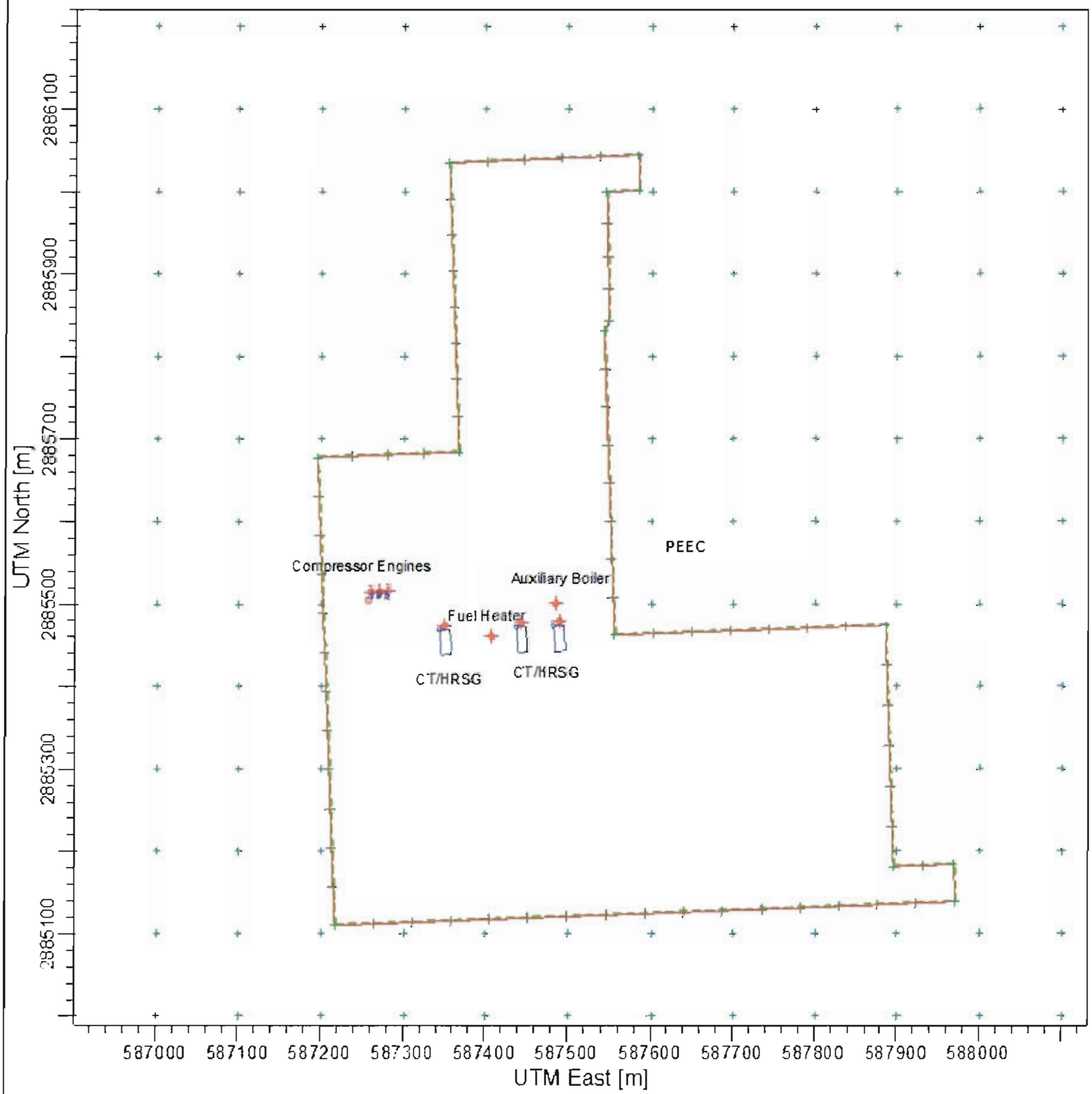


Figure D-2
Source and Building Locations for PEEC

Source: Golder, 2011.

Y:\Projects\2011\113-87618 FPL PEEC SCA\Appx (10.1-10.11)\Appx 10.2.5 AC Pmt (PSD)\Figures\Appendix D-2.docx

APPENDIX E

```
CO STARTING
   TITLEONE 2006 FPL PPE NEW CTS - CT LOAD ANALYSIS, MHI "J" CLASS GAS 9/13/11
   TITLETWO GENERIC (10 g/s) EMISSION RATES FOR CC CTS
   MODELOPT DFAULT CONC
   AVERTIME PERIOD 24 8 3 1
   POLLUTID GEN
   RUNORNOT RUN
CO FINISHED
**
****************************************
** ISCST3 Source Pathway
****************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION GA1095 POINT 587489.306  2885478.742  0.000
   LOCATION GB1095 POINT 587443.291  2885477.412  0.000
   LOCATION GC1095 POINT 587349.178  2885474.119  0.000

   LOCATION GA1075 POINT 587489.306  2885478.742  0.000
   LOCATION GB1075 POINT 587443.291  2885477.412  0.000
   LOCATION GC1075 POINT 587349.178  2885474.119  0.000

   LOCATION GA1035 POINT 587489.306  2885478.742  0.000
   LOCATION GB1035 POINT 587443.291  2885477.412  0.000
   LOCATION GC1035 POINT 587349.178  2885474.119  0.000

   LOCATION GA7595 POINT 587489.306  2885478.742  0.000
   LOCATION GB7595 POINT 587443.291  2885477.412  0.000
   LOCATION GC7595 POINT 587349.178  2885474.119  0.000

   LOCATION GA7575 POINT 587489.306  2885478.742  0.000
   LOCATION GB7575 POINT 587443.291  2885477.412  0.000
   LOCATION GC7575 POINT 587349.178  2885474.119  0.000

   LOCATION GA7535 POINT 587489.306  2885478.742  0.000
   LOCATION GB7535 POINT 587443.291  2885477.412  0.000
   LOCATION GC7535 POINT 587349.178  2885474.119  0.000

   LOCATION GA5095 POINT 587489.306  2885478.742  0.000
   LOCATION GB5095 POINT 587443.291  2885477.412  0.000
   LOCATION GC5095 POINT 587349.178  2885474.119  0.000

   LOCATION GA5075 POINT 587489.306  2885478.742  0.000
   LOCATION GB5075 POINT 587443.291  2885477.412  0.000
   LOCATION GC5075 POINT 587349.178  2885474.119  0.000

   LOCATION GA5035 POINT 587489.306  2885478.742  0.000
   LOCATION GB5035 POINT 587443.291  2885477.412  0.000
   LOCATION GC5035 POINT 587349.178  2885474.119  0.000

** Source Parameters **
```

```
** Baseload, 95 F
   SRCPARAM GA1095 3.3333   45.4   363.7   16.86  6.71
   SRCPARAM GB1095 3.3333   45.4   363.7   16.86  6.71
   SRCPARAM GC1095 3.3333   45.4   363.7   16.86  6.71
** Baseload, 75 F
   SRCPARAM GA1075 3.3333   45.4   363.7   17.47  6.71
   SRCPARAM GB1075 3.3333   45.4   363.7   17.47  6.71
   SRCPARAM GC1075 3.3333   45.4   363.7   17.47  6.71
** Baseload, 35 F
   SRCPARAM GA1035 3.3333   45.4   364.3   18.61  6.71
   SRCPARAM GB1035 3.3333   45.4   364.3   18.61  6.71
   SRCPARAM GC1035 3.3333   45.4   364.3   18.61  6.71
** 75% Load, 95 F
   SRCPARAM GA7595 3.3333   45.4   359.3   13.48  6.71
   SRCPARAM GB7595 3.3333   45.4   359.3   13.48  6.71
   SRCPARAM GC7595 3.3333   45.4   359.3   13.48  6.71
** 75% Load, 75 F
   SRCPARAM GA7575 3.3333   45.4   358.7   13.96  6.71
   SRCPARAM GB7575 3.3333   45.4   358.7   13.96  6.71
   SRCPARAM GC7575 3.3333   45.4   358.7   13.96  6.71
** 75% Load, 35 F
   SRCPARAM GA7535 3.3333   45.4   357.6   14.99  6.71
   SRCPARAM GB7535 3.3333   45.4   357.6   14.99  6.71
   SRCPARAM GC7535 3.3333   45.4   357.6   14.99  6.71

** 50% Load, 95 F
   SRCPARAM GA5095 3.3333   45.4   359.3   11.18  6.71
   SRCPARAM GB5095 3.3333   45.4   359.3   11.18  6.71
   SRCPARAM GC5095 3.3333   45.4   359.3   11.18  6.71
** 50% Load, 75 F
   SRCPARAM GA5075 3.3333   45.4   358.7   11.39  6.71
   SRCPARAM GB5075 3.3333   45.4   358.7   11.39  6.71
   SRCPARAM GC5075 3.3333   45.4   358.7   11.39  6.71
** 50% Load, 35 F
   SRCPARAM GA5035 3.3333   45.4   357.6   11.80  6.71
   SRCPARAM GB5035 3.3333   45.4   357.6   11.80  6.71
   SRCPARAM GC5035 3.3333   45.4   357.6   11.80  6.71

** Building Downwash **
SO BUILDHGT GA1035-GA7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT GA1035-GA7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT GA1035-GA7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT GA1035-GA7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT GA1035-GA7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT GA1035-GA7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDWID GA1035-GA7595      19.06   23.60   27.43   30.41   32.48   33.56
SO BUILDWID GA1035-GA7595      33.62   32.65   31.59   33.15   33.71   33.24
SO BUILDWID GA1035-GA7595      31.76   29.31   25.98   21.86   17.07   13.94
SO BUILDWID GA1035-GA7595      19.06   23.60   27.43   30.41   32.48   33.56
SO BUILDWID GA1035-GA7595      33.62   32.65   31.59   33.15   33.71   33.24
SO BUILDWID GA1035-GA7595      31.76   29.31   25.98   21.86   17.07   13.94
SO BUILDLEN GA1035-GA7595      33.15   33.71   33.24   31.77   29.32   25.98
SO BUILDLEN GA1035-GA7595      21.86   17.07   13.94   19.06   23.60   27.43
SO BUILDLEN GA1035-GA7595      30.42   32.49   33.57   33.63   32.66   31.59
```

```
SO BUILDLEN GA1035-GA7595      33.15    33.71    33.24    31.77    29.32    25.98
SO BUILDLEN GA1035-GA7595      21.86    17.07    13.94    19.06    23.60    27.43
SO BUILDLEN GA1035-GA7595      30.42    32.49    33.57    33.63    32.66    31.59
SO XBADJ    GA1035-GA7595     -36.54   -35.91   -34.20   -61.77   -63.38   -63.07
SO XBADJ    GA1035-GA7595     -60.84   -56.76    -7.04    -6.08    -4.94    -3.65
SO XBADJ    GA1035-GA7595      -2.24    -0.77     0.72     2.20     3.60     4.46
SO XBADJ    GA1035-GA7595       3.38     2.20     0.96    30.00    34.06    37.08
SO XBADJ    GA1035-GA7595      38.98    39.69    -6.90   -12.98   -18.66   -23.78
SO XBADJ    GA1035-GA7595     -28.18   -31.71   -34.29   -35.82   -36.27   -36.05
SO YBADJ    GA1035-GA7595      -3.45    -6.86   -10.07    20.35    12.07     3.43
SO YBADJ    GA1035-GA7595      -5.32   -13.91   -20.25   -19.96   -19.06   -17.58
SO YBADJ    GA1035-GA7595     -15.56   -13.07   -10.19    -6.99    -3.59    -0.07
SO YBADJ    GA1035-GA7595       3.45     6.86    10.07   -20.35   -12.07    -3.43
SO YBADJ    GA1035-GA7595       5.32    13.91    20.26    19.96    19.06    17.58
SO YBADJ    GA1035-GA7595      15.56    13.07    10.19     6.99     3.59     0.07

SO BUILDHGT GB1035-GB7595      23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT GB1035-GB7595      23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT GB1035-GB7595      23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT GB1035-GB7595      23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT GB1035-GB7595      23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT GB1035-GB7595      23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDWID GB1035-GB7595      19.06    23.60    27.42    30.41    32.48    33.56
SO BUILDWID GB1035-GB7595      33.62    32.65    31.59    33.15    33.71    33.24
SO BUILDWID GB1035-GB7595      31.76    29.31    25.98    21.86    17.07    13.94
SO BUILDWID GB1035-GB7595      19.06    23.60    27.42    30.41    32.48    33.56
SO BUILDWID GB1035-GB7595      33.62    32.65    31.59    33.15    33.71    33.24
SO BUILDWID GB1035-GB7595      31.76    29.31    25.98    21.86    17.07    13.94
SO BUILDLEN GB1035-GB7595      33.16    33.72    33.25    31.77    29.32    25.98
SO BUILDLEN GB1035-GB7595      21.86    17.07    13.94    19.06    23.60    27.43
SO BUILDLEN GB1035-GB7595      30.42    32.49    33.56    33.62    32.65    31.60
SO BUILDLEN GB1035-GB7595      33.16    33.72    33.25    31.77    29.32    25.98
SO BUILDLEN GB1035-GB7595      21.86    17.07    13.94    19.06    23.60    27.43
SO BUILDLEN GB1035-GB7595      30.42    32.49    33.56    33.62    32.65    31.60
SO XBADJ    GB1035-GB7595     -36.84   -36.03   -34.11   -31.17   -27.27  -105.13
SO XBADJ    GB1035-GB7595    -106.15  -103.94    38.98    39.01    37.85    35.54
SO XBADJ    GB1035-GB7595      32.16    27.79     1.65     3.00     4.26     4.94
SO XBADJ    GB1035-GB7595       3.68     2.31     0.87    -0.60    -2.05    -3.44
SO XBADJ    GB1035-GB7595      -4.72    -5.86   -52.92   -58.07   -61.45   -62.97
SO XBADJ    GB1035-GB7595     -62.57   -60.28   -35.21   -36.62   -36.92   -36.54
SO YBADJ    GB1035-GB7595      -4.53    -7.98   -11.18   -14.05   -16.49    25.82
SO YBADJ    GB1035-GB7595       9.43    -7.25   -18.92   -10.66    -2.07     6.59
SO YBADJ    GB1035-GB7595      15.04    23.03    -9.56    -6.21    -2.68     0.94
SO YBADJ    GB1035-GB7595       4.53     7.98    11.18    14.05    16.49    18.43
SO YBADJ    GB1035-GB7595      19.81    20.59    18.92    10.66     2.07    -6.59
SO YBADJ    GB1035-GB7595     -15.04   -23.04     9.56     6.21     2.68    -0.94

SO BUILDHGT GC1035-GC7595      23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT GC1035-GC7595      23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT GC1035-GC7595      23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT GC1035-GC7595      23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT GC1035-GC7595      23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT GC1035-GC7595      23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDWID GC1035-GC7595      19.06    23.60    27.42    30.41    32.48    33.56
```

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SO BUILDWID GC1035-GC7595       33.62   32.65   31.60   33.16   33.72   33.25
SO BUILDWID GC1035-GC7595       31.77   29.32   25.98   21.86   17.07   13.94
SO BUILDWID GC1035-GC7595       19.06   23.60   27.42   30.41   32.48   33.56
SO BUILDWID GC1035-GC7595       33.62   32.65   31.60   33.16   33.72   33.25
SO BUILDWID GC1035-GC7595       31.77   29.32   25.98   21.86   17.07   13.94
SO BUILDLEN GC1035-GC7595       33.16   33.72   33.25   31.77   29.32   25.98
SO BUILDLEN GC1035-GC7595       21.86   17.07   13.94   19.06   23.60   27.42
SO BUILDLEN GC1035-GC7595       30.41   32.48   33.56   33.62   32.65   31.60
SO BUILDLEN GC1035-GC7595       33.16   33.72   33.25   31.77   29.32   25.98
SO BUILDLEN GC1035-GC7595       21.86   17.07   13.94   19.06   23.60   27.42
SO BUILDLEN GC1035-GC7595       30.41   32.48   33.56   33.62   32.65   31.60
SO XBADJ    GC1035-GC7595      -36.45  -35.56  -33.60  -30.62  -26.71  -21.98
SO XBADJ    GC1035-GC7595      -16.59  -10.69   -5.56   -4.60   -3.49   -2.28
SO XBADJ    GC1035-GC7595       -1.00    0.31    1.61    2.86    4.03    4.62
SO XBADJ    GC1035-GC7595        3.28    1.85    0.36   -1.15   -2.61   -4.00
SO XBADJ    GC1035-GC7595       -5.27   -6.38   -8.38  -14.46 -107.09  -25.14
SO XBADJ    GC1035-GC7595      -29.41  -32.79  -35.17  -36.48  -36.68  -36.22
SO YBADJ    GC1035-GC7595       -4.93   -8.31  -11.43  -14.21  -16.55  -18.39
SO YBADJ    GC1035-GC7595      -19.67  -20.35  -20.42  -19.86  -18.71  -16.98
SO YBADJ    GC1035-GC7595      -14.74  -12.05   -8.99   -5.66   -2.16    1.41
SO YBADJ    GC1035-GC7595        4.93    8.31   11.43   14.21   16.55   18.39
SO YBADJ    GC1035-GC7595       19.67   20.35   20.42   19.86  -16.11   16.98
SO YBADJ    GC1035-GC7595       14.74   12.05    8.99    5.66    2.16   -1.41

   SRCGROUP G1095 GA1095 GB1095 GC1095
   SRCGROUP G1075 GA1075 GB1075 GC1075
   SRCGROUP G1035 GA1035 GB1035 GC1035
   SRCGROUP G7595 GA7595 GB7595 GC7595
   SRCGROUP G7575 GA7575 GB7575 GC7575
   SRCGROUP G7535 GA7535 GB7535 GC7535
   SRCGROUP G5095 GA5095 GB5095 GC5095
   SRCGROUP G5075 GA5075 GB5075 GC5075
   SRCGROUP G5035 GA5035 GB5035 GC5035

SO FINISHED
**
****************************************
** ISCST3 Receptor Pathway
****************************************
**
**
RE STARTING
   INCLUDED PEM1.rou
RE FINISHED
**
****************************************
** AERMOD Meteorology Pathway
****************************************
**
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ME STARTING
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   PROFFILE s:\amodmet\FLL1M2006.PFL
   SURFDATA 12849 2006 Fort_Lauderdale_Hollywood_Intl_AP
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   PROFBASE 11 FEET
   STARTEND 06 01 01 06 12 31
ME FINISHED
**
****************************************
** AERMOD Output Pathway
****************************************
**
**
OU STARTING
   RECTABLE ALLAVE FIRST
OU FINISHED
```

AERBOB RELEASE 110422

AERMOD OUTPUT FILE NUMBER 1 :gengas.o06
AERMOD OUTPUT FILE NUMBER 2 :gengas.o07
AERMOD OUTPUT FILE NUMBER 3 :gengas.o08
AERMOD OUTPUT FILE NUMBER 4 :gengas.o09
AERMOD OUTPUT FILE NUMBER 5 :gengas.o10
First title for last output file is: 2006 FPL PPE NEW CTS - CT LOAD ANALYSIS, MHI "J" CLASS GAS 9/13/11
Second title for last output file is: GENERIC (10 g/s) EMISSION RATES FOR CC CTS

AVERAGING TIME	YEAR	CONC (ug/m3)	X (m)	Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID: G1095					
Annual					
	06	0.43860	586800.0	2885800.0	06123124
	07	0.42699	586700.0	2885400.0	07123124
	08	0.47887	586800.0	2885900.0	08123124
	09	0.57469	586900.0	2885900.0	09123124
	10	0.43899	586900.0	2885900.0	10123124
HIGH 24-Hour					
	06	3.89602	586300.	2884900.	06110424
	07	5.23999	586400.	2884900.	07103024
	08	4.56985	586300.	2885700.	08090924
	09	3.71606	586000.	2885300.	09110824
	10	3.30113	586600.	2885300.	10062424
HIGH 8-Hour					
	06	7.22551	586800.	2885200.	06101516
	07	8.45774	586300.	2884800.	07103024
	08	7.21284	586100.	2885600.	08090908
	09	7.28918	586700.	2885400.	09042616
	10	7.59978	586700.	2885500.	10051216
HIGH 3-Hour					
	06	7.69102	586700.	2885300.	06100312
	07	9.13692	586300.	2884800.	07103021
	08	8.20163	586100.	2885600.	08090906
	09	8.29798	586700.	2885600.	09081612
	10	8.03552	586700.	2885600.	10072012
HIGH 1-Hour					
	06	9.51961	586500.	2885000.	06110404
	07	9.50006	586500.	2884900.	07103019
	08	8.69335	588100.	2885600.	08051211
	09	8.71712	586800.	2885600.	09081610
	10	8.23403	586700.	2885400.	10071712
SOURCE GROUP ID: G1075					
Annual					
	06	0.42420	586800.0	2885800.0	06123124
	07	0.41305	586700.0	2885400.0	07123124
	08	0.46490	586800.0	2885900.0	08123124
	09	0.55926	586900.0	2885900.0	09123124
	10	0.42456	586900.0	2885900.0	10123124

HIGH 24-Hour					
	06	3.71332	586300.	2884900.	06110424
	07	5.05629	586400.	2884900.	07103024
	08	4.36522	586300.	2885700.	08090924
	09	3.52397	586000.	2885300.	09110824
	10	3.21649	586600.	2885300.	10062424
HIGH 8-Hour					
	06	7.00401	586800.	2885200.	06101516
	07	8.23864	586300.	2884800.	07103024
	08	6.99049	586800.	2885400.	08050116
	09	7.09047	586700.	2885400.	09042616
	10	7.39271	586700.	2885500.	10051216
HIGH 3-Hour					
	06	7.51820	586700.	2885300.	06100312
	07	8.84378	586300.	2884800.	07103021
	08	7.86908	586100.	2885600.	08090906
	09	8.11585	586700.	2885600.	09081612
	10	7.85943	586700.	2885600.	10072012
HIGH 1-Hour					
	06	9.17046	586400.	2884900.	06110404
	07	9.25428	586500.	2884900.	07103018
	08	8.47975	588100.	2885600.	08051211
	09	8.49000	586800.	2885600.	09081610
	10	8.04296	586700.	2885400.	10071712
SOURCE GROUP ID: G1035					
Annual					
	06	0.39699	586800.0	2885800.0	06123124
	07	0.38720	586700.0	2885400.0	07123124
	08	0.43852	586800.0	2885900.0	08123124
	09	0.52999	586900.0	2885900.0	09123124
	10	0.39738	586900.0	2885900.0	10123124
HIGH 24-Hour					
	06	3.40661	586500.	2885000.	06110424
	07	4.65992	586400.	2884900.	07103024
	08	3.98716	586300.	2885700.	08090924
	09	3.17840	585900.	2885300.	09110824
	10	3.05384	586600.	2885300.	10062424
HIGH 8-Hour					
	06	6.57713	586800.	2885200.	06101516
	07	7.70974	586300.	2884800.	07103024
	08	6.58265	586800.	2885400.	08050116
	09	6.78094	586700.	2885400.	09042616
	10	6.99890	586700.	2885500.	10051216
HIGH 3-Hour					
	06	7.18258	586700.	2885300.	06100312
	07	8.29659	586300.	2884800.	07103021
	08	7.33153	587000.	2886000.	08051615
	09	7.76518	586700.	2885600.	09081612
	10	7.52347	586700.	2885600.	10072012
HIGH 1-Hour					
	06	9.36765	586500.	2885000.	06110404
	07	8.75899	586500.	2884900.	07103019
	08	8.05387	588100.	2885600.	08051211
	09	8.02966	586800.	2885600.	09081610

	10	7.67711	586700.	2885400.	10071712
SOURCE GROUP ID: G7595					
Annual					
	06	0.56024	586800.0	2885800.0	06123124
	07	0.54954	586700.0	2885400.0	07123124
	08	0.59943	586900.0	2885800.0	08123124
	09	0.70829	586900.0	2885800.0	09123124
	10	0.55829	586900.0	2885900.0	10123124
HIGH 24-Hour					
	06	5.46558	586500.	2885000.	06110424
	07	7.02122	586400.	2884900.	07103024
	08	6.19516	586600.	2885600.	08090924
	09	5.55908	586300.	2885400.	09110824
	10	4.14089	586700.	2885500.	10051224
HIGH 8-Hour					
	06	9.16828	586800.	2885200.	06101516
	07	10.69136	586500.	2884900.	07103024
	08	9.84355	586300.	2885600.	08090908
	09	9.25542	586800.	2885700.	09110916
	10	9.53319	586800.	2885500.	10051216
HIGH 3-Hour					
	06	9.64827	586800.	2885400.	06082912
	07	11.50433	586500.	2884900.	07103021
	08	10.89372	586200.	2885600.	08090906
	09	9.95692	586800.	2885600.	09081612
	10	10.06277	586700.	2885600.	10072012
HIGH 1-Hour					
	06	11.47423	586500.	2885000.	06110404
	07	11.92211	586500.	2884900.	07103019
	08	11.22940	586300.	2885600.	08090905
	09	10.73468	586800.	2885600.	09081610
	10	10.37696	586800.	2885400.	10092311
SOURCE GROUP ID: G7575					
Annual					
	06	0.54579	586800.0	2885800.0	06123124
	07	0.53362	586700.0	2885400.0	07123124
	08	0.58361	586900.0	2885800.0	08123124
	09	0.69248	586900.0	2885800.0	09123124
	10	0.54432	586900.0	2885900.0	10123124
HIGH 24-Hour					
	06	5.24376	586500.	2885000.	06110424
	07	6.79670	586400.	2884900.	07103024
	08	6.00139	586400.	2885700.	08090924
	09	5.32376	586300.	2885400.	09110824
	10	4.00897	586700.	2885500.	10051224
HIGH 8-Hour					
	06	8.87215	586800.	2885200.	06101516
	07	10.41849	586500.	2884900.	07103024
	08	9.56184	586300.	2885600.	08090908
	09	8.96708	586800.	2885700.	09110916
	10	9.20736	586800.	2885500.	10051216
HIGH 3-Hour					
	06	9.27919	586800.	2885400.	06082912
	07	11.21980	586500.	2884900.	07103021

	08	10.58833	586200.	2885600.	08090906
	09	9.70577	586700.	2885600.	09081612
	10	9.79601	586700.	2885600.	10072012
HIGH 1-Hour					
	06	11.22766	586500.	2885000.	06110404
	07	11.67209	586500.	2884900.	07103019
	08	10.89030	586300.	2885600.	08090905
	09	10.41761	586800.	2885600.	09081610
	10	10.02430	586800.	2885400.	10092311
SOURCE GROUP ID: G7535					
Annual					
	06	0.51747	586800.0	2885800.0	06123124
	07	0.50297	586700.0	2885400.0	07123124
	08	0.55398	586800.0	2885900.0	08123124
	09	0.66090	586900.0	2885800.0	09123124
	10	0.51651	586900.0	2885900.0	10123124
HIGH 24-Hour					
	06	4.85514	586300.	2884900.	06110424
	07	6.34319	586400.	2884900.	07103024
	08	5.58536	586400.	2885700.	08090924
	09	4.83389	586300.	2885400.	09110824
	10	3.76868	586700.	2885500.	10051224
HIGH 8-Hour					
	06	8.31871	586800.	2885200.	06101516
	07	9.88020	586500.	2884900.	07103024
	08	8.91975	586200.	2885600.	08090908
	09	8.30375	586700.	2885400.	09042616
	10	8.62793	586700.	2885500.	10051216
HIGH 3-Hour					
	06	8.74260	586800.	2885300.	06060712
	07	10.59763	586500.	2884900.	07103021
	08	9.94953	586200.	2885600.	08090906
	09	9.24235	586700.	2885600.	09081612
	10	9.24673	586700.	2885600.	10072012
HIGH 1-Hour					
	06	10.60278	586500.	2885000.	06110404
	07	11.10933	586500.	2884900.	07103019
	08	10.22846	586200.	2885600.	08090905
	09	9.90441	588000.	2885300.	09062210
	10	9.36728	586800.	2885200.	10072211
SOURCE GROUP ID: G5095					
Annual					
	06	0.66647	586900.0	2885800.0	06123124
	07	0.66399	586800.0	2885400.0	07123124
	08	0.71734	586900.0	2885800.0	08123124
	09	0.82189	586900.0	2885800.0	09123124
	10	0.66044	586900.0	2885900.0	10123124
HIGH 24-Hour					
	06	6.88299	586500.	2885000.	06110424
	07	8.65473	586600.	2885000.	07103024
	08	7.54516	586700.	2885600.	08090924
	09	7.12005	586400.	2885400.	09110824
	10	5.07750	586800.	2885500.	10051224
HIGH 8-Hour					

	06	11.02324	586800.	2885200.	06101516
	07	12.31041	586500.	2884900.	07103024
	08	11.70751	586800.	2885600.	08090916
	09	11.08582	586800.	2885400.	09110816
	10	11.44788	586800.	2885500.	10051216
HIGH 3-Hour					
	06	11.81290	586800.	2885400.	06082912
	07	13.24091	586500.	2884900.	07103021
	08	12.49139	586300.	2885600.	08090906
	09	11.75255	587924.	2885138.	09020315
	10	11.81720	586800.	2885600.	10072012
HIGH 1-Hour					
	06	13.12006	586500.	2885000.	06110404
	07	13.45920	586500.	2884900.	07103019
	08	12.86591	586900.	2885600.	08070910
	09	12.68943	586800.	2885600.	09081609
	10	12.40363	586800.	2885400.	10092311
SOURCE GROUP ID: G5075					
Annual					
	06	0.65815	586900.0	2885800.0	06123124
	07	0.65445	586700.0	2885400.0	07123124
	08	0.70786	586900.0	2885800.0	08123124
	09	0.81330	586900.0	2885800.0	09123124
	10	0.65252	586900.0	2885900.0	10123124
HIGH 24-Hour					
	06	6.76941	586500.	2885000.	06110424
	07	8.52130	586600.	2885000.	07103024
	08	7.42183	586700.	2885600.	08090924
	09	7.01875	586400.	2885400.	09110824
	10	4.99538	586800.	2885500.	10051224
HIGH 8-Hour					
	06	10.87889	586800.	2885200.	06101516
	07	12.20136	586500.	2884900.	07103024
	08	11.55586	586800.	2885600.	08090916
	09	10.93816	586800.	2885700.	09110916
	10	11.29406	586800.	2885500.	10051216
HIGH 3-Hour					
	06	11.64488	586800.	2885400.	06082912
	07	13.12542	586500.	2884900.	07103021
	08	12.36836	586300.	2885600.	08090906
	09	11.58261	587924.	2885138.	09020315
	10	11.66293	586800.	2885600.	10072012
HIGH 1-Hour					
	06	13.00634	586500.	2885000.	06110404
	07	13.35840	586500.	2884900.	07103019
	08	12.64602	586900.	2885600.	08070910
	09	12.52888	586800.	2885600.	09081609
	10	12.24167	586800.	2885400.	10092311
SOURCE GROUP ID: G5035					
Annual					
	06	0.64256	586900.0	2885800.0	06123124
	07	0.63742	586700.0	2885400.0	07123124
	08	0.69009	586900.0	2885800.0	08123124
	09	0.79736	586900.0	2885800.0	09123124

	10	0.63798	586900.0	2885900.0	10123124
HIGH 24-Hour					
	06	6.60949	586500.	2885000.	06110424
	07	8.29133	586600.	2885000.	07103024
	08	7.20016	586600.	2885600.	08090924
	09	6.89112	586400.	2885400.	09110824
	10	4.84105	586800.	2885500.	10051224
HIGH 8-Hour					
	06	10.60181	586800.	2885200.	06101516
	07	11.98552	586500.	2884900.	07103024
	08	11.23141	586800.	2885600.	08090916
	09	10.68038	586800.	2885700.	09110916
	10	11.00006	586800.	2885500.	10051216
HIGH 3-Hour					
	06	11.32301	586800.	2885400.	06082912
	07	12.89983	586500.	2884900.	07103021
	08	12.10100	586300.	2885600.	08090906
	09	11.25941	586800.	2885600.	09081612
	10	11.36777	586800.	2885500.	10051215
HIGH 1-Hour					
	06	12.80719	586500.	2885000.	06110404
	07	13.15921	586500.	2884900.	07103019
	08	12.36087	586300.	2885600.	08090903
	09	12.44958	586400.	2885400.	09110822
	10	11.93105	586800.	2885400.	10092311

All receptor computations reported with respect to a user-specified origin

GRID	0.00	0.00
DISCRETE	0.00	0.00

```
CO STARTING
   TITLEONE 2006 FPL PPE NEW CTS - CT LOAD ANALYSIS, MHI "J" CLASS OIL 9/13/11
   TITLETWO GENERIC (10 g/s) EMISSION RATES FOR CC CTS
   MODELOPT DFAULT CONC
   AVERTIME PERIOD 24 8 3 1
   POLLUTID GEN
   RUNORNOT RUN
CO FINISHED
**
****************************************
** ISCST3 Source Pathway
****************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION OA1095 POINT 587489.306  2885478.742  0.000
   LOCATION OB1095 POINT 587443.291  2885477.412  0.000
   LOCATION OC1095 POINT 587349.178  2885474.119  0.000

   LOCATION OA1075 POINT 587489.306  2885478.742  0.000
   LOCATION OB1075 POINT 587443.291  2885477.412  0.000
   LOCATION OC1075 POINT 587349.178  2885474.119  0.000

   LOCATION OA1035 POINT 587489.306  2885478.742  0.000
   LOCATION OB1035 POINT 587443.291  2885477.412  0.000
   LOCATION OC1035 POINT 587349.178  2885474.119  0.000

   LOCATION OA7595 POINT 587489.306  2885478.742  0.000
   LOCATION OB7595 POINT 587443.291  2885477.412  0.000
   LOCATION OC7595 POINT 587349.178  2885474.119  0.000

   LOCATION OA7575 POINT 587489.306  2885478.742  0.000
   LOCATION OB7575 POINT 587443.291  2885477.412  0.000
   LOCATION OC7575 POINT 587349.178  2885474.119  0.000

   LOCATION OA7535 POINT 587489.306  2885478.742  0.000
   LOCATION OB7535 POINT 587443.291  2885477.412  0.000
   LOCATION OC7535 POINT 587349.178  2885474.119  0.000

   LOCATION OA5095 POINT 587489.306  2885478.742  0.000
   LOCATION OB5095 POINT 587443.291  2885477.412  0.000
   LOCATION OC5095 POINT 587349.178  2885474.119  0.000

   LOCATION OA5075 POINT 587489.306  2885478.742  0.000
   LOCATION OB5075 POINT 587443.291  2885477.412  0.000
   LOCATION OC5075 POINT 587349.178  2885474.119  0.000

   LOCATION OA5035 POINT 587489.306  2885478.742  0.000
   LOCATION OB5035 POINT 587443.291  2885477.412  0.000
   LOCATION OC5035 POINT 587349.178  2885474.119  0.000

** Source Parameters **
```

```
** Baseload, 95 F
   SRCPARAM OA1095 3.3333   45.4   452.0   20.71  6.71
   SRCPARAM OB1095 3.3333   45.4   452.0   20.71  6.71
   SRCPARAM OC1095 3.3333   45.4   452.0   20.71  6.71
** Baseload, 75 F
   SRCPARAM OA1075 3.3333   45.4   452.6   21.60  6.71
   SRCPARAM OB1075 3.3333   45.4   452.6   21.60  6.71
   SRCPARAM OC1075 3.3333   45.4   452.6   21.60  6.71
** Baseload, 35 F
   SRCPARAM OA1035 3.3333   45.4   454.8   23.51  6.71
   SRCPARAM OB1035 3.3333   45.4   454.8   23.51  6.71
   SRCPARAM OC1035 3.3333   45.4   454.8   23.51  6.71
** 75% Load, 95 F
   SRCPARAM OA7595 3.3333   45.4   452.0   16.93  6.71
   SRCPARAM OB7595 3.3333   45.4   452.0   16.93  6.71
   SRCPARAM OC7595 3.3333   45.4   452.0   16.93  6.71
** 75% Load, 75 F
   SRCPARAM OA7575 3.3333   45.4   452.6   17.70  6.71
   SRCPARAM OB7575 3.3333   45.4   452.6   17.70  6.71
   SRCPARAM OC7575 3.3333   45.4   452.6   17.70  6.71
** 75% Load, 35 F
   SRCPARAM OA7535 3.3333   45.4   454.8   19.17  6.71
   SRCPARAM OB7535 3.3333   45.4   454.8   19.17  6.71
   SRCPARAM OC7535 3.3333   45.4   454.8   19.17  6.71

** 50% Load, 95 F
   SRCPARAM OA5095 3.3333   45.4   452.0   14.58  6.71
   SRCPARAM OB5095 3.3333   45.4   452.0   14.58  6.71
   SRCPARAM OC5095 3.3333   45.4   452.0   14.58  6.71
** 50% Load, 75 F
   SRCPARAM OA5075 3.3333   45.4   452.6   15.20  6.71
   SRCPARAM OB5075 3.3333   45.4   452.6   15.20  6.71
   SRCPARAM OC5075 3.3333   45.4   452.6   15.20  6.71
** 50% Load, 35 F
   SRCPARAM OA5035 3.3333   45.4   454.8   16.37  6.71
   SRCPARAM OB5035 3.3333   45.4   454.8   16.37  6.71
   SRCPARAM OC5035 3.3333   45.4   454.8   16.37  6.71

** Building Downwash **
SO BUILDHGT OA1035-OA7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OA1035-OA7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OA1035-OA7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OA1035-OA7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OA1035-OA7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OA1035-OA7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDWID OA1035-OA7595      19.06   23.60   27.43   30.41   32.48   33.56
SO BUILDWID OA1035-OA7595      33.62   32.65   31.59   33.15   33.71   33.24
SO BUILDWID OA1035-OA7595      31.76   29.31   25.98   21.86   17.07   13.94
SO BUILDWID OA1035-OA7595      19.06   23.60   27.43   30.41   32.48   33.56
SO BUILDWID OA1035-OA7595      33.62   32.65   31.59   33.15   33.71   33.24
SO BUILDWID OA1035-OA7595      31.76   29.31   25.98   21.86   17.07   13.94
SO BUILDLEN OA1035-OA7595      33.15   33.71   33.24   31.77   29.32   25.98
SO BUILDLEN OA1035-OA7595      21.86   17.07   13.94   19.06   23.60   27.43
SO BUILDLEN OA1035-OA7595      30.42   32.49   33.57   33.63   32.66   31.59
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SO BUILDLEN OA1035-OA7595      33.15   33.71   33.24   31.77   29.32   25.98
SO BUILDLEN OA1035-OA7595      21.86   17.07   13.94   19.06   23.60   27.43
SO BUILDLEN OA1035-OA7595      30.42   32.49   33.57   33.63   32.66   31.59
SO XBADJ    OA1035-OA7595     -36.54  -35.91  -34.20  -61.77  -63.38  -63.07
SO XBADJ    OA1035-OA7595     -60.84  -56.76   -7.04   -6.08   -4.94   -3.65
SO XBADJ    OA1035-OA7595      -2.24   -0.77    0.72    2.20    3.60    4.46
SO XBADJ    OA1035-OA7595       3.38    2.20    0.96   30.00   34.06   37.08
SO XBADJ    OA1035-OA7595      38.98   39.69   -6.90  -12.98  -18.66  -23.78
SO XBADJ    OA1035-OA7595     -28.18  -31.71  -34.29  -35.82  -36.27  -36.05
SO YBADJ    OA1035-OA7595      -3.45   -6.86  -10.07   20.35   12.07    3.43
SO YBADJ    OA1035-OA7595      -5.32  -13.91  -20.25  -19.96  -19.06  -17.58
SO YBADJ    OA1035-OA7595     -15.56  -13.07  -10.19   -6.99   -3.59   -0.07
SO YBADJ    OA1035-OA7595       3.45    6.86   10.07  -20.35  -12.07   -3.43
SO YBADJ    OA1035-OA7595       5.32   13.91   20.26   19.96   19.06   17.58
SO YBADJ    OA1035-OA7595      15.56   13.07   10.19    6.99    3.59    0.07

SO BUILDHGT OB1035-OB7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OB1035-OB7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OB1035-OB7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OB1035-OB7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OB1035-OB7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OB1035-OB7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDWID OB1035-OB7595      19.06   23.60   27.42   30.41   32.48   33.56
SO BUILDWID OB1035-OB7595      33.62   32.65   31.59   33.15   33.71   33.24
SO BUILDWID OB1035-OB7595      31.76   29.31   25.98   21.86   17.07   13.94
SO BUILDWID OB1035-OB7595      19.06   23.60   27.42   30.41   32.48   33.56
SO BUILDWID OB1035-OB7595      33.62   32.65   31.59   33.15   33.71   33.24
SO BUILDWID OB1035-OB7595      31.76   29.31   25.98   21.86   17.07   13.94
SO BUILDLEN OB1035-OB7595      33.16   33.72   33.25   31.77   29.32   25.98
SO BUILDLEN OB1035-OB7595      21.86   17.07   13.94   19.06   23.60   27.43
SO BUILDLEN OB1035-OB7595      30.42   32.49   33.56   33.62   32.65   31.60
SO BUILDLEN OB1035-OB7595      33.16   33.72   33.25   31.77   29.32   25.98
SO BUILDLEN OB1035-OB7595      21.86   17.07   13.94   19.06   23.60   27.43
SO BUILDLEN OB1035-OB7595      30.42   32.49   33.56   33.62   32.65   31.60
SO XBADJ    OB1035-OB7595     -36.84  -36.03  -34.11  -31.17  -27.27 -105.13
SO XBADJ    OB1035-OB7595    -106.15 -103.94   38.98   39.01   37.85   35.54
SO XBADJ    OB1035-OB7595      32.16   27.79    1.65    3.00    4.26    4.94
SO XBADJ    OB1035-OB7595       3.68    2.31    0.87   -0.60   -2.05   -3.44
SO XBADJ    OB1035-OB7595      -4.72   -5.86  -52.92  -58.07  -61.45  -62.97
SO XBADJ    OB1035-OB7595     -62.57  -60.28  -35.21  -36.62  -36.92  -36.54
SO YBADJ    OB1035-OB7595      -4.53   -7.98  -11.18  -14.05  -16.49   25.82
SO YBADJ    OB1035-OB7595       9.43   -7.25  -18.92  -10.66   -2.07    6.59
SO YBADJ    OB1035-OB7595      15.04   23.03   -9.56   -6.21   -2.68    0.94
SO YBADJ    OB1035-OB7595       4.53    7.98   11.18   14.05   16.49   18.43
SO YBADJ    OB1035-OB7595      19.81   20.59   18.92   10.66    2.07   -6.59
SO YBADJ    OB1035-OB7595     -15.04  -23.04    9.56    6.21    2.68   -0.94

SO BUILDHGT OC1035-OC7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OC1035-OC7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OC1035-OC7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OC1035-OC7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OC1035-OC7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OC1035-OC7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDWID OC1035-OC7595      19.06   23.60   27.42   30.41   32.48   33.56
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SO BUILDWID OC1035-OC7595        33.62    32.65    31.60    33.16    33.72    33.25
SO BUILDWID OC1035-OC7595        31.77    29.32    25.98    21.86    17.07    13.94
SO BUILDWID OC1035-OC7595        19.06    23.60    27.42    30.41    32.48    33.56
SO BUILDWID OC1035-OC7595        33.62    32.65    31.60    33.16    33.72    33.25
SO BUILDWID OC1035-OC7595        31.77    29.32    25.98    21.86    17.07    13.94
SO BUILDLEN OC1035-OC7595        33.16    33.72    33.25    31.77    29.32    25.98
SO BUILDLEN OC1035-OC7595        21.86    17.07    13.94    19.06    23.60    27.42
SO BUILDLEN OC1035-OC7595        30.41    32.48    33.56    33.62    32.65    31.60
SO BUILDLEN OC1035-OC7595        33.16    33.72    33.25    31.77    29.32    25.98
SO BUILDLEN OC1035-OC7595        21.86    17.07    13.94    19.06    23.60    27.42
SO BUILDLEN OC1035-OC7595        30.41    32.48    33.56    33.62    32.65    31.60
SO XBADJ    OC1035-OC7595       -36.45   -35.56   -33.60   -30.62   -26.71   -21.98
SO XBADJ    OC1035-OC7595       -16.59   -10.69    -5.56    -4.60    -3.49    -2.28
SO XBADJ    OC1035-OC7595        -1.00     0.31     1.61     2.86     4.03     4.62
SO XBADJ    OC1035-OC7595         3.28     1.85     0.36    -1.15    -2.61    -4.00
SO XBADJ    OC1035-OC7595        -5.27    -6.38    -8.38   -14.46  -107.09   -25.14
SO XBADJ    OC1035-OC7595       -29.41   -32.79   -35.17   -36.48   -36.68   -36.22
SO YBADJ    OC1035-OC7595        -4.93    -8.31   -11.43   -14.21   -16.55   -18.39
SO YBADJ    OC1035-OC7595       -19.67   -20.35   -20.42   -19.86   -18.71   -16.98
SO YBADJ    OC1035-OC7595       -14.74   -12.05    -8.99    -5.66    -2.16     1.41
SO YBADJ    OC1035-OC7595         4.93     8.31    11.43    14.21    16.55    18.39
SO YBADJ    OC1035-OC7595        19.67    20.35    20.42    19.86   -16.11    16.98
SO YBADJ    OC1035-OC7595        14.74    12.05     8.99     5.66     2.16    -1.41

   SRCGROUP O1095 OA1095 OB1095 OC1095
   SRCGROUP O1075 OA1075 OB1075 OC1075
   SRCGROUP O1035 OA1035 OB1035 OC1035
   SRCGROUP O7595 OA7595 OB7595 OC7595
   SRCGROUP O7575 OA7575 OB7575 OC7575
   SRCGROUP O7535 OA7535 OB7535 OC7535
   SRCGROUP O5095 OA5095 OB5095 OC5095
   SRCGROUP O5075 OA5075 OB5075 OC5075
   SRCGROUP O5035 OA5035 OB5035 OC5035

SO FINISHED
**
****************************************
** ISCST3 Receptor Pathway
****************************************
**
**
RE STARTING
   INCLUDED PEM1.rou
RE FINISHED
**
****************************************
** AERMOD Meteorology Pathway
****************************************
**
**
ME STARTING
   SURFFILE s:\amodmet\FLL1M2006.SFC
   PROFFILE s:\amodmet\FLL1M2006.PFL
   SURFDATA 12849 2006 Fort_Lauderdale_Hollywood_Intl_AP
```

```
   UAIRDATA 92803 2006 Miami_-_FL_Intl_Univ
   PROFBASE 11 FEET
   STARTEND 06 01 01 06 12 31
ME FINISHED
**
****************************************
** AERMOD Output Pathway
****************************************
**
**
OU STARTING
   RECTABLE ALLAVE FIRST
OU FINISHED
```

AERBOB RELEASE 110422

AERMOD OUTPUT FILE NUMBER 1 :genoil.o06
AERMOD OUTPUT FILE NUMBER 2 :genoil.o07
AERMOD OUTPUT FILE NUMBER 3 :genoil.o08
AERMOD OUTPUT FILE NUMBER 4 :genoil.o09
AERMOD OUTPUT FILE NUMBER 5 :genoil.o10
First title for last output file is: 2006 FPL PPE NEW CTS - CT LOAD ANALYSIS, MHI "J" CLASS OIL 9/13/11
Second title for last output file is: GENERIC (10 g/s) EMISSION RATES FOR CC CTS

AVERAGING TIME	YEAR	CONC (ug/m3)	X (m)	Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID: 01095					
Annual					
	06	0.21064	586800.0	2885800.0	06123124
	07	0.21514	586600.0	2885400.0	07123124
	08	0.24948	586800.0	2885900.0	08123124
	09	0.31877	586800.0	2885900.0	09123124
	10	0.21481	586800.0	2886000.0	10123124
HIGH 24-Hour					
	06	1.78851	586300.	2884900.	06110424
	07	2.42035	586300.	2884800.	07103024
	08	1.97808	586400.	2885700.	08090924
	09	2.04834	586600.	2885400.	09042624
	10	1.81373	586500.	2885300.	10062424
HIGH 8-Hour					
	06	3.96968	586500.	2885000.	06110416
	07	4.06775	586600.	2885300.	07032616
	08	4.23897	586600.	2885800.	08083116
	09	4.64794	586600.	2885400.	09042616
	10	4.19013	586600.	2885500.	10051216
HIGH 3-Hour					
	06	4.45345	586700.	2885300.	06100312
	07	4.52250	586600.	2885300.	07100615
	08	4.80044	586600.	2885800.	08083115
	09	4.99484	586700.	2885400.	09042612
	10	4.87550	586700.	2885600.	10072012
HIGH 1-Hour					
	06	5.03192	586700.	2885400.	06082912
	07	4.93308	586600.	2885300.	07052511
	08	5.08336	588100.	2885600.	08051212
	09	5.24870	588200.	2885700.	09030114
	10	5.02790	586700.	2885600.	10072012
SOURCE GROUP ID: 01075					
Annual					
	06	0.20087	586800.0	2885800.0	06123124
	07	0.20546	586600.0	2885400.0	07123124
	08	0.23886	586800.0	2885900.0	08123124
	09	0.30687	586800.0	2885900.0	09123124
	10	0.20523	586800.0	2886000.0	10123124

HIGH 24-Hour					
	06	1.69922	586300.	2884900.	06110424
	07	2.26663	586300.	2884800.	07103024
	08	1.89437	586400.	2885700.	08090924
	09	1.98160	586600.	2885400.	09042624
	10	1.74382	586500.	2885300.	10062424
HIGH 8-Hour					
	06	3.84493	586500.	2885000.	06110416
	07	3.91474	586600.	2885300.	07032616
	08	4.08492	586600.	2885800.	08083116
	09	4.50257	586600.	2885400.	09042616
	10	4.02154	586600.	2885500.	10051216
HIGH 3-Hour					
	06	4.28569	586600.	2885000.	06041115
	07	4.34802	586600.	2885300.	07100615
	08	4.65365	586600.	2885800.	08083115
	09	4.82459	586700.	2885400.	09042612
	10	4.69145	586600.	2885600.	10072012
HIGH 1-Hour					
	06	4.82715	586700.	2885400.	06082912
	07	4.77384	586600.	2885300.	07052511
	08	4.88367	588100.	2885600.	08051212
	09	5.09399	588200.	2885700.	09030114
	10	4.85012	586700.	2885600.	10072012
SOURCE GROUP ID: O1035					
Annual					
	06	0.18179	586700.0	2885800.0	06123124
	07	0.18618	586600.0	2885400.0	07123124
	08	0.21767	586800.0	2885900.0	08123124
	09	0.28287	586800.0	2885900.0	09123124
	10	0.18618	586800.0	2886000.0	10123124
HIGH 24-Hour					
	06	1.52767	586300.	2884900.	06110424
	07	1.98265	586100.	2884700.	07103024
	08	1.75661	586400.	2885700.	08090924
	09	1.84387	586600.	2885400.	09042624
	10	1.60212	586500.	2885300.	10062424
HIGH 8-Hour					
	06	3.59302	586500.	2885000.	06110416
	07	3.60187	586600.	2885300.	07032616
	08	3.80559	586400.	2885700.	08090916
	09	4.20144	586600.	2885400.	09042616
	10	3.68124	586600.	2885500.	10051216
HIGH 3-Hour					
	06	4.03213	586600.	2885000.	06041115
	07	3.99553	586600.	2885300.	07100615
	08	4.34712	586600.	2885800.	08083115
	09	4.47909	586700.	2885400.	09042612
	10	4.32034	586600.	2885600.	10072012
HIGH 1-Hour					
	06	4.40938	586700.	2885400.	06082912
	07	4.43980	586600.	2885300.	07052511
	08	4.52587	586700.	2885700.	08083113
	09	4.77711	588200.	2885700.	09030114

	10	4.48847	586700.	2885600.	10072012
SOURCE GROUP ID: O7595					
Annual					
	06	0.26011	586800.0	2885800.0	06123124
	07	0.26316	586600.0	2885400.0	07123124
	08	0.30196	586800.0	2885900.0	08123124
	09	0.37812	586900.0	2885900.0	09123124
	10	0.26313	586800.0	2885900.0	10123124
HIGH 24-Hour					
	06	2.32923	586500.	2885000.	06110424
	07	3.18228	586300.	2884800.	07103024
	08	2.54712	586300.	2885700.	08090924
	09	2.37183	586600.	2885400.	09042624
	10	2.16940	586600.	2885300.	10062424
HIGH 8-Hour					
	06	4.73479	586700.	2885300.	06100316
	07	5.05809	586300.	2884800.	07103024
	08	5.12526	586500.	2885700.	08090916
	09	5.38748	586700.	2885400.	09042616
	10	5.05835	586700.	2885500.	10051216
HIGH 3-Hour					
	06	5.34530	586700.	2885300.	06100312
	07	5.51853	586200.	2884700.	07103021
	08	5.51108	586700.	2885500.	08083015
	09	5.86934	586700.	2885600.	09081612
	10	5.76959	586700.	2885600.	10072012
HIGH 1-Hour					
	06	6.14195	586300.	2884900.	06110404
	07	6.17375	586300.	2884800.	07103019
	08	6.05328	588100.	2885600.	08051212
	09	6.03775	588200.	2885700.	09030114
	10	5.83755	586700.	2885600.	10072012
SOURCE GROUP ID: O7575					
Annual					
	06	0.24792	586800.0	2885800.0	06123124
	07	0.25140	586600.0	2885400.0	07123124
	08	0.28914	586800.0	2885900.0	08123124
	09	0.36373	586900.0	2885900.0	09123124
	10	0.25115	586800.0	2885900.0	10123124
HIGH 24-Hour					
	06	2.18589	586500.	2885000.	06110424
	07	2.99772	586300.	2884800.	07103024
	08	2.39415	586300.	2885700.	08090924
	09	2.28797	586600.	2885400.	09042624
	10	2.08364	586600.	2885300.	10062424
HIGH 8-Hour					
	06	4.54141	586700.	2885300.	06100316
	07	4.74268	586100.	2884700.	07103024
	08	4.91259	586500.	2885700.	08090916
	09	5.18362	586700.	2885400.	09042616
	10	4.84858	586700.	2885500.	10051216
HIGH 3-Hour					
	06	5.13537	586700.	2885300.	06100312
	07	5.14473	586200.	2884700.	07103021

	08	5.30990	586700.	2885500.	08083015
	09	5.66290	586700.	2885600.	09081612
	10	5.56747	586700.	2885600.	10072012
HIGH 1-Hour					
	06	5.75761	586200.	2884800.	06110404
	07	5.82159	586200.	2884700.	07103019
	08	5.82275	588100.	2885600.	08051212
	09	5.80008	586800.	2885500.	09081611
	10	5.65430	586700.	2885600.	10072012
SOURCE GROUP ID: 07535					
Annual					
	06	0.22617	586800.0	2885800.0	06123124
	07	0.23042	586600.0	2885400.0	07123124
	08	0.26618	586800.0	2885900.0	08123124
	09	0.33769	586900.0	2885900.0	09123124
	10	0.22985	586800.0	2886000.0	10123124
HIGH 24-Hour					
	06	1.93928	586500.	2885000.	06110424
	07	2.66998	586300.	2884800.	07103024
	08	2.14815	586400.	2885700.	08090924
	09	2.15197	586600.	2885400.	09042624
	10	1.92664	586600.	2885300.	10062424
HIGH 8-Hour					
	06	4.20491	586600.	2885300.	06100316
	07	4.30235	586600.	2885300.	07032616
	08	4.55844	586600.	2885800.	08083116
	09	4.87133	586600.	2885400.	09042616
	10	4.46700	586700.	2885500.	10051216
HIGH 3-Hour					
	06	4.74783	586700.	2885300.	06100312
	07	4.79170	586600.	2885300.	07100615
	08	5.02290	586600.	2885800.	08083115
	09	5.28175	586700.	2885600.	09081612
	10	5.18143	586700.	2885600.	10072012
HIGH 1-Hour					
	06	5.32407	586700.	2885400.	06082912
	07	5.20176	586700.	2885400.	07052711
	08	5.40388	588100.	2885600.	08051212
	09	5.47831	588200.	2885700.	09030114
	10	5.30621	586700.	2885600.	10072012
SOURCE GROUP ID: 05095					
Annual					
	06	0.30331	586800.0	2885800.0	06123124
	07	0.30728	586700.0	2885400.0	07123124
	08	0.34637	586800.0	2885900.0	08123124
	09	0.42703	586900.0	2885900.0	09123124
	10	0.30571	586900.0	2885900.0	10123124
HIGH 24-Hour					
	06	2.79975	586500.	2885000.	06110424
	07	3.80206	586500.	2884900.	07103024
	08	3.12445	586300.	2885700.	08090924
	09	2.71128	586700.	2885400.	09042624
	10	2.46868	586600.	2885300.	10062424
HIGH 8-Hour					

	06	5.64548	586700.	2885100.	06110416
	07	6.19603	586300.	2884800.	07103024
	08	5.94213	586700.	2885100.	08101416
	09	6.18741	586700.	2885400.	09042616
	10	5.79805	586700.	2885500.	10051216
HIGH 3-Hour					
	06	6.23965	586700.	2885300.	06100312
	07	6.62539	586300.	2884800.	07103021
	08	6.33455	586700.	2885400.	08031715
	09	6.60498	586700.	2885600.	09081612
	10	6.75053	586700.	2885600.	10072012
HIGH 1-Hour					
	06	7.22887	586300.	2884900.	06110404
	07	7.26600	586300.	2884800.	07103019
	08	7.01065	588100.	2885600.	08051212
	09	7.01484	588000.	2885800.	09030113
	10	6.77404	586700.	2885600.	10072011
SOURCE GROUP ID: O5075					
Annual					
	06	0.29005	586800.0	2885800.0	06123124
	07	0.29317	586700.0	2885400.0	07123124
	08	0.33279	586800.0	2885900.0	08123124
	09	0.41216	586900.0	2885900.0	09123124
	10	0.29259	586900.0	2885900.0	10123124
HIGH 24-Hour					
	06	2.68500	586500.	2885000.	06110424
	07	3.59912	586500.	2884900.	07103024
	08	2.94505	586300.	2885700.	08090924
	09	2.60502	586600.	2885400.	09042624
	10	2.37247	586600.	2885300.	10062424
HIGH 8-Hour					
	06	5.37578	586700.	2885100.	06110416
	07	5.84593	586300.	2884800.	07103024
	08	5.68602	586700.	2885100.	08101416
	09	5.93089	586700.	2885400.	09042616
	10	5.55067	586700.	2885500.	10051216
HIGH 3-Hour					
	06	5.93281	586700.	2885300.	06100312
	07	6.29437	586200.	2884700.	07103021
	08	6.07216	586700.	2885500.	08083015
	09	6.36745	586700.	2885600.	09081612
	10	6.45449	586700.	2885600.	10072012
HIGH 1-Hour					
	06	7.11751	586300.	2884900.	06110404
	07	6.91005	586300.	2884800.	07103019
	08	6.70197	588100.	2885600.	08051212
	09	6.67184	588000.	2885800.	09030113
	10	6.49429	586700.	2885600.	10072012
SOURCE GROUP ID: O5035					
Annual					
	06	0.26640	586800.0	2885800.0	06123124
	07	0.26936	586600.0	2885400.0	07123124
	08	0.30857	586800.0	2885900.0	08123124
	09	0.38545	586900.0	2885900.0	09123124

	10	0.26940	586900.0	2885900.0	10123124
HIGH 24-Hour					
	06	2.41418	586500.	2885000.	06110424
	07	3.27768	586300.	2884800.	07103024
	08	2.63792	586300.	2885700.	08090924
	09	2.42393	586600.	2885400.	09042624
	10	2.21236	586600.	2885300.	10062424
HIGH 8-Hour					
	06	4.89554	586700.	2885100.	06110416
	07	5.24419	586300.	2884800.	07103024
	08	5.26537	586500.	2885700.	08090916
	09	5.50750	586700.	2885400.	09042616
	10	5.16699	586700.	2885500.	10051216
HIGH 3-Hour					
	06	5.45095	586700.	2885300.	06100312
	07	5.69174	586200.	2884700.	07103021
	08	5.63173	586700.	2885500.	08083015
	09	5.97416	586700.	2885600.	09081612
	10	5.90002	586700.	2885600.	10072012
HIGH 1-Hour					
	06	6.37588	586300.	2884900.	06110404
	07	6.28154	586200.	2884700.	07103019
	08	6.16357	588100.	2885600.	08051212
	09	6.18901	588200.	2885700.	09030114
	10	5.99766	586700.	2885600.	10072012

All receptor computations reported with respect to a user-specified origin

GRID	0.00	0.00
DISCRETE	0.00	0.00

```
CO STARTING
   TITLEONE FPL FUTURE SO2 AAQS WITH MHI "J" CLASS GAS 9/15/11
   TITLETWO FT. LAUDERDALE/MIAMI FIU MET 2006-2010
   MODELOPT DFAULT CONC
   AVERTIME PERIOD 24 3 1
   POLLUTID SO2
   RUNORNOT RUN
CO FINISHED
**
****************************************
** ISCST3 Source Pathway
****************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION GA1035 POINT 587489.306  2885478.742  0.000
   LOCATION GB1035 POINT 587443.291  2885477.412  0.000
   LOCATION GC1035 POINT 587349.178  2885474.119  0.000
** LOCATION COMPRS1  POINT      587260.876  2885514.841        0.000
   LOCATION COMPRS2  POINT      587270.298  2885515.008        0.000
   LOCATION COMPRS3  POINT      587279.960  2885515.439        0.000
   LOCATION HEATER   POINT      587406.240  2885460.530        0.000

** Source Parameters **
** Baseload, 35 F, GAS
   SRCPARAM GA1035 2.14   45.4   364.3   18.61  6.71
   SRCPARAM GB1035 2.14   45.4   364.3   18.61  6.71
   SRCPARAM GC1035 2.14   45.4   364.3   18.61  6.71
** MAX 2 COMPRESSORS OPERATING SIMULTANEOUSLY
** SRCPARAM COMPRS1  0.0404    6.309   807.594  43.58640     1.067
   SRCPARAM COMPRS2  0.0404    6.309   807.594  43.58640     1.067
   SRCPARAM COMPRS3  0.0404    6.309   807.594  43.58640     1.067
   SRCPARAM HEATER   0.0068    9.144   533.150  16.33513     0.427

** Building Downwash **
SO BUILDHGT GA1035-GA7595       23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT GA1035-GA7595       23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT GA1035-GA7595       23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT GA1035-GA7595       23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT GA1035-GA7595       23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT GA1035-GA7595       23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDWID GA1035-GA7595       19.06   23.60   27.43   30.41   32.48   33.56
SO BUILDWID GA1035-GA7595       33.62   32.65   31.59   33.15   33.71   33.24
SO BUILDWID GA1035-GA7595       31.76   29.31   25.98   21.86   17.07   13.94
SO BUILDWID GA1035-GA7595       19.06   23.60   27.43   30.41   32.48   33.56
SO BUILDWID GA1035-GA7595       33.62   32.65   31.59   33.15   33.71   33.24
SO BUILDWID GA1035-GA7595       31.76   29.31   25.98   21.86   17.07   13.94
SO BUILDLEN GA1035-GA7595       33.15   33.71   33.24   31.77   29.32   25.98
SO BUILDLEN GA1035-GA7595       21.86   17.07   13.94   19.06   23.60   27.43
SO BUILDLEN GA1035-GA7595       30.42   32.49   33.57   33.63   32.66   31.59
SO BUILDLEN GA1035-GA7595       33.15   33.71   33.24   31.77   29.32   25.98
SO BUILDLEN GA1035-GA7595       21.86   17.07   13.94   19.06   23.60   27.43
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SO BUILDLEN GA1035-GA7595        30.42    32.49    33.57    33.63    32.66    31.59
SO XBADJ    GA1035-GA7595       -36.54   -35.91   -34.20   -61.77   -63.38   -63.07
SO XBADJ    GA1035-GA7595       -60.84   -56.76    -7.04    -6.08    -4.94    -3.65
SO XBADJ    GA1035-GA7595        -2.24    -0.77     0.72     2.20     3.60     4.46
SO XBADJ    GA1035-GA7595         3.38     2.20     0.96    30.00    34.06    37.08
SO XBADJ    GA1035-GA7595        38.98    39.69    -6.90   -12.98   -18.66   -23.78
SO XBADJ    GA1035-GA7595       -28.18   -31.71   -34.29   -35.82   -36.27   -36.05
SO YBADJ    GA1035-GA7595        -3.45    -6.86   -10.07    20.35    12.07     3.43
SO YBADJ    GA1035-GA7595        -5.32   -13.91   -20.25   -19.96   -19.06   -17.58
SO YBADJ    GA1035-GA7595       -15.56   -13.07   -10.19    -6.99    -3.59    -0.07
SO YBADJ    GA1035-GA7595         3.45     6.86    10.07   -20.35   -12.07    -3.43
SO YBADJ    GA1035-GA7595         5.32    13.91    20.26    19.96    19.06    17.58
SO YBADJ    GA1035-GA7595        15.56    13.07    10.19     6.99     3.59     0.07

SO BUILDHGT GB1035-GB7595        23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT GB1035-GB7595        23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT GB1035-GB7595        23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT GB1035-GB7595        23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT GB1035-GB7595        23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT GB1035-GB7595        23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDWID GB1035-GB7595        19.06    23.60    27.42    30.41    32.48    33.56
SO BUILDWID GB1035-GB7595        33.62    32.65    31.59    33.15    33.71    33.24
SO BUILDWID GB1035-GB7595        31.76    29.31    25.98    21.86    17.07    13.94
SO BUILDWID GB1035-GB7595        19.06    23.60    27.42    30.41    32.48    33.56
SO BUILDWID GB1035-GB7595        33.62    32.65    31.59    33.15    33.71    33.24
SO BUILDWID GB1035-GB7595        31.76    29.31    25.98    21.86    17.07    13.94
SO BUILDLEN GB1035-GB7595        33.16    33.72    33.25    31.77    29.32    25.98
SO BUILDLEN GB1035-GB7595        21.86    17.07    13.94    19.06    23.60    27.43
SO BUILDLEN GB1035-GB7595        30.42    32.49    33.56    33.62    32.65    31.60
SO BUILDLEN GB1035-GB7595        33.16    33.72    33.25    31.77    29.32    25.98
SO BUILDLEN GB1035-GB7595        21.86    17.07    13.94    19.06    23.60    27.43
SO BUILDLEN GB1035-GB7595        30.42    32.49    33.56    33.62    32.65    31.60
SO XBADJ    GB1035-GB7595       -36.84   -36.03   -34.11   -31.17   -27.27  -105.13
SO XBADJ    GB1035-GB7595      -106.15  -103.94    38.98    39.01    37.85    35.54
SO XBADJ    GB1035-GB7595        32.16    27.79     1.65     3.00     4.26     4.94
SO XBADJ    GB1035-GB7595         3.68     2.31     0.87    -0.60    -2.05    -3.44
SO XBADJ    GB1035-GB7595        -4.72    -5.86   -52.92   -58.07   -61.45   -62.97
SO XBADJ    GB1035-GB7595       -62.57   -60.28   -35.21   -36.62   -36.92   -36.54
SO YBADJ    GB1035-GB7595        -4.53    -7.98   -11.18   -14.05   -16.49    25.82
SO YBADJ    GB1035-GB7595         9.43    -7.25   -18.92   -10.66    -2.07     6.59
SO YBADJ    GB1035-GB7595        15.04    23.03    -9.56    -6.21    -2.68     0.94
SO YBADJ    GB1035-GB7595         4.53     7.98    11.18    14.05    16.49    18.43
SO YBADJ    GB1035-GB7595        19.81    20.59    18.92    10.66     2.07    -6.59
SO YBADJ    GB1035-GB7595       -15.04   -23.04     9.56     6.21     2.68    -0.94

SO BUILDHGT GC1035-GC7595        23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT GC1035-GC7595        23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT GC1035-GC7595        23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT GC1035-GC7595        23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT GC1035-GC7595        23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT GC1035-GC7595        23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDWID GC1035-GC7595        19.06    23.60    27.42    30.41    32.48    33.56
SO BUILDWID GC1035-GC7595        33.62    32.65    31.60    33.16    33.72    33.25
SO BUILDWID GC1035-GC7595        31.77    29.32    25.98    21.86    17.07    13.94
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SO BUILDWID GC1035-GC7595        19.06    23.60    27.42    30.41    32.48    33.56
SO BUILDWID GC1035-GC7595        33.62    32.65    31.60    33.16    33.72    33.25
SO BUILDWID GC1035-GC7595        31.77    29.32    25.98    21.86    17.07    13.94
SO BUILDLEN GC1035-GC7595        33.16    33.72    33.25    31.77    29.32    25.98
SO BUILDLEN GC1035-GC7595        21.86    17.07    13.94    19.06    23.60    27.42
SO BUILDLEN GC1035-GC7595        30.41    32.48    33.56    33.62    32.65    31.60
SO BUILDLEN GC1035-GC7595        33.16    33.72    33.25    31.77    29.32    25.98
SO BUILDLEN GC1035-GC7595        21.86    17.07    13.94    19.06    23.60    27.42
SO BUILDLEN GC1035-GC7595        30.41    32.48    33.56    33.62    32.65    31.60
SO XBADJ    GC1035-GC7595       -36.45   -35.56   -33.60   -30.62   -26.71   -21.98
SO XBADJ    GC1035-GC7595       -16.59   -10.69    -5.56    -4.60    -3.49    -2.28
SO XBADJ    GC1035-GC7595        -1.00     0.31     1.61     2.86     4.03     4.62
SO XBADJ    GC1035-GC7595         3.28     1.85     0.36    -1.15    -2.61    -4.00
SO XBADJ    GC1035-GC7595        -5.27    -6.38    -8.38   -14.46  -107.09   -25.14
SO XBADJ    GC1035-GC7595       -29.41   -32.79   -35.17   -36.48   -36.68   -36.22
SO YBADJ    GC1035-GC7595        -4.93    -8.31   -11.43   -14.21   -16.55   -18.39
SO YBADJ    GC1035-GC7595       -19.67   -20.35   -20.42   -19.86   -18.71   -16.98
SO YBADJ    GC1035-GC7595       -14.74   -12.05    -8.99    -5.66    -2.16     1.41
SO YBADJ    GC1035-GC7595         4.93     8.31    11.43    14.21    16.55    18.39
SO YBADJ    GC1035-GC7595        19.67    20.35    20.42    19.86   -16.11    16.98
SO YBADJ    GC1035-GC7595        14.74    12.05     8.99     5.66     2.16    -1.41

**SO BUILDHGT COMPRS1      0.00      0.00      0.00      0.00      0.00      0.00
**SO BUILDHGT COMPRS1      0.00      0.00      0.00      0.00      0.00      0.00
**SO BUILDHGT COMPRS1      0.00      0.00      0.00      0.00      0.00      0.00
**SO BUILDHGT COMPRS1      0.00      0.00      0.00      0.00      0.00      0.00
**SO BUILDHGT COMPRS1      0.00      0.00      0.00      0.00     23.77     23.77
**SO BUILDHGT COMPRS1     23.77      0.00      0.00      0.00      0.00      0.00
**SO BUILDWID COMPRS1      0.00      0.00      0.00      0.00      0.00      0.00
**SO BUILDWID COMPRS1      0.00      0.00      0.00      0.00      0.00      0.00
**SO BUILDWID COMPRS1      0.00      0.00      0.00      0.00      0.00      0.00
**SO BUILDWID COMPRS1      0.00      0.00      0.00      0.00      0.00      0.00
**SO BUILDWID COMPRS1      0.00      0.00      0.00      0.00     33.72     33.25
**SO BUILDWID COMPRS1     31.77      0.00      0.00      0.00      0.00      0.00
**SO BUILDLEN COMPRS1      0.00      0.00      0.00      0.00      0.00      0.00
**SO BUILDLEN COMPRS1      0.00      0.00      0.00      0.00      0.00      0.00
**SO BUILDLEN COMPRS1      0.00      0.00      0.00      0.00      0.00      0.00
**SO BUILDLEN COMPRS1      0.00      0.00      0.00      0.00      0.00      0.00
**SO BUILDLEN COMPRS1      0.00      0.00      0.00      0.00     23.60     27.42
**SO BUILDLEN COMPRS1     30.41      0.00      0.00      0.00      0.00      0.00
**SO XBADJ    COMPRS1      0.00      0.00      0.00      0.00      0.00      0.00
**SO XBADJ    COMPRS1      0.00      0.00      0.00      0.00      0.00      0.00
**SO XBADJ    COMPRS1      0.00      0.00      0.00      0.00      0.00      0.00
**SO XBADJ    COMPRS1      0.00      0.00      0.00      0.00      0.00      0.00
**SO XBADJ    COMPRS1      0.00      0.00      0.00      0.00   -117.01   -121.97
**SO XBADJ    COMPRS1   -123.23      0.00      0.00      0.00      0.00      0.00
**SO YBADJ    COMPRS1      0.00      0.00      0.00      0.00      0.00      0.00
**SO YBADJ    COMPRS1      0.00      0.00      0.00      0.00      0.00      0.00
**SO YBADJ    COMPRS1      0.00      0.00      0.00      0.00      0.00      0.00
**SO YBADJ    COMPRS1      0.00      0.00      0.00      0.00      0.00      0.00
**SO YBADJ    COMPRS1      0.00      0.00      0.00      0.00     26.77      8.09
**SO YBADJ    COMPRS1    -10.83      0.00      0.00      0.00      0.00      0.00
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SO BUILDHGT COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT COMPRS2     0.00     0.00     0.00     0.00     0.00    23.77
SO BUILDHGT COMPRS2    23.77    23.77     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS2     0.00     0.00     0.00     0.00     0.00    33.25
SO BUILDWID COMPRS2    31.77    29.32     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS2     0.00     0.00     0.00     0.00     0.00    27.42
SO BUILDLEN COMPRS2    30.41    32.48     0.00     0.00     0.00     0.00
SO XBADJ    COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    COMPRS2     0.00     0.00     0.00     0.00     0.00  -113.90
SO XBADJ    COMPRS2  -116.12  -114.81     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS2     0.00     0.00     0.00     0.00     0.00    12.95
SO YBADJ    COMPRS2    -4.64   -22.10     0.00     0.00     0.00     0.00


SO BUILDHGT COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT COMPRS3     0.00     0.00     0.00     0.00     0.00    23.77
SO BUILDHGT COMPRS3    23.77    23.77     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS3     0.00     0.00     0.00     0.00     0.00    33.25
SO BUILDWID COMPRS3    31.77    29.32     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS3     0.00     0.00     0.00     0.00     0.00    27.42
SO BUILDLEN COMPRS3    30.41    32.48     0.00     0.00     0.00     0.00
SO XBADJ    COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
```

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SO XBADJ    COMPRS3      0.00     0.00     0.00     0.00     0.00 -105.75
SO XBADJ    COMPRS3   -109.00  -108.93     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS3      0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS3      0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS3      0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS3      0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS3      0.00     0.00     0.00     0.00     0.00    18.15
SO YBADJ    COMPRS3      1.90   -14.42     0.00     0.00     0.00     0.00

SO BUILDHGT HEATER       0.00     0.00     0.00     0.00    23.77    23.77
SO BUILDHGT HEATER      23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT HEATER      23.77     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT HEATER       0.00     0.00     0.00     0.00    23.77    23.77
SO BUILDHGT HEATER      23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT HEATER      23.77     0.00     0.00     0.00     0.00     0.00
SO BUILDWID HEATER       0.00     0.00     0.00     0.00    32.48    33.56
SO BUILDWID HEATER      33.62    32.65    31.60    33.16    33.72    33.25
SO BUILDWID HEATER      31.77     0.00     0.00     0.00     0.00     0.00
SO BUILDWID HEATER       0.00     0.00     0.00     0.00    32.48    33.56
SO BUILDWID HEATER      33.62    32.65    31.59    33.15    33.71    33.25
SO BUILDWID HEATER      31.77     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN HEATER       0.00     0.00     0.00     0.00    29.32    25.98
SO BUILDLEN HEATER      21.86    17.07    13.94    19.06    23.60    27.42
SO BUILDLEN HEATER      30.41     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN HEATER       0.00     0.00     0.00     0.00    29.32    25.98
SO BUILDLEN HEATER      21.86    17.07    13.94    19.06    23.60    27.42
SO BUILDLEN HEATER      30.41     0.00     0.00     0.00     0.00     0.00
SO XBADJ    HEATER       0.00     0.00     0.00     0.00    11.96   -64.60
SO XBADJ    HEATER     -65.56   -64.52   -62.62    28.55    25.22    21.12
SO XBADJ    HEATER      16.38     0.00     0.00     0.00     0.00     0.00
SO XBADJ    HEATER       0.00     0.00     0.00     0.00   -41.28    38.62
SO XBADJ    HEATER      43.70    47.46   -89.97   -91.62   -90.50   -48.54
SO XBADJ    HEATER     -46.79     0.00     0.00     0.00     0.00     0.00
SO YBADJ    HEATER       0.00     0.00     0.00     0.00   -27.38    21.91
SO YBADJ    HEATER      12.62     2.94    -6.83     2.80     9.37    15.65
SO YBADJ    HEATER      21.46     0.00     0.00     0.00     0.00     0.00
SO YBADJ    HEATER       0.00     0.00     0.00     0.00    27.38   -21.91
SO YBADJ    HEATER     -12.62    -2.94     2.04   -12.40   -26.47   -15.65
SO YBADJ    HEATER     -21.46     0.00     0.00     0.00     0.00     0.00

   SRCGROUP CTS     GA1035 GB1035 GC1035
   SRCGROUP CTSHTR  GA1035 GB1035 GC1035 HEATER
   SRCGROUP ALL

SO FINISHED
**
****************************************
** ISCST3 Receptor Pathway
****************************************
**
**
RE STARTING
   INCLUDED PEM1.rou
RE FINISHED
```

```
**
****************************************
** AERMOD Meteorology Pathway
****************************************
**
**
ME STARTING
   SURFFILE s:\amodmet\FLL1M5Y.SFC
   PROFFILE s:\amodmet\FLL1M5Y.PFL
   SURFDATA 12849 2006 Fort_Lauderdale_Hollywood_Intl_AP
   UAIRDATA 92803 2006 Miami_-_FL_Intl_Univ
   PROFBASE 11 FEET
   STARTEND 06 01 01 06 12 31
ME FINISHED
**
****************************************
** AERMOD Output Pathway
****************************************
**
**
OU STARTING
   RECTABLE ALLAVE SECOND FOURTH
OU FINISHED
```

AERBOB RELEASE 110422

AERMOD OUTPUT FILE NUMBER 1 :SO2AQS.006
AERMOD OUTPUT FILE NUMBER 2 :SO2AQS.007
AERMOD OUTPUT FILE NUMBER 3 :SO2AQS.008
AERMOD OUTPUT FILE NUMBER 4 :SO2AQS.009
AERMOD OUTPUT FILE NUMBER 5 :SO2AQS.010
First title for last output file is: FPL FUTURE SO2 AAQS WITH MHI "J" CLASS GAS 9/15/11
Second title for last output file is: FT. LAUDERDALE/MIAMI FIU MET 2006-2010

AVERAGING TIME	YEAR	CONC (ug/m3)	X (m)	Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID: CTS					
Annual					
	06	0.25487	586800.0	2885800.0	06123124
	07	0.24858	586700.0	2885400.0	07123124
	08	0.28153	586800.0	2885900.0	08123124
	09	0.34026	586900.0	2885900.0	09123124
	10	0.25512	586900.0	2885900.0	10123124
SOURCE GROUP ID: CTSHTR					
Annual					
	06	0.27178	586800.0	2885800.0	06123124
	07	0.25967	586700.0	2885400.0	07123124
	08	0.29364	586800.0	2885900.0	08123124
	09	0.36007	586900.0	2885800.0	09123124
	10	0.26971	586900.0	2885900.0	10123124
SOURCE GROUP ID: ALL					
Annual					
	06	0.30541	586900.0	2885800.0	06123124
	07	0.28767	586700.0	2885400.0	07123124
	08	0.32625	586900.0	2885800.0	08123124
	09	0.39781	586900.0	2885800.0	09123124
	10	0.29668	586900.0	2885900.0	10123124
	09	0.00000	0.	0.	
	10	0.00000	0.	0.	

All receptor computations reported with respect to a user-specified origin

GRID	0.00	0.00
DISCRETE	0.00	0.00

```
CO STARTING
   TITLEONE FPL FUTURE PM10/PM2.5 AAQS WITH MHI "J" CLASS GAS 9/15/11
   TITLETWO FT. LAUDERDALE/MIAMI FIU MET 2006-2010
   MODELOPT DFAULT CONC
   AVERTIME PERIOD
   POLLUTID PM10
   RUNORNOT RUN
CO FINISHED
**
****************************************
** ISCST3 Source Pathway
****************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION OA5095 POINT 587489.306  2885478.742  0.000
   LOCATION OB5095 POINT 587443.291  2885477.412  0.000
   LOCATION OC5095 POINT 587349.178  2885474.119  0.000
** LOCATION COMPRS1  POINT      587260.876  2885514.841        0.000
   LOCATION COMPRS2  POINT      587270.298  2885515.008        0.000
   LOCATION COMPRS3  POINT      587279.960  2885515.439        0.000
   LOCATION HEATER   POINT      587406.240  2885460.530        0.000

** Source Parameters **
** 50% Load, 95 F, OIL
   SRCPARAM OA5095 1.64   45.4   452.0   14.58  6.71
   SRCPARAM OB5095 1.64   45.4   452.0   14.58  6.71
   SRCPARAM OC5095 1.64   45.4   452.0   14.58  6.71
** MAX 2 COMPRESSORS OPERATING SIMULTANEOUSLY
** SRCPARAM COMPRS1  0.047    6.309   807.594  43.58640     1.067
   SRCPARAM COMPRS2  0.047    6.309   807.594  43.58640     1.067
   SRCPARAM COMPRS3  0.047    6.309   807.594  43.58640     1.067
   SRCPARAM HEATER   0.0003    9.144   533.150  16.33513     0.427

** Building Downwash **
SO BUILDHGT OA1035-OA7595       23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OA1035-OA7595       23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OA1035-OA7595       23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OA1035-OA7595       23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OA1035-OA7595       23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OA1035-OA7595       23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDWID OA1035-OA7595       19.06   23.60   27.43   30.41   32.48   33.56
SO BUILDWID OA1035-OA7595       33.62   32.65   31.59   33.15   33.71   33.24
SO BUILDWID OA1035-OA7595       31.76   29.31   25.98   21.86   17.07   13.94
SO BUILDWID OA1035-OA7595       19.06   23.60   27.43   30.41   32.48   33.56
SO BUILDWID OA1035-OA7595       33.62   32.65   31.59   33.15   33.71   33.24
SO BUILDWID OA1035-OA7595       31.76   29.31   25.98   21.86   17.07   13.94
SO BUILDLEN OA1035-OA7595       33.15   33.71   33.24   31.77   29.32   25.98
SO BUILDLEN OA1035-OA7595       21.86   17.07   13.94   19.06   23.60   27.43
SO BUILDLEN OA1035-OA7595       30.42   32.49   33.57   33.63   32.66   31.59
SO BUILDLEN OA1035-OA7595       33.15   33.71   33.24   31.77   29.32   25.98
SO BUILDLEN OA1035-OA7595       21.86   17.07   13.94   19.06   23.60   27.43
```

SO	BUILDLEN	OA1035-OA7595	30.42	32.49	33.57	33.63	32.66	31.59
SO	XBADJ	OA1035-OA7595	-36.54	-35.91	-34.20	-61.77	-63.38	-63.07
SO	XBADJ	OA1035-OA7595	-60.84	-56.76	-7.04	-6.08	-4.94	-3.65
SO	XBADJ	OA1035-OA7595	-2.24	-0.77	0.72	2.20	3.60	4.46
SO	XBADJ	OA1035-OA7595	3.38	2.20	0.96	30.00	34.06	37.08
SO	XBADJ	OA1035-OA7595	38.98	39.69	-6.90	-12.98	-18.66	-23.78
SO	XBADJ	OA1035-OA7595	-28.18	-31.71	-34.29	-35.82	-36.27	-36.05
SO	YBADJ	OA1035-OA7595	-3.45	-6.86	-10.07	20.35	12.07	3.43
SO	YBADJ	OA1035-OA7595	-5.32	-13.91	-20.25	-19.96	-19.06	-17.58
SO	YBADJ	OA1035-OA7595	-15.56	-13.07	-10.19	-6.99	-3.59	-0.07
SO	YBADJ	OA1035-OA7595	3.45	6.86	10.07	-20.35	-12.07	-3.43
SO	YBADJ	OA1035-OA7595	5.32	13.91	20.26	19.96	19.06	17.58
SO	YBADJ	OA1035-OA7595	15.56	13.07	10.19	6.99	3.59	0.07

SO	BUILDHGT	OB1035-OB7595	23.77	23.77	23.77	23.77	23.77	23.77
SO	BUILDHGT	OB1035-OB7595	23.77	23.77	23.77	23.77	23.77	23.77
SO	BUILDHGT	OB1035-OB7595	23.77	23.77	23.77	23.77	23.77	23.77
SO	BUILDHGT	OB1035-OB7595	23.77	23.77	23.77	23.77	23.77	23.77
SO	BUILDHGT	OB1035-OB7595	23.77	23.77	23.77	23.77	23.77	23.77
SO	BUILDHGT	OB1035-OB7595	23.77	23.77	23.77	23.77	23.77	23.77
SO	BUILDWID	OB1035-OB7595	19.06	23.60	27.42	30.41	32.48	33.56
SO	BUILDWID	OB1035-OB7595	33.62	32.65	31.59	33.15	33.71	33.24
SO	BUILDWID	OB1035-OB7595	31.76	29.31	25.98	21.86	17.07	13.94
SO	BUILDWID	OB1035-OB7595	19.06	23.60	27.42	30.41	32.48	33.56
SO	BUILDWID	OB1035-OB7595	33.62	32.65	31.59	33.15	33.71	33.24
SO	BUILDWID	OB1035-OB7595	31.76	29.31	25.98	21.86	17.07	13.94
SO	BUILDLEN	OB1035-OB7595	33.16	33.72	33.25	31.77	29.32	25.98
SO	BUILDLEN	OB1035-OB7595	21.86	17.07	13.94	19.06	23.60	27.43
SO	BUILDLEN	OB1035-OB7595	30.42	32.49	33.56	33.62	32.65	31.60
SO	BUILDLEN	OB1035-OB7595	33.16	33.72	33.25	31.77	29.32	25.98
SO	BUILDLEN	OB1035-OB7595	21.86	17.07	13.94	19.06	23.60	27.43
SO	BUILDLEN	OB1035-OB7595	30.42	32.49	33.56	33.62	32.65	31.60
SO	XBADJ	OB1035-OB7595	-36.84	-36.03	-34.11	-31.17	-27.27	-105.13
SO	XBADJ	OB1035-OB7595	-106.15	-103.94	38.98	39.01	37.85	35.54
SO	XBADJ	OB1035-OB7595	32.16	27.79	1.65	3.00	4.26	4.94
SO	XBADJ	OB1035-OB7595	3.68	2.31	0.87	-0.60	-2.05	-3.44
SO	XBADJ	OB1035-OB7595	-4.72	-5.86	-52.92	-58.07	-61.45	-62.97
SO	XBADJ	OB1035-OB7595	-62.57	-60.28	-35.21	-36.62	-36.92	-36.54
SO	YBADJ	OB1035-OB7595	-4.53	-7.98	-11.18	-14.05	-16.49	25.82
SO	YBADJ	OB1035-OB7595	9.43	-7.25	-18.92	-10.66	-2.07	6.59
SO	YBADJ	OB1035-OB7595	15.04	23.03	-9.56	-6.21	-2.68	0.94
SO	YBADJ	OB1035-OB7595	4.53	7.98	11.18	14.05	16.49	18.43
SO	YBADJ	OB1035-OB7595	19.81	20.59	18.92	10.66	2.07	-6.59
SO	YBADJ	OB1035-OB7595	-15.04	-23.04	9.56	6.21	2.68	-0.94

SO	BUILDHGT	OC1035-OC7595	23.77	23.77	23.77	23.77	23.77	23.77
SO	BUILDHGT	OC1035-OC7595	23.77	23.77	23.77	23.77	23.77	23.77
SO	BUILDHGT	OC1035-OC7595	23.77	23.77	23.77	23.77	23.77	23.77
SO	BUILDHGT	OC1035-OC7595	23.77	23.77	23.77	23.77	23.77	23.77
SO	BUILDHGT	OC1035-OC7595	23.77	23.77	23.77	23.77	23.77	23.77
SO	BUILDHGT	OC1035-OC7595	23.77	23.77	23.77	23.77	23.77	23.77
SO	BUILDWID	OC1035-OC7595	19.06	23.60	27.42	30.41	32.48	33.56
SO	BUILDWID	OC1035-OC7595	33.62	32.65	31.60	33.16	33.72	33.25
SO	BUILDWID	OC1035-OC7595	31.77	29.32	25.98	21.86	17.07	13.94

```
SO BUILDWID OC1035-OC7595        19.06   23.60   27.42   30.41   32.48   33.56
SO BUILDWID OC1035-OC7595        33.62   32.65   31.60   33.16   33.72   33.25
SO BUILDWID OC1035-OC7595        31.77   29.32   25.98   21.86   17.07   13.94
SO BUILDLEN OC1035-OC7595        33.16   33.72   33.25   31.77   29.32   25.98
SO BUILDLEN OC1035-OC7595        21.86   17.07   13.94   19.06   23.60   27.42
SO BUILDLEN OC1035-OC7595        30.41   32.48   33.56   33.62   32.65   31.60
SO BUILDLEN OC1035-OC7595        33.16   33.72   33.25   31.77   29.32   25.98
SO BUILDLEN OC1035-OC7595        21.86   17.07   13.94   19.06   23.60   27.42
SO BUILDLEN OC1035-OC7595        30.41   32.48   33.56   33.62   32.65   31.60
SO XBADJ    OC1035-OC7595       -36.45  -35.56  -33.60  -30.62  -26.71  -21.98
SO XBADJ    OC1035-OC7595       -16.59  -10.69   -5.56   -4.60   -3.49   -2.28
SO XBADJ    OC1035-OC7595        -1.00    0.31    1.61    2.86    4.03    4.62
SO XBADJ    OC1035-OC7595         3.28    1.85    0.36   -1.15   -2.61   -4.00
SO XBADJ    OC1035-OC7595        -5.27   -6.38   -8.38  -14.46 -107.09  -25.14
SO XBADJ    OC1035-OC7595       -29.41  -32.79  -35.17  -36.48  -36.68  -36.22
SO YBADJ    OC1035-OC7595        -4.93   -8.31  -11.43  -14.21  -16.55  -18.39
SO YBADJ    OC1035-OC7595       -19.67  -20.35  -20.42  -19.86  -18.71  -16.98
SO YBADJ    OC1035-OC7595       -14.74  -12.05   -8.99   -5.66   -2.16    1.41
SO YBADJ    OC1035-OC7595         4.93    8.31   11.43   14.21   16.55   18.39
SO YBADJ    OC1035-OC7595        19.67   20.35   20.42   19.86  -16.11   16.98
SO YBADJ    OC1035-OC7595        14.74   12.05    8.99    5.66    2.16   -1.41

**SO BUILDHGT COMPRS1      0.00    0.00    0.00    0.00    0.00    0.00
**SO BUILDHGT COMPRS1      0.00    0.00    0.00    0.00    0.00    0.00
**SO BUILDHGT COMPRS1      0.00    0.00    0.00    0.00    0.00    0.00
**SO BUILDHGT COMPRS1      0.00    0.00    0.00    0.00    0.00    0.00
**SO BUILDHGT COMPRS1      0.00    0.00    0.00    0.00   23.77   23.77
**SO BUILDHGT COMPRS1     23.77    0.00    0.00    0.00    0.00    0.00
**SO BUILDWID COMPRS1      0.00    0.00    0.00    0.00    0.00    0.00
**SO BUILDWID COMPRS1      0.00    0.00    0.00    0.00    0.00    0.00
**SO BUILDWID COMPRS1      0.00    0.00    0.00    0.00    0.00    0.00
**SO BUILDWID COMPRS1      0.00    0.00    0.00    0.00    0.00    0.00
**SO BUILDWID COMPRS1      0.00    0.00    0.00    0.00   33.72   33.25
**SO BUILDWID COMPRS1     31.77    0.00    0.00    0.00    0.00    0.00
**SO BUILDLEN COMPRS1      0.00    0.00    0.00    0.00    0.00    0.00
**SO BUILDLEN COMPRS1      0.00    0.00    0.00    0.00    0.00    0.00
**SO BUILDLEN COMPRS1      0.00    0.00    0.00    0.00    0.00    0.00
**SO BUILDLEN COMPRS1      0.00    0.00    0.00    0.00    0.00    0.00
**SO BUILDLEN COMPRS1      0.00    0.00    0.00    0.00   23.60   27.42
**SO BUILDLEN COMPRS1     30.41    0.00    0.00    0.00    0.00    0.00
**SO XBADJ    COMPRS1      0.00    0.00    0.00    0.00    0.00    0.00
**SO XBADJ    COMPRS1      0.00    0.00    0.00    0.00    0.00    0.00
**SO XBADJ    COMPRS1      0.00    0.00    0.00    0.00    0.00    0.00
**SO XBADJ    COMPRS1      0.00    0.00    0.00    0.00    0.00    0.00
**SO XBADJ    COMPRS1      0.00    0.00    0.00    0.00 -117.01 -121.97
**SO XBADJ    COMPRS1   -123.23    0.00    0.00    0.00    0.00    0.00
**SO YBADJ    COMPRS1      0.00    0.00    0.00    0.00    0.00    0.00
**SO YBADJ    COMPRS1      0.00    0.00    0.00    0.00    0.00    0.00
**SO YBADJ    COMPRS1      0.00    0.00    0.00    0.00    0.00    0.00
**SO YBADJ    COMPRS1      0.00    0.00    0.00    0.00    0.00    0.00
**SO YBADJ    COMPRS1      0.00    0.00    0.00    0.00   26.77    8.09
**SO YBADJ    COMPRS1    -10.83    0.00    0.00    0.00    0.00    0.00
```

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SO BUILDHGT COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT COMPRS2     0.00     0.00     0.00     0.00     0.00    23.77
SO BUILDHGT COMPRS2    23.77    23.77     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS2     0.00     0.00     0.00     0.00     0.00    33.25
SO BUILDWID COMPRS2    31.77    29.32     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS2     0.00     0.00     0.00     0.00     0.00    27.42
SO BUILDLEN COMPRS2    30.41    32.48     0.00     0.00     0.00     0.00
SO XBADJ    COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    COMPRS2     0.00     0.00     0.00     0.00     0.00  -113.90
SO XBADJ    COMPRS2  -116.12  -114.81     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS2     0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS2     0.00     0.00     0.00     0.00     0.00    12.95
SO YBADJ    COMPRS2    -4.64   -22.10     0.00     0.00     0.00     0.00


SO BUILDHGT COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT COMPRS3     0.00     0.00     0.00     0.00     0.00    23.77
SO BUILDHGT COMPRS3    23.77    23.77     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS3     0.00     0.00     0.00     0.00     0.00    33.25
SO BUILDWID COMPRS3    31.77    29.32     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS3     0.00     0.00     0.00     0.00     0.00    27.42
SO BUILDLEN COMPRS3    30.41    32.48     0.00     0.00     0.00     0.00
SO XBADJ    COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
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SO XBADJ    COMPRS3     0.00    0.00    0.00    0.00    0.00 -105.75
SO XBADJ    COMPRS3  -109.00 -108.93    0.00    0.00    0.00    0.00
SO YBADJ    COMPRS3     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    COMPRS3     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    COMPRS3     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    COMPRS3     0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    COMPRS3     0.00    0.00    0.00    0.00    0.00   18.15
SO YBADJ    COMPRS3     1.90  -14.42    0.00    0.00    0.00    0.00

SO BUILDHGT HEATER      0.00    0.00    0.00    0.00   23.77   23.77
SO BUILDHGT HEATER     23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT HEATER     23.77    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT HEATER      0.00    0.00    0.00    0.00   23.77   23.77
SO BUILDHGT HEATER     23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT HEATER     23.77    0.00    0.00    0.00    0.00    0.00
SO BUILDWID HEATER      0.00    0.00    0.00    0.00   32.48   33.56
SO BUILDWID HEATER     33.62   32.65   31.60   33.16   33.72   33.25
SO BUILDWID HEATER     31.77    0.00    0.00    0.00    0.00    0.00
SO BUILDWID HEATER      0.00    0.00    0.00    0.00   32.48   33.56
SO BUILDWID HEATER     33.62   32.65   31.59   33.15   33.71   33.25
SO BUILDWID HEATER     31.77    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN HEATER      0.00    0.00    0.00    0.00   29.32   25.98
SO BUILDLEN HEATER     21.86   17.07   13.94   19.06   23.60   27.42
SO BUILDLEN HEATER     30.41    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN HEATER      0.00    0.00    0.00    0.00   29.32   25.98
SO BUILDLEN HEATER     21.86   17.07   13.94   19.06   23.60   27.42
SO BUILDLEN HEATER     30.41    0.00    0.00    0.00    0.00    0.00
SO XBADJ    HEATER      0.00    0.00    0.00    0.00   11.96  -64.60
SO XBADJ    HEATER    -65.56  -64.52  -62.62   28.55   25.22   21.12
SO XBADJ    HEATER     16.38    0.00    0.00    0.00    0.00    0.00
SO XBADJ    HEATER      0.00    0.00    0.00    0.00  -41.28   38.62
SO XBADJ    HEATER     43.70   47.46  -89.97  -91.62  -90.50  -48.54
SO XBADJ    HEATER    -46.79    0.00    0.00    0.00    0.00    0.00
SO YBADJ    HEATER      0.00    0.00    0.00    0.00  -27.38   21.91
SO YBADJ    HEATER     12.62    2.94   -6.83    2.80    9.37   15.65
SO YBADJ    HEATER     21.46    0.00    0.00    0.00    0.00    0.00
SO YBADJ    HEATER      0.00    0.00    0.00    0.00   27.38  -21.91
SO YBADJ    HEATER    -12.62   -2.94    2.04  -12.40  -26.47  -15.65
SO YBADJ    HEATER    -21.46    0.00    0.00    0.00    0.00    0.00

SO SRCGROUP CTS    OA5095 OB5095 OC5095
SO SRCGROUP CTSHTR OA5095 OB5095 OC5095 HEATER
SO SRCGROUP ALL


SO FINISHED
**
****************************************
** ISCST3 Receptor Pathway
****************************************
**
**
RE STARTING
   INCLUDED PEM1.rou
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RE FINISHED
**
***************************************
** AERMOD Meteorology Pathway
***************************************
**
**
ME STARTING
   SURFFILE s:\amodmet\FLL1M5Y.SFC
   PROFFILE s:\amodmet\FLL1M5Y.PFL
   SURFDATA 12849 2006 Fort_Lauderdale_Hollywood_Intl_AP
   UAIRDATA 92803 2006 Miami_-_FL_Intl_Univ
   PROFBASE 11 FEET
   STARTEND 06 01 01 06 12 31
ME FINISHED
**
***************************************
** AERMOD Output Pathway
***************************************
**
**
OU STARTING
OU FINISHED
```

AERBOB RELEASE 110422

AERMOD OUTPUT FILE NUMBER 1 :PM10AQS.006
AERMOD OUTPUT FILE NUMBER 2 :PM10AQS.007
AERMOD OUTPUT FILE NUMBER 3 :PM10AQS.008
AERMOD OUTPUT FILE NUMBER 4 :PM10AQS.009
AERMOD OUTPUT FILE NUMBER 5 :PM10AQS.010
First title for last output file is: FPL FUTURE PM10/PM2.5 AAQS WITH MHI "J" CLASS GAS 9/15/11
Second title for last output file is: FT. LAUDERDALE/MIAMI FIU MET 2006-2010

AVERAGING TIME	YEAR	CONC (ug/m3)	X (m)	Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID: CTS					
Annual					
	06	0.14923	586800.0	2885800.0	06123124
	07	0.15118	586700.0	2885400.0	07123124
	08	0.17042	586800.0	2885900.0	08123124
	09	0.21010	586900.0	2885900.0	09123124
	10	0.15041	586900.0	2885900.0	10123124
SOURCE GROUP ID: CTSHTR					
Annual					
	06	0.14998	586800.0	2885800.0	06123124
	07	0.15167	586700.0	2885400.0	07123124
	08	0.17095	586800.0	2885900.0	08123124
	09	0.21073	586900.0	2885900.0	09123124
	10	0.15105	586900.0	2885900.0	10123124
SOURCE GROUP ID: ALL					
Annual					
	06	0.18859	586900.0	2885800.0	06123124
	07	0.18424	586700.0	2885400.0	07123124
	08	0.20685	586900.0	2885800.0	08123124
	09	0.25394	586900.0	2885800.0	09123124
	10	0.18350	586900.0	2885800.0	10123124

All receptor computations reported with respect to a user-specified origin

GRID	0.00	0.00
DISCRETE	0.00	0.00

```
CO STARTING
   TITLEONE FPL FUTURE NO2 AAQS WITH MHI "J" CLASS GAS 9/15/11
   TITLETWO FT. LAUDERDALE/MIAMI FIU MET 2006-2010
   MODELOPT DFAULT CONC
   AVERTIME PERIOD
   POLLUTID NO2
   RUNORNOT RUN
CO FINISHED
**
****************************************
** ISCST3 Source Pathway
****************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION OA1035 POINT 587489.306  2885478.742  0.000
   LOCATION OB1035 POINT 587443.291  2885477.412  0.000
   LOCATION OC1035 POINT 587349.178  2885474.119  0.000
** LOCATION COMPRS1  POINT      587260.876  2885514.841        0.000
   LOCATION COMPRS2  POINT      587270.298  2885515.008        0.000
   LOCATION COMPRS3  POINT      587279.960  2885515.439        0.000
   LOCATION HEATER   POINT      587406.240  2885460.530        0.000

** Source Parameters **
** Baseload, 35 F, OIL
   SRCPARAM OA1035 9.85   45.4   454.8   23.51  6.71
   SRCPARAM OB1035 9.85   45.4   454.8   23.51  6.71
   SRCPARAM OC1035 9.85   45.4   454.8   23.51  6.71
** MAX 2 COMPRESSORS OPERATING SIMULTANEOUSLY AT WORST CASE EMISSIONS
** SRCPARAM COMPRS1  0.399  6.309   807.594  43.58640     1.067
   SRCPARAM COMPRS2  0.399  6.309   807.594  43.58640     1.067
   SRCPARAM COMPRS3  0.399  6.309   807.594  43.58640     1.067
   SRCPARAM HEATER   0.12   9.144   533.150  16.33513     0.427

** Building Downwash **
SO BUILDHGT OA1035-OA7595       23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OA1035-OA7595       23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OA1035-OA7595       23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OA1035-OA7595       23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OA1035-OA7595       23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OA1035-OA7595       23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDWID OA1035-OA7595       19.06   23.60   27.43   30.41   32.48   33.56
SO BUILDWID OA1035-OA7595       33.62   32.65   31.59   33.15   33.71   33.24
SO BUILDWID OA1035-OA7595       31.76   29.31   25.98   21.86   17.07   13.94
SO BUILDWID OA1035-OA7595       19.06   23.60   27.43   30.41   32.48   33.56
SO BUILDWID OA1035-OA7595       33.62   32.65   31.59   33.15   33.71   33.24
SO BUILDWID OA1035-OA7595       31.76   29.31   25.98   21.86   17.07   13.94
SO BUILDLEN OA1035-OA7595       33.15   33.71   33.24   31.77   29.32   25.98
SO BUILDLEN OA1035-OA7595       21.86   17.07   13.94   19.06   23.60   27.43
SO BUILDLEN OA1035-OA7595       30.42   32.49   33.57   33.63   32.66   31.59
SO BUILDLEN OA1035-OA7595       33.15   33.71   33.24   31.77   29.32   25.98
SO BUILDLEN OA1035-OA7595       21.86   17.07   13.94   19.06   23.60   27.43
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SO BUILDLEN OA1035-OA7595      30.42   32.49   33.57   33.63   32.66   31.59
SO XBADJ    OA1035-OA7595     -36.54  -35.91  -34.20  -61.77  -63.38  -63.07
SO XBADJ    OA1035-OA7595     -60.84  -56.76   -7.04   -6.08   -4.94   -3.65
SO XBADJ    OA1035-OA7595      -2.24   -0.77    0.72    2.20    3.60    4.46
SO XBADJ    OA1035-OA7595       3.38    2.20    0.96   30.00   34.06   37.08
SO XBADJ    OA1035-OA7595      38.98   39.69   -6.90  -12.98  -18.66  -23.78
SO XBADJ    OA1035-OA7595     -28.18  -31.71  -34.29  -35.82  -36.27  -36.05
SO YBADJ    OA1035-OA7595      -3.45   -6.86  -10.07   20.35   12.07    3.43
SO YBADJ    OA1035-OA7595      -5.32  -13.91  -20.25  -19.96  -19.06  -17.58
SO YBADJ    OA1035-OA7595     -15.56  -13.07  -10.19   -6.99   -3.59   -0.07
SO YBADJ    OA1035-OA7595       3.45    6.86   10.07  -20.35  -12.07   -3.43
SO YBADJ    OA1035-OA7595       5.32   13.91   20.26   19.96   19.06   17.58
SO YBADJ    OA1035-OA7595      15.56   13.07   10.19    6.99    3.59    0.07

SO BUILDHGT OB1035-OB7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OB1035-OB7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OB1035-OB7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OB1035-OB7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OB1035-OB7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OB1035-OB7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDWID OB1035-OB7595      19.06   23.60   27.42   30.41   32.48   33.56
SO BUILDWID OB1035-OB7595      33.62   32.65   31.59   33.15   33.71   33.24
SO BUILDWID OB1035-OB7595      31.76   29.31   25.98   21.86   17.07   13.94
SO BUILDWID OB1035-OB7595      19.06   23.60   27.42   30.41   32.48   33.56
SO BUILDWID OB1035-OB7595      33.62   32.65   31.59   33.15   33.71   33.24
SO BUILDWID OB1035-OB7595      31.76   29.31   25.98   21.86   17.07   13.94
SO BUILDLEN OB1035-OB7595      33.16   33.72   33.25   31.77   29.32   25.98
SO BUILDLEN OB1035-OB7595      21.86   17.07   13.94   19.06   23.60   27.43
SO BUILDLEN OB1035-OB7595      30.42   32.49   33.56   33.62   32.65   31.60
SO BUILDLEN OB1035-OB7595      33.16   33.72   33.25   31.77   29.32   25.98
SO BUILDLEN OB1035-OB7595      21.86   17.07   13.94   19.06   23.60   27.43
SO BUILDLEN OB1035-OB7595      30.42   32.49   33.56   33.62   32.65   31.60
SO XBADJ    OB1035-OB7595     -36.84  -36.03  -34.11  -31.17  -27.27 -105.13
SO XBADJ    OB1035-OB7595    -106.15 -103.94   38.98   39.01   37.85   35.54
SO XBADJ    OB1035-OB7595      32.16   27.79    1.65    3.00    4.26    4.94
SO XBADJ    OB1035-OB7595       3.68    2.31    0.87   -0.60   -2.05   -3.44
SO XBADJ    OB1035-OB7595      -4.72   -5.86  -52.92  -58.07  -61.45  -62.97
SO XBADJ    OB1035-OB7595     -62.57  -60.28  -35.21  -36.62  -36.92  -36.54
SO YBADJ    OB1035-OB7595      -4.53   -7.98  -11.18  -14.05  -16.49   25.82
SO YBADJ    OB1035-OB7595       9.43   -7.25  -18.92  -10.66   -2.07    6.59
SO YBADJ    OB1035-OB7595      15.04   23.03   -9.56   -6.21   -2.68    0.94
SO YBADJ    OB1035-OB7595       4.53    7.98   11.18   14.05   16.49   18.43
SO YBADJ    OB1035-OB7595      19.81   20.59   18.92   10.66    2.07   -6.59
SO YBADJ    OB1035-OB7595     -15.04  -23.04    9.56    6.21    2.68   -0.94

SO BUILDHGT OC1035-OC7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OC1035-OC7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OC1035-OC7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OC1035-OC7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OC1035-OC7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OC1035-OC7595      23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDWID OC1035-OC7595      19.06   23.60   27.42   30.41   32.48   33.56
SO BUILDWID OC1035-OC7595      33.62   32.65   31.60   33.16   33.72   33.25
SO BUILDWID OC1035-OC7595      31.77   29.32   25.98   21.86   17.07   13.94
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SO BUILDWID OC1035-OC7595        19.06    23.60    27.42    30.41    32.48    33.56
SO BUILDWID OC1035-OC7595        33.62    32.65    31.60    33.16    33.72    33.25
SO BUILDWID OC1035-OC7595        31.77    29.32    25.98    21.86    17.07    13.94
SO BUILDLEN OC1035-OC7595        33.16    33.72    33.25    31.77    29.32    25.98
SO BUILDLEN OC1035-OC7595        21.86    17.07    13.94    19.06    23.60    27.42
SO BUILDLEN OC1035-OC7595        30.41    32.48    33.56    33.62    32.65    31.60
SO BUILDLEN OC1035-OC7595        33.16    33.72    33.25    31.77    29.32    25.98
SO BUILDLEN OC1035-OC7595        21.86    17.07    13.94    19.06    23.60    27.42
SO BUILDLEN OC1035-OC7595        30.41    32.48    33.56    33.62    32.65    31.60
SO XBADJ    OC1035-OC7595       -36.45   -35.56   -33.60   -30.62   -26.71   -21.98
SO XBADJ    OC1035-OC7595       -16.59   -10.69    -5.56    -4.60    -3.49    -2.28
SO XBADJ    OC1035-OC7595        -1.00     0.31     1.61     2.86     4.03     4.62
SO XBADJ    OC1035-OC7595         3.28     1.85     0.36    -1.15    -2.61    -4.00
SO XBADJ    OC1035-OC7595        -5.27    -6.38    -8.38   -14.46  -107.09   -25.14
SO XBADJ    OC1035-OC7595       -29.41   -32.79   -35.17   -36.48   -36.68   -36.22
SO YBADJ    OC1035-OC7595        -4.93    -8.31   -11.43   -14.21   -16.55   -18.39
SO YBADJ    OC1035-OC7595       -19.67   -20.35   -20.42   -19.86   -18.71   -16.98
SO YBADJ    OC1035-OC7595       -14.74   -12.05    -8.99    -5.66    -2.16     1.41
SO YBADJ    OC1035-OC7595         4.93     8.31    11.43    14.21    16.55    18.39
SO YBADJ    OC1035-OC7595        19.67    20.35    20.42    19.86   -16.11    16.98
SO YBADJ    OC1035-OC7595        14.74    12.05     8.99     5.66     2.16    -1.41

**SO BUILDHGT COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO BUILDHGT COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO BUILDHGT COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO BUILDHGT COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO BUILDHGT COMPRS1      0.00     0.00     0.00     0.00    23.77    23.77
**SO BUILDHGT COMPRS1     23.77     0.00     0.00     0.00     0.00     0.00
**SO BUILDWID COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO BUILDWID COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO BUILDWID COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO BUILDWID COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO BUILDWID COMPRS1      0.00     0.00     0.00     0.00    33.72    33.25
**SO BUILDWID COMPRS1     31.77     0.00     0.00     0.00     0.00     0.00
**SO BUILDLEN COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO BUILDLEN COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO BUILDLEN COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO BUILDLEN COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO BUILDLEN COMPRS1      0.00     0.00     0.00     0.00    23.60    27.42
**SO BUILDLEN COMPRS1     30.41     0.00     0.00     0.00     0.00     0.00
**SO XBADJ    COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO XBADJ    COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO XBADJ    COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO XBADJ    COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO XBADJ    COMPRS1      0.00     0.00     0.00     0.00  -117.01  -121.97
**SO XBADJ    COMPRS1   -123.23     0.00     0.00     0.00     0.00     0.00
**SO YBADJ    COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO YBADJ    COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO YBADJ    COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO YBADJ    COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO YBADJ    COMPRS1      0.00     0.00     0.00     0.00    26.77     8.09
**SO YBADJ    COMPRS1    -10.83     0.00     0.00     0.00     0.00     0.00
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SO BUILDHGT COMPRS2      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT COMPRS2      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT COMPRS2      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT COMPRS2      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT COMPRS2      0.00     0.00     0.00     0.00     0.00    23.77
SO BUILDHGT COMPRS2     23.77    23.77     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS2      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS2      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS2      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS2      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS2      0.00     0.00     0.00     0.00     0.00    33.25
SO BUILDWID COMPRS2     31.77    29.32     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS2      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS2      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS2      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS2      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS2      0.00     0.00     0.00     0.00     0.00    27.42
SO BUILDLEN COMPRS2     30.41    32.48     0.00     0.00     0.00     0.00
SO XBADJ    COMPRS2      0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    COMPRS2      0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    COMPRS2      0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    COMPRS2      0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    COMPRS2      0.00     0.00     0.00     0.00     0.00  -113.90
SO XBADJ    COMPRS2   -116.12  -114.81     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS2      0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS2      0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS2      0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS2      0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS2      0.00     0.00     0.00     0.00     0.00    12.95
SO YBADJ    COMPRS2     -4.64   -22.10     0.00     0.00     0.00     0.00


SO BUILDHGT COMPRS3      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT COMPRS3      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT COMPRS3      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT COMPRS3      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT COMPRS3      0.00     0.00     0.00     0.00     0.00    23.77
SO BUILDHGT COMPRS3     23.77    23.77     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS3      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS3      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS3      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS3      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID COMPRS3      0.00     0.00     0.00     0.00     0.00    33.25
SO BUILDWID COMPRS3     31.77    29.32     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS3      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS3      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS3      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS3      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN COMPRS3      0.00     0.00     0.00     0.00     0.00    27.42
SO BUILDLEN COMPRS3     30.41    32.48     0.00     0.00     0.00     0.00
SO XBADJ    COMPRS3      0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    COMPRS3      0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    COMPRS3      0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    COMPRS3      0.00     0.00     0.00     0.00     0.00     0.00
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SO XBADJ    COMPRS3     0.00     0.00     0.00     0.00     0.00 -105.75
SO XBADJ    COMPRS3  -109.00  -108.93     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS3     0.00     0.00     0.00     0.00     0.00    18.15
SO YBADJ    COMPRS3     1.90   -14.42     0.00     0.00     0.00     0.00

SO BUILDHGT HEATER      0.00     0.00     0.00     0.00    23.77    23.77
SO BUILDHGT HEATER     23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT HEATER     23.77     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT HEATER      0.00     0.00     0.00     0.00    23.77    23.77
SO BUILDHGT HEATER     23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT HEATER     23.77     0.00     0.00     0.00     0.00     0.00
SO BUILDWID HEATER      0.00     0.00     0.00     0.00    32.48    33.56
SO BUILDWID HEATER     33.62    32.65    31.60    33.16    33.72    33.25
SO BUILDWID HEATER     31.77     0.00     0.00     0.00     0.00     0.00
SO BUILDWID HEATER      0.00     0.00     0.00     0.00    32.48    33.56
SO BUILDWID HEATER     33.62    32.65    31.59    33.15    33.71    33.25
SO BUILDWID HEATER     31.77     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN HEATER      0.00     0.00     0.00     0.00    29.32    25.98
SO BUILDLEN HEATER     21.86    17.07    13.94    19.06    23.60    27.42
SO BUILDLEN HEATER     30.41     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN HEATER      0.00     0.00     0.00     0.00    29.32    25.98
SO BUILDLEN HEATER     21.86    17.07    13.94    19.06    23.60    27.42
SO BUILDLEN HEATER     30.41     0.00     0.00     0.00     0.00     0.00
SO XBADJ    HEATER      0.00     0.00     0.00     0.00    11.96   -64.60
SO XBADJ    HEATER    -65.56   -64.52   -62.62    28.55    25.22    21.12
SO XBADJ    HEATER     16.38     0.00     0.00     0.00     0.00     0.00
SO XBADJ    HEATER      0.00     0.00     0.00     0.00   -41.28    38.62
SO XBADJ    HEATER     43.70    47.46   -89.97   -91.62   -90.50   -48.54
SO XBADJ    HEATER    -46.79     0.00     0.00     0.00     0.00     0.00
SO YBADJ    HEATER      0.00     0.00     0.00     0.00   -27.38    21.91
SO YBADJ    HEATER     12.62     2.94    -6.83     2.80     9.37    15.65
SO YBADJ    HEATER     21.46     0.00     0.00     0.00     0.00     0.00
SO YBADJ    HEATER      0.00     0.00     0.00     0.00    27.38   -21.91
SO YBADJ    HEATER    -12.62    -2.94     2.04   -12.40   -26.47   -15.65
SO YBADJ    HEATER    -21.46     0.00     0.00     0.00     0.00     0.00

SO SRCGROUP CTS    OA1035 OB1035 OC1035
SO SRCGROUP CTSHTR OA1035 OB1035 OC1035 HEATER
SO SRCGROUP ALL

SO FINISHED
**
****************************************
** ISCST3 Receptor Pathway
****************************************
**
**
RE STARTING
   INCLUDED PEM1.rou
RE FINISHED
```

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**
***************************************
** AERMOD Meteorology Pathway
***************************************
**
**
ME STARTING
   SURFFILE s:\amodmet\FLL1M5Y.SFC
   PROFFILE s:\amodmet\FLL1M5Y.PFL
   SURFDATA 12849 2006 Fort_Lauderdale_Hollywood_Intl_AP
   UAIRDATA 92803 2006 Miami_-_FL_Intl_Univ
   PROFBASE 11 FEET
   STARTEND 06 01 01 06 12 31
ME FINISHED
**
***************************************
** AERMOD Output Pathway
***************************************
**
**
OU STARTING
OU FINISHED
```

AERBOB RELEASE 110422

AERMOD OUTPUT FILE NUMBER 1 :NO2AQS.006
AERMOD OUTPUT FILE NUMBER 2 :NO2AQS.007
AERMOD OUTPUT FILE NUMBER 3 :NO2AQS.008
AERMOD OUTPUT FILE NUMBER 4 :NO2AQS.009
AERMOD OUTPUT FILE NUMBER 5 :NO2AQS.010
First title for last output file is: FPL FUTURE NO2 AAQS WITH MHI "J" CLASS GAS 9/15/11
Second title for last output file is: FT. LAUDERDALE/MIAMI FIU MET 2006-2010

AVERAGING TIME	YEAR	CONC (ug/m3)	X (m)	Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID: CTS					
Annual					
	06	0.53718	586700.0	2885800.0	06123124
	07	0.55017	586600.0	2885400.0	07123124
	08	0.64321	586800.0	2885900.0	08123124
	09	0.83588	586800.0	2885900.0	09123124
	10	0.55017	586800.0	2886000.0	10123124
SOURCE GROUP ID: CTSHTR					
Annual					
	06	1.23887	587199.3	2885584.5	06123124
	07	1.28448	587204.6	2885442.2	07123124
	08	1.25682	587202.9	2885489.8	08123124
	09	1.43689	587199.3	2885584.5	09123124
	10	1.20622	587199.3	2885584.5	10123124
SOURCE GROUP ID: ALL					
Annual					
	06	1.50733	587199.3	2885584.5	06123124
	07	1.39892	587199.3	2885584.5	07123124
	08	1.45308	587000.0	2885700.0	08123124
	09	1.83210	587000.0	2885700.0	09123124
	10	1.48789	587199.3	2885584.5	10123124

All receptor computations reported with respect to a user-specified origin

GRID	0.00	0.00
DISCRETE	0.00	0.00

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CO STARTING
   TITLEONE FPL FUTURE CO AAQS WITH MHI "J" CLASS GAS 9/16/11
   TITLETWO FT. LAUDERDALE/MIAMI FIU MET 2006-2010
   MODELOPT DFAULT CONC
   AVERTIME 8 1
   POLLUTID CO
   RUNORNOT RUN
CO FINISHED
**
***************************************
** ISCST3 Source Pathway
***************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION OA1035 POINT 587489.306  2885478.742  0.000
   LOCATION OB1035 POINT 587443.291  2885477.412  0.000
   LOCATION OC1035 POINT 587349.178  2885474.119  0.000
** LOCATION COMPRS1  POINT      587260.876  2885514.841        0.000
   LOCATION COMPRS2  POINT      587270.298  2885515.008        0.000
   LOCATION COMPRS3  POINT      587279.960  2885515.439        0.000
   LOCATION HEATER   POINT      587406.240  2885460.530        0.000

** Source Parameters **
** Baseload, 35 F, OIL
   SRCPARAM OA1035 26.24  45.4   454.8   23.51  6.71
   SRCPARAM OB1035 26.24  45.4   454.8   23.51  6.71
   SRCPARAM OC1035 26.24  45.4   454.8   23.51  6.71
** MAX 2 COMPRESSORS OPERATING SIMULTANEOUSLY
** SRCPARAM COMPRS1  0.405     6.309   807.594  43.58640     1.067
   SRCPARAM COMPRS2  0.405     6.309   807.594  43.58640     1.067
   SRCPARAM COMPRS3  0.405     6.309   807.594  43.58640     1.067
   SRCPARAM HEATER   0.101     9.144   533.150  16.33513     0.427

** Building Downwash **
SO BUILDHGT OA1035-OA7595       23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OA1035-OA7595       23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OA1035-OA7595       23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OA1035-OA7595       23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OA1035-OA7595       23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT OA1035-OA7595       23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDWID OA1035-OA7595       19.06   23.60   27.43   30.41   32.48   33.56
SO BUILDWID OA1035-OA7595       33.62   32.65   31.59   33.15   33.71   33.24
SO BUILDWID OA1035-OA7595       31.76   29.31   25.98   21.86   17.07   13.94
SO BUILDWID OA1035-OA7595       19.06   23.60   27.43   30.41   32.48   33.56
SO BUILDWID OA1035-OA7595       33.62   32.65   31.59   33.15   33.71   33.24
SO BUILDWID OA1035-OA7595       31.76   29.31   25.98   21.86   17.07   13.94
SO BUILDLEN OA1035-OA7595       33.15   33.71   33.24   31.77   29.32   25.98
SO BUILDLEN OA1035-OA7595       21.86   17.07   13.94   19.06   23.60   27.43
SO BUILDLEN OA1035-OA7595       30.42   32.49   33.57   33.63   32.66   31.59
SO BUILDLEN OA1035-OA7595       33.15   33.71   33.24   31.77   29.32   25.98
SO BUILDLEN OA1035-OA7595       21.86   17.07   13.94   19.06   23.60   27.43
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SO BUILDLEN OA1035-OA7595       30.42    32.49    33.57    33.63    32.66    31.59
SO XBADJ    OA1035-OA7595      -36.54   -35.91   -34.20   -61.77   -63.38   -63.07
SO XBADJ    OA1035-OA7595      -60.84   -56.76    -7.04    -6.08    -4.94    -3.65
SO XBADJ    OA1035-OA7595       -2.24    -0.77     0.72     2.20     3.60     4.46
SO XBADJ    OA1035-OA7595        3.38     2.20     0.96    30.00    34.06    37.08
SO XBADJ    OA1035-OA7595       38.98    39.69    -6.90   -12.98   -18.66   -23.78
SO XBADJ    OA1035-OA7595      -28.18   -31.71   -34.29   -35.82   -36.27   -36.05
SO YBADJ    OA1035-OA7595       -3.45    -6.86   -10.07    20.35    12.07     3.43
SO YBADJ    OA1035-OA7595       -5.32   -13.91   -20.25   -19.96   -19.06   -17.58
SO YBADJ    OA1035-OA7595      -15.56   -13.07   -10.19    -6.99    -3.59    -0.07
SO YBADJ    OA1035-OA7595        3.45     6.86    10.07   -20.35   -12.07    -3.43
SO YBADJ    OA1035-OA7595        5.32    13.91    20.26    19.96    19.06    17.58
SO YBADJ    OA1035-OA7595       15.56    13.07    10.19     6.99     3.59     0.07

SO BUILDHGT OB1035-OB7595       23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT OB1035-OB7595       23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT OB1035-OB7595       23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT OB1035-OB7595       23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT OB1035-OB7595       23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT OB1035-OB7595       23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDWID OB1035-OB7595       19.06    23.60    27.42    30.41    32.48    33.56
SO BUILDWID OB1035-OB7595       33.62    32.65    31.59    33.15    33.71    33.24
SO BUILDWID OB1035-OB7595       31.76    29.31    25.98    21.86    17.07    13.94
SO BUILDWID OB1035-OB7595       19.06    23.60    27.42    30.41    32.48    33.56
SO BUILDWID OB1035-OB7595       33.62    32.65    31.59    33.15    33.71    33.24
SO BUILDWID OB1035-OB7595       31.76    29.31    25.98    21.86    17.07    13.94
SO BUILDLEN OB1035-OB7595       33.16    33.72    33.25    31.77    29.32    25.98
SO BUILDLEN OB1035-OB7595       21.86    17.07    13.94    19.06    23.60    27.43
SO BUILDLEN OB1035-OB7595       30.42    32.49    33.56    33.62    32.65    31.60
SO BUILDLEN OB1035-OB7595       33.16    33.72    33.25    31.77    29.32    25.98
SO BUILDLEN OB1035-OB7595       21.86    17.07    13.94    19.06    23.60    27.43
SO BUILDLEN OB1035-OB7595       30.42    32.49    33.56    33.62    32.65    31.60
SO XBADJ    OB1035-OB7595      -36.84   -36.03   -34.11   -31.17   -27.27  -105.13
SO XBADJ    OB1035-OB7595     -106.15  -103.94    38.98    39.01    37.85    35.54
SO XBADJ    OB1035-OB7595       32.16    27.79     1.65     3.00     4.26     4.94
SO XBADJ    OB1035-OB7595        3.68     2.31     0.87    -0.60    -2.05    -3.44
SO XBADJ    OB1035-OB7595       -4.72    -5.86   -52.92   -58.07   -61.45   -62.97
SO XBADJ    OB1035-OB7595      -62.57   -60.28   -35.21   -36.62   -36.92   -36.54
SO YBADJ    OB1035-OB7595       -4.53    -7.98   -11.18   -14.05   -16.49    25.82
SO YBADJ    OB1035-OB7595        9.43    -7.25   -18.92   -10.66    -2.07     6.59
SO YBADJ    OB1035-OB7595       15.04    23.03    -9.56    -6.21    -2.68     0.94
SO YBADJ    OB1035-OB7595        4.53     7.98    11.18    14.05    16.49    18.43
SO YBADJ    OB1035-OB7595       19.81    20.59    18.92    10.66     2.07    -6.59
SO YBADJ    OB1035-OB7595      -15.04   -23.04     9.56     6.21     2.68    -0.94

SO BUILDHGT OC1035-OC7595       23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT OC1035-OC7595       23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT OC1035-OC7595       23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT OC1035-OC7595       23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT OC1035-OC7595       23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT OC1035-OC7595       23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDWID OC1035-OC7595       19.06    23.60    27.42    30.41    32.48    33.56
SO BUILDWID OC1035-OC7595       33.62    32.65    31.60    33.16    33.72    33.25
SO BUILDWID OC1035-OC7595       31.77    29.32    25.98    21.86    17.07    13.94
```

```
SO BUILDWID OC1035-OC7595         19.06    23.60    27.42    30.41    32.48    33.56
SO BUILDWID OC1035-OC7595         33.62    32.65    31.60    33.16    33.72    33.25
SO BUILDWID OC1035-OC7595         31.77    29.32    25.98    21.86    17.07    13.94
SO BUILDLEN OC1035-OC7595         33.16    33.72    33.25    31.77    29.32    25.98
SO BUILDLEN OC1035-OC7595         21.86    17.07    13.94    19.06    23.60    27.42
SO BUILDLEN OC1035-OC7595         30.41    32.48    33.56    33.62    32.65    31.60
SO BUILDLEN OC1035-OC7595         33.16    33.72    33.25    31.77    29.32    25.98
SO BUILDLEN OC1035-OC7595         21.86    17.07    13.94    19.06    23.60    27.42
SO BUILDLEN OC1035-OC7595         30.41    32.48    33.56    33.62    32.65    31.60
SO XBADJ    OC1035-OC7595        -36.45   -35.56   -33.60   -30.62   -26.71   -21.98
SO XBADJ    OC1035-OC7595        -16.59   -10.69    -5.56    -4.60    -3.49    -2.28
SO XBADJ    OC1035-OC7595         -1.00     0.31     1.61     2.86     4.03     4.62
SO XBADJ    OC1035-OC7595          3.28     1.85     0.36    -1.15    -2.61    -4.00
SO XBADJ    OC1035-OC7595         -5.27    -6.38    -8.38   -14.46  -107.09   -25.14
SO XBADJ    OC1035-OC7595        -29.41   -32.79   -35.17   -36.48   -36.68   -36.22
SO YBADJ    OC1035-OC7595         -4.93    -8.31   -11.43   -14.21   -16.55   -18.39
SO YBADJ    OC1035-OC7595        -19.67   -20.35   -20.42   -19.86   -18.71   -16.98
SO YBADJ    OC1035-OC7595        -14.74   -12.05    -8.99    -5.66    -2.16     1.41
SO YBADJ    OC1035-OC7595          4.93     8.31    11.43    14.21    16.55    18.39
SO YBADJ    OC1035-OC7595         19.67    20.35    20.42    19.86   -16.11    16.98
SO YBADJ    OC1035-OC7595         14.74    12.05     8.99     5.66     2.16    -1.41

**SO BUILDHGT COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO BUILDHGT COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO BUILDHGT COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO BUILDHGT COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO BUILDHGT COMPRS1      0.00     0.00     0.00     0.00    23.77    23.77
**SO BUILDHGT COMPRS1     23.77     0.00     0.00     0.00     0.00     0.00
**SO BUILDWID COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO BUILDWID COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO BUILDWID COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO BUILDWID COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO BUILDWID COMPRS1      0.00     0.00     0.00     0.00    33.72    33.25
**SO BUILDWID COMPRS1     31.77     0.00     0.00     0.00     0.00     0.00
**SO BUILDLEN COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO BUILDLEN COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO BUILDLEN COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO BUILDLEN COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO BUILDLEN COMPRS1      0.00     0.00     0.00     0.00    23.60    27.42
**SO BUILDLEN COMPRS1     30.41     0.00     0.00     0.00     0.00     0.00
**SO XBADJ    COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO XBADJ    COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO XBADJ    COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO XBADJ    COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO XBADJ    COMPRS1      0.00     0.00     0.00     0.00  -117.01  -121.97
**SO XBADJ    COMPRS1   -123.23     0.00     0.00     0.00     0.00     0.00
**SO YBADJ    COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO YBADJ    COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO YBADJ    COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO YBADJ    COMPRS1      0.00     0.00     0.00     0.00     0.00     0.00
**SO YBADJ    COMPRS1      0.00     0.00     0.00     0.00    26.77     8.09
**SO YBADJ    COMPRS1    -10.83     0.00     0.00     0.00     0.00     0.00
```

SO	BUILDHGT	COMPRS2	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	COMPRS2	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	COMPRS2	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	COMPRS2	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	COMPRS2	0.00	0.00	0.00	0.00	0.00	23.77
SO	BUILDHGT	COMPRS2	23.77	23.77	0.00	0.00	0.00	0.00
SO	BUILDWID	COMPRS2	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	COMPRS2	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	COMPRS2	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	COMPRS2	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	COMPRS2	0.00	0.00	0.00	0.00	0.00	33.25
SO	BUILDWID	COMPRS2	31.77	29.32	0.00	0.00	0.00	0.00
SO	BUILDLEN	COMPRS2	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	COMPRS2	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	COMPRS2	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	COMPRS2	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	COMPRS2	0.00	0.00	0.00	0.00	0.00	27.42
SO	BUILDLEN	COMPRS2	30.41	32.48	0.00	0.00	0.00	0.00
SO	XBADJ	COMPRS2	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	COMPRS2	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	COMPRS2	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	COMPRS2	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	COMPRS2	0.00	0.00	0.00	0.00	0.00	-113.90
SO	XBADJ	COMPRS2	-116.12	-114.81	0.00	0.00	0.00	0.00
SO	YBADJ	COMPRS2	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	COMPRS2	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	COMPRS2	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	COMPRS2	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	COMPRS2	0.00	0.00	0.00	0.00	0.00	12.95
SO	YBADJ	COMPRS2	-4.64	-22.10	0.00	0.00	0.00	0.00

SO	BUILDHGT	COMPRS3	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	COMPRS3	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	COMPRS3	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	COMPRS3	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	COMPRS3	0.00	0.00	0.00	0.00	0.00	23.77
SO	BUILDHGT	COMPRS3	23.77	23.77	0.00	0.00	0.00	0.00
SO	BUILDWID	COMPRS3	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	COMPRS3	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	COMPRS3	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	COMPRS3	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	COMPRS3	0.00	0.00	0.00	0.00	0.00	33.25
SO	BUILDWID	COMPRS3	31.77	29.32	0.00	0.00	0.00	0.00
SO	BUILDLEN	COMPRS3	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	COMPRS3	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	COMPRS3	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	COMPRS3	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	COMPRS3	0.00	0.00	0.00	0.00	0.00	27.42
SO	BUILDLEN	COMPRS3	30.41	32.48	0.00	0.00	0.00	0.00
SO	XBADJ	COMPRS3	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	COMPRS3	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	COMPRS3	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	COMPRS3	0.00	0.00	0.00	0.00	0.00	0.00

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SO XBADJ    COMPRS3     0.00     0.00     0.00     0.00     0.00 -105.75
SO XBADJ    COMPRS3  -109.00  -108.93     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS3     0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    COMPRS3     0.00     0.00     0.00     0.00     0.00    18.15
SO YBADJ    COMPRS3     1.90   -14.42     0.00     0.00     0.00     0.00

SO BUILDHGT HEATER      0.00     0.00     0.00     0.00    23.77    23.77
SO BUILDHGT HEATER     23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT HEATER     23.77     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT HEATER      0.00     0.00     0.00     0.00    23.77    23.77
SO BUILDHGT HEATER     23.77    23.77    23.77    23.77    23.77    23.77
SO BUILDHGT HEATER     23.77     0.00     0.00     0.00     0.00     0.00
SO BUILDWID HEATER      0.00     0.00     0.00     0.00    32.48    33.56
SO BUILDWID HEATER     33.62    32.65    31.60    33.16    33.72    33.25
SO BUILDWID HEATER     31.77     0.00     0.00     0.00     0.00     0.00
SO BUILDWID HEATER      0.00     0.00     0.00     0.00    32.48    33.56
SO BUILDWID HEATER     33.62    32.65    31.59    33.15    33.71    33.25
SO BUILDWID HEATER     31.77     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN HEATER      0.00     0.00     0.00     0.00    29.32    25.98
SO BUILDLEN HEATER     21.86    17.07    13.94    19.06    23.60    27.42
SO BUILDLEN HEATER     30.41     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN HEATER      0.00     0.00     0.00     0.00    29.32    25.98
SO BUILDLEN HEATER     21.86    17.07    13.94    19.06    23.60    27.42
SO BUILDLEN HEATER     30.41     0.00     0.00     0.00     0.00     0.00
SO XBADJ    HEATER      0.00     0.00     0.00     0.00    11.96   -64.60
SO XBADJ    HEATER    -65.56   -64.52   -62.62    28.55    25.22    21.12
SO XBADJ    HEATER     16.38     0.00     0.00     0.00     0.00     0.00
SO XBADJ    HEATER      0.00     0.00     0.00     0.00   -41.28    38.62
SO XBADJ    HEATER     43.70    47.46   -89.97   -91.62   -90.50   -48.54
SO XBADJ    HEATER    -46.79     0.00     0.00     0.00     0.00     0.00
SO YBADJ    HEATER      0.00     0.00     0.00     0.00   -27.38    21.91
SO YBADJ    HEATER     12.62     2.94    -6.83     2.80     9.37    15.65
SO YBADJ    HEATER     21.46     0.00     0.00     0.00     0.00     0.00
SO YBADJ    HEATER      0.00     0.00     0.00     0.00    27.38   -21.91
SO YBADJ    HEATER    -12.62    -2.94     2.04   -12.40   -26.47   -15.65
SO YBADJ    HEATER    -21.46     0.00     0.00     0.00     0.00     0.00

SO SRCGROUP CTS    OA1035 OB1035 OC1035
SO SRCGROUP CTSHTR OA1035 OB1035 OC1035 HEATER
SO SRCGROUP ALL

SO FINISHED
**
****************************************
** ISCST3 Receptor Pathway
****************************************
**
**
RE STARTING
   INCLUDED PEM1.rou
RE FINISHED
```

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**
****************************************
** AERMOD Meteorology Pathway
****************************************
**
**
ME STARTING
   SURFFILE s:\amodmet\FLL1M5Y.SFC
   PROFFILE s:\amodmet\FLL1M5Y.PFL
   SURFDATA 12849 2006 Fort_Lauderdale_Hollywood_Intl_AP
   UAIRDATA 92803 2006 Miami_-_FL_Intl_Univ
   PROFBASE 11 FEET
   STARTEND 06 01 01 10 12 31
ME FINISHED
**
****************************************
** AERMOD Output Pathway
****************************************
**
**
OU STARTING
   RECTABLE ALLAVE SECOND
OU FINISHED
```

**MODELOPTs: RegDFAULT CONC ELEV

*** THE SUMMARY OF HIGHEST 8-HR RESULTS ***

** CONC OF CO IN MICROGRAMS/M**3 **

GROUP ID			AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
CTS	HIGH	2ND HIGH VALUE IS	30.38897	ON 09042516:	AT (586600.00, 2885400.00, 2.14, 2.14, 0.00)	DC	
CTSHTR	HIGH	2ND HIGH VALUE IS	30.73098	ON 09042516:	AT (586600.00, 2885400.00, 2.14, 2.14, 0.00)	DC	
ALL	HIGH	2ND HIGH VALUE IS	32.16527	ON 09042516:	AT (586600.00, 2885500.00, 2.90, 2.90, 0.00)	DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

**MODELOPTs: RegDFAULT CONC ELEV

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF CO IN MICROGRAMS/M**3 **

GROUP ID			AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
CTS	HIGH	2ND HIGH VALUE IS	35.60065	ON 09051613:	AT (586600.00, 2885600.00, 3.00, 3.00, 0.00)	DC	
CTSHTR	HIGH	2ND HIGH VALUE IS	36.15898	ON 09042613:	AT (586700.00, 2885400.00, 2.00, 2.00, 0.00)	DC	
ALL	HIGH	2ND HIGH VALUE IS	38.26358	ON 09042613:	AT (586700.00, 2885400.00, 2.00, 2.00, 0.00)	DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

**MODELOPTs: RegDFAULT CONC   ELEV

```
*** Message Summary : AERMOD Model Execution ***

 --------- Summary of Total Messages --------

A Total of           0 Fatal Error Message(s)
A Total of           3 Warning Message(s)
A Total of        2306 Informational Message(s)

A Total of       43824 Hours Were Processed

A Total of        1269 Calm Hours Identified

A Total of        1037 Missing Hours Identified (  2.37 Percent)

   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***

   ********   WARNING MESSAGES   ********
CN W305      47 WAKFLG:Stack height > or = EPA formula height for SRCID:       OA1035
CN W305      47 WAKFLG:Stack height > or = EPA formula height for SRCID:       OB1035
CN W305      47 WAKFLG:Stack height > or = EPA formula height for SRCID:       OC1035

   ************************************
   *** AERMOD Finishes Successfully ***
   ************************************
```

```
CO STARTING
   TITLEONE FPL FUTURE AUX BOILER 2006 11/6/11
   TITLETWO FT. LAUDERDALE/MIAMI FIU MET 2006-2010
   MODELOPT DFAULT CONC
   AVERTIME PERIOD 24 8 3 1
   POLLUTID GEN
   RUNORNOT RUN
CO FINISHED
**
****************************************
** ISCST3 Source Pathway
****************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION AUXBLR       POINT      587484.850  2885500.690        0.000

** Source Parameters **
   SRCPARAM AUXBLR            10.0    18.288   419.817  25.08504     0.838

** Building Downwash **
SO BUILDHGT AUXBLR     23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT AUXBLR     23.77    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT AUXBLR      0.00   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT AUXBLR     23.77   23.77   23.77   23.77   23.77   23.77
SO BUILDHGT AUXBLR     23.77    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT AUXBLR      0.00   23.77   23.77   23.77   23.77   23.77
SO BUILDWID AUXBLR     19.06   23.60   27.42   30.41   32.48   33.56
SO BUILDWID AUXBLR     33.62    0.00    0.00    0.00    0.00    0.00
SO BUILDWID AUXBLR      0.00   29.31   25.98   21.86   17.07   13.94
SO BUILDWID AUXBLR     19.06   23.60   27.42   30.41   32.48   33.56
SO BUILDWID AUXBLR     33.62    0.00    0.00    0.00    0.00    0.00
SO BUILDWID AUXBLR      0.00   29.31   25.98   21.86   17.07   13.94
SO BUILDLEN AUXBLR     33.15   33.71   33.25   31.77   29.32   25.98
SO BUILDLEN AUXBLR     21.86    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN AUXBLR      0.00   32.49   33.57   33.63   32.66   31.59
SO BUILDLEN AUXBLR     33.15   33.71   33.25   31.77   29.32   25.98
SO BUILDLEN AUXBLR     21.86    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN AUXBLR      0.00   32.49   33.57   33.63   32.66   31.59
SO XBADJ    AUXBLR    -57.38  -55.01  -75.06  -75.71  -74.07  -70.18
SO XBADJ    AUXBLR    -64.16    0.00    0.00    0.00    0.00    0.00
SO XBADJ    AUXBLR      0.00   18.91   21.96   24.35   25.99   26.41
SO XBADJ    AUXBLR     24.23   21.30   41.81   43.95   44.75   44.20
SO XBADJ    AUXBLR     42.30    0.00    0.00    0.00    0.00    0.00
SO XBADJ    AUXBLR      0.00  -51.40  -55.53  -57.97  -58.66  -58.00
SO YBADJ    AUXBLR    -11.65  -18.56   13.17    2.82   -7.61  -17.81
SO YBADJ    AUXBLR    -27.47    0.00    0.00    0.00    0.00    0.00
SO YBADJ    AUXBLR      0.00  -23.77  -17.30  -10.31   -3.01    4.39
SO YBADJ    AUXBLR     11.65   18.56  -13.17   -2.82    7.61   17.81
SO YBADJ    AUXBLR     27.47    0.00    0.00    0.00    0.00    0.00
SO YBADJ    AUXBLR      0.00   23.77   17.30   10.31    3.01   -4.39
```

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SO SRCGROUP ALL

SO FINISHED
**
***************************************
** ISCST3 Receptor Pathway
***************************************
**
**
RE STARTING
   INCLUDED PEM1.rou
RE FINISHED
**
***************************************
** AERMOD Meteorology Pathway
***************************************
**
**
ME STARTING
   SURFFILE s:\amodmet\FLL1M5Y.SFC
   PROFFILE s:\amodmet\FLL1M5Y.PFL
   SURFDATA 12849 2006 Fort_Lauderdale_Hollywood_Intl_AP
   UAIRDATA 92803 2006 Miami_-_FL_Intl_Univ
   PROFBASE 11 FEET
   STARTEND 06 01 01 06 12 31
ME FINISHED
**
***************************************
** AERMOD Output Pathway
***************************************
**
**
OU STARTING
   RECTABLE ALLAVE FIRST
OU FINISHED
```

AERBOB RELEASE 110422

AERMOD OUTPUT FILE NUMBER 1 :AUXBLR.006
AERMOD OUTPUT FILE NUMBER 2 :AUXBLR.007
AERMOD OUTPUT FILE NUMBER 3 :AUXBLR.008
AERMOD OUTPUT FILE NUMBER 4 :AUXBLR.009
AERMOD OUTPUT FILE NUMBER 5 :AUXBLR.010
First title for last output file is: FPL FUTURE AUX BOILER 2006 11/6/11
Second title for last output file is: FT. LAUDERDALE/MIAMI FIU MET 2006-2010

AVERAGING TIME	YEAR	CONC (ug/m3)	X (m)	Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID: ALL					
Annual					
	06	17.66699	587208.3	2885347.8	06123124
	07	20.43161	587208.3	2885347.8	07123124
	08	19.19727	587208.3	2885347.8	08123124
	09	12.09807	587206.4	2885395.0	09123124
	10	15.35933	587208.3	2885347.8	10123124
HIGH 24-Hour					
	06	197.20378	587208.	2885348.	06121924
	07	171.73849	587208.	2885348.	07101324
	08	170.51404	587208.	2885348.	08101524
	09	160.74315	587208.	2885348.	09020824
	10	163.52295	587208.	2885348.	10052224
HIGH 8-Hour					
	06	239.00926	587212.	2885253.	06050224
	07	270.38324	587688.	2885128.	07110508
	08	266.61246	587641.	2885127.	08120808
	09	274.74942	587735.	2885130.	09123008
	10	286.11209	587208.	2885348.	10052208
HIGH 3-Hour					
	06	352.17694	587830.	2885134.	06020524
	07	393.86838	587641.	2885127.	07083003
	08	367.52280	587688.	2885128.	08112503
	09	358.88657	587688.	2885128.	09011003
	10	392.66406	587641.	2885127.	10121603
HIGH 1-Hour					
	06	538.81488	587264.	2885112.	06100623
	07	555.29004	587215.	2885158.	07091220
	08	540.68488	587215.	2885158.	08120422
	09	535.49683	587212.	2885253.	09091903
	10	542.40936	587100.	2885200.	10061822

All receptor computations reported with respect to a user-specified origin

GRID	0.00	0.00
DISCRETE	0.00	0.00

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CO STARTING
  TITLEONE FPL FUTURE SO2 AAQS WITH MHI "J" CLASS GAS 1/11/12
  TITLETWO FT. LAUDERDALE/MIAMI FIU MET 2006-2010
  MODELOPT DFAULT CONC
  AVERTIME PERIOD 24 3 1
  POLLUTID SO2
  RUNORNOT RUN
CO FINISHED
**
****************************************
** ISCST3 Source Pathway
****************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
  LOCATION GA1035 POINT 587489.306  2885478.742  0.000
  LOCATION GB1035 POINT 587443.291  2885477.412  0.000
  LOCATION GC1035 POINT 587349.178  2885474.119  0.000
** LOCATION COMPRS1  POINT     587260.876  2885514.841      0.000
  LOCATION COMPRS2  POINT     587270.298  2885515.008      0.000
  LOCATION COMPRS3  POINT     587279.960  2885515.439      0.000
  LOCATION HEATER   POINT    587406.240  2885460.530      0.000

** Source Parameters **
** Baseload, 35 F, GAS
  SRCPARAM GA1035 2.14   45.4   364.3   18.61  6.71
  SRCPARAM GB1035 2.14   45.4   364.3   18.61  6.71
  SRCPARAM GC1035 2.14   45.4   364.3   18.61  6.71
** MAX 2 COMPRESSORS OPERATING SIMULTANEOUSLY
** SRCPARAM COMPRS1  0.0404    6.309   807.594  43.58640     1.067
  SRCPARAM COMPRS2  0.0404    6.309   807.594  43.58640     1.067
  SRCPARAM COMPRS3  0.0404    6.309   807.594  43.58640     1.067
  SRCPARAM HEATER   0.0068    9.144   533.150  16.33513     0.427

** Building Downwash **
SO BUILDHGT GA1035-GA7595      23.77  23.77  23.77  23.77  23.77  23.77
SO BUILDHGT GA1035-GA7595      23.77  23.77  23.77  23.77  23.77  23.77
SO BUILDHGT GA1035-GA7595      23.77  23.77  23.77  23.77  23.77  23.77
SO BUILDHGT GA1035-GA7595      23.77  23.77  23.77  23.77  23.77  23.77
SO BUILDHGT GA1035-GA7595      23.77  23.77  23.77  23.77  23.77  23.77
SO BUILDHGT GA1035-GA7595      23.77  23.77  23.77  23.77  23.77  23.77
SO BUILDWID GA1035-GA7595      19.06  23.60  27.43  30.41  32.48  33.56
SO BUILDWID GA1035-GA7595      33.62  32.65  31.59  33.15  33.71  33.24
SO BUILDWID GA1035-GA7595      31.76  29.31  25.98  21.86  17.07  13.94
SO BUILDWID GA1035-GA7595      19.06  23.60  27.43  30.41  32.48  33.56
SO BUILDWID GA1035-GA7595      33.62  32.65  31.59  33.15  33.71  33.24
SO BUILDWID GA1035-GA7595      31.76  29.31  25.98  21.86  17.07  13.94
SO BUILDLEN GA1035-GA7595      33.15  33.71  33.24  31.77  29.32  25.98
SO BUILDLEN GA1035-GA7595      21.86  17.07  13.94  19.06  23.60  27.43
SO BUILDLEN GA1035-GA7595      30.42  32.49  33.57  33.63  32.66  31.59
SO BUILDLEN GA1035-GA7595      33.15  33.71  33.24  31.77  29.32  25.98
SO BUILDLEN GA1035-GA7595      21.86  17.07  13.94  19.06  23.60  27.43
SO BUILDLEN GA1035-GA7595      30.42  32.49  33.57  33.63  32.66  31.59
SO XBADJ    GA1035-GA7595     -36.54 -35.91 -34.20 -61.77 -63.38 -63.07
SO XBADJ    GA1035-GA7595     -60.84 -56.76  -7.04  -6.08  -4.94  -3.65
SO XBADJ    GA1035-GA7595      -2.24  -0.77   0.72   2.20   3.60   4.46
SO XBADJ    GA1035-GA7595       3.38   2.20   0.96  30.00  34.06  37.08
SO XBADJ    GA1035-GA7595      38.98  39.69  -6.90 -12.98 -18.66 -23.78
SO XBADJ    GA1035-GA7595     -28.18 -31.71 -34.29 -35.82 -36.27 -36.05
SO YBADJ    GA1035-GA7595      -3.45  -6.86 -10.07  20.35  12.07   3.43
SO YBADJ    GA1035-GA7595      -5.32 -13.91 -20.25 -19.96 -19.06 -17.58
SO YBADJ    GA1035-GA7595     -15.56 -13.07 -10.19  -6.99  -3.59  -0.07
SO YBADJ    GA1035-GA7595       3.45   6.86  10.07 -20.35 -12.07  -3.43
SO YBADJ    GA1035-GA7595       5.32  13.91  20.26  19.96  19.06  17.58
SO YBADJ    GA1035-GA7595      15.56  13.07  10.19   6.99   3.59   0.07

SO BUILDHGT GB1035-GB7595      23.77  23.77  23.77  23.77  23.77  23.77
SO BUILDHGT GB1035-GB7595      23.77  23.77  23.77  23.77  23.77  23.77
SO BUILDHGT GB1035-GB7595      23.77  23.77  23.77  23.77  23.77  23.77
SO BUILDHGT GB1035-GB7595      23.77  23.77  23.77  23.77  23.77  23.77
SO BUILDHGT GB1035-GB7595      23.77  23.77  23.77  23.77  23.77  23.77
SO BUILDHGT GB1035-GB7595      23.77  23.77  23.77  23.77  23.77  23.77
SO BUILDWID GB1035-GB7595      19.06  23.60  27.42  30.41  32.48  33.56
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SO BUILDWID GB1035-GB7595     33.62  32.65  31.59  33.15  33.71  33.24
SO BUILDWID GB1035-GB7595     31.76  29.31  25.98  21.86  17.07  13.94
SO BUILDWID GB1035-GB7595     19.06  23.60  27.42  30.41  32.48  33.56
SO BUILDWID GB1035-GB7595     33.62  32.65  31.59  33.15  33.71  33.24
SO BUILDWID GB1035-GB7595     31.76  29.31  25.98  21.86  17.07  13.94
SO BUILDLEN GB1035-GB7595     33.16  33.72  33.25  31.77  29.32  25.98
SO BUILDLEN GB1035-GB7595     21.86  17.07  13.94  19.06  23.60  27.43
SO BUILDLEN GB1035-GB7595     30.42  32.49  33.56  33.62  32.65  31.60
SO BUILDLEN GB1035-GB7595     33.16  33.72  33.25  31.77  29.32  25.98
SO BUILDLEN GB1035-GB7595     21.86  17.07  13.94  19.06  23.60  27.43
SO BUILDLEN GB1035-GB7595     30.42  32.49  33.56  33.62  32.65  31.60
SO XBADJ    GB1035-GB7595   -36.84 -36.03 -34.11 -31.17 -27.27 -105.13
SO XBADJ    GB1035-GB7595  -106.15 -103.94  38.98  39.01  37.85  35.54
SO XBADJ    GB1035-GB7595    32.16  27.79   1.65   3.00   4.26   4.94
SO XBADJ    GB1035-GB7595     3.68   2.31   0.87  -0.60  -2.05  -3.44
SO XBADJ    GB1035-GB7595    -4.72  -5.86 -52.92 -58.07 -61.45 -62.97
SO XBADJ    GB1035-GB7595   -62.57 -60.28 -35.21 -36.62 -36.92 -36.54
SO YBADJ    GB1035-GB7595    -4.53  -7.98 -11.18 -14.05 -16.49  25.82
SO YBADJ    GB1035-GB7595     9.43  -7.25 -18.92 -10.66  -2.07   6.59
SO YBADJ    GB1035-GB7595    15.04  23.03  -9.56  -6.21  -2.68   0.94
SO YBADJ    GB1035-GB7595     4.53   7.98  11.18  14.05  16.49  18.43
SO YBADJ    GB1035-GB7595    19.81  20.59  18.92  10.66   2.07  -6.59
SO YBADJ    GB1035-GB7595   -15.04 -23.04   9.56   6.21   2.68  -0.94

SO BUILDHGT GC1035-GC7595     23.77  23.77  23.77  23.77  23.77  23.77
SO BUILDHGT GC1035-GC7595     23.77  23.77  23.77  23.77  23.77  23.77
SO BUILDHGT GC1035-GC7595     23.77  23.77  23.77  23.77  23.77  23.77
SO BUILDHGT GC1035-GC7595     23.77  23.77  23.77  23.77  23.77  23.77
SO BUILDHGT GC1035-GC7595     23.77  23.77  23.77  23.77  23.77  23.77
SO BUILDHGT GC1035-GC7595     23.77  23.77  23.77  23.77  23.77  23.77
SO BUILDWID GC1035-GC7595     19.06  23.60  27.42  30.41  32.48  33.56
SO BUILDWID GC1035-GC7595     33.62  32.65  31.60  33.16  33.72  33.25
SO BUILDWID GC1035-GC7595     31.77  29.32  25.98  21.86  17.07  13.94
SO BUILDWID GC1035-GC7595     19.06  23.60  27.42  30.41  32.48  33.56
SO BUILDWID GC1035-GC7595     33.62  32.65  31.60  33.16  33.72  33.25
SO BUILDWID GC1035-GC7595     31.77  29.32  25.98  21.86  17.07  13.94
SO BUILDLEN GC1035-GC7595     33.16  33.72  33.25  31.77  29.32  25.98
SO BUILDLEN GC1035-GC7595     21.86  17.07  13.94  19.06  23.60  27.42
SO BUILDLEN GC1035-GC7595     30.41  32.48  33.56  33.62  32.65  31.60
SO BUILDLEN GC1035-GC7595     33.16  33.72  33.25  31.77  29.32  25.98
SO BUILDLEN GC1035-GC7595     21.86  17.07  13.94  19.06  23.60  27.42
SO BUILDLEN GC1035-GC7595     30.41  32.48  33.56  33.62  32.65  31.60
SO XBADJ    GC1035-GC7595   -36.45 -35.56 -33.60 -30.62 -26.71 -21.98
SO XBADJ    GC1035-GC7595   -16.59 -10.69  -5.56  -4.60  -3.49  -2.28
SO XBADJ    GC1035-GC7595    -1.00   0.31   1.61   2.86   4.03   4.62
SO XBADJ    GC1035-GC7595     3.28   1.85   0.36  -1.15  -2.61  -4.00
SO XBADJ    GC1035-GC7595    -5.27  -6.38  -8.38 -14.46 -107.09 -25.14
SO XBADJ    GC1035-GC7595   -29.41 -32.79 -35.17 -36.48 -36.68 -36.22
SO YBADJ    GC1035-GC7595    -4.93  -8.31 -11.43 -14.21 -16.55 -18.39
SO YBADJ    GC1035-GC7595   -19.67 -20.35 -20.42 -19.86 -18.71 -16.98
SO YBADJ    GC1035-GC7595   -14.74 -12.05  -8.99  -5.66  -2.16   1.41
SO YBADJ    GC1035-GC7595     4.93   8.31  11.43  14.21  16.55  18.39
SO YBADJ    GC1035-GC7595    19.67  20.35  20.42  19.86 -16.11  16.98
SO YBADJ    GC1035-GC7595    14.74  12.05   8.99   5.66   2.16  -1.41

**SO BUILDHGT COMPRS1    0.00   0.00   0.00   0.00   0.00   0.00
**SO BUILDHGT COMPRS1    0.00   0.00   0.00   0.00   0.00   0.00
**SO BUILDHGT COMPRS1    0.00   0.00   0.00   0.00   0.00   0.00
**SO BUILDHGT COMPRS1    0.00   0.00   0.00   0.00   0.00   0.00
**SO BUILDHGT COMPRS1    0.00   0.00   0.00   0.00  23.77  23.77
**SO BUILDHGT COMPRS1   23.77   0.00   0.00   0.00   0.00   0.00
**SO BUILDWID COMPRS1    0.00   0.00   0.00   0.00   0.00   0.00
**SO BUILDWID COMPRS1    0.00   0.00   0.00   0.00   0.00   0.00
**SO BUILDWID COMPRS1    0.00   0.00   0.00   0.00   0.00   0.00
**SO BUILDWID COMPRS1    0.00   0.00   0.00   0.00   0.00   0.00
**SO BUILDWID COMPRS1    0.00   0.00   0.00   0.00  33.72  33.25
**SO BUILDWID COMPRS1   31.77   0.00   0.00   0.00   0.00   0.00
**SO BUILDLEN COMPRS1    0.00   0.00   0.00   0.00   0.00   0.00
**SO BUILDLEN COMPRS1    0.00   0.00   0.00   0.00   0.00   0.00
**SO BUILDLEN COMPRS1    0.00   0.00   0.00   0.00   0.00   0.00
**SO BUILDLEN COMPRS1    0.00   0.00   0.00   0.00   0.00   0.00
**SO BUILDLEN COMPRS1    0.00   0.00   0.00   0.00  23.60  27.42
**SO BUILDLEN COMPRS1   30.41   0.00   0.00   0.00   0.00   0.00
**SO XBADJ    COMPRS1    0.00   0.00   0.00   0.00   0.00   0.00
**SO XBADJ    COMPRS1    0.00   0.00   0.00   0.00   0.00   0.00
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**SO XBADJ    COMPRS1    0.00   0.00   0.00   0.00   0.00   0.00
**SO XBADJ    COMPRS1    0.00   0.00   0.00   0.00   0.00   0.00
**SO XBADJ    COMPRS1    0.00   0.00   0.00   0.00 -117.01 -121.97
**SO XBADJ    COMPRS1 -123.23   0.00   0.00   0.00   0.00   0.00
**SO YBADJ    COMPRS1    0.00   0.00   0.00   0.00   0.00   0.00
**SO YBADJ    COMPRS1    0.00   0.00   0.00   0.00   0.00   0.00
**SO YBADJ    COMPRS1    0.00   0.00   0.00   0.00   0.00   0.00
**SO YBADJ    COMPRS1    0.00   0.00   0.00   0.00   0.00   0.00
**SO YBADJ    COMPRS1    0.00   0.00   0.00   0.00  26.77   8.09
**SO YBADJ    COMPRS1  -10.83   0.00   0.00   0.00   0.00   0.00


SO BUILDHGT COMPRS2    0.00   0.00   0.00   0.00   0.00   0.00
SO BUILDHGT COMPRS2    0.00   0.00   0.00   0.00   0.00   0.00
SO BUILDHGT COMPRS2    0.00   0.00   0.00   0.00   0.00   0.00
SO BUILDHGT COMPRS2    0.00   0.00   0.00   0.00   0.00   0.00
SO BUILDHGT COMPRS2    0.00   0.00   0.00   0.00   0.00  23.77
SO BUILDHGT COMPRS2   23.77  23.77   0.00   0.00   0.00   0.00
SO BUILDWID COMPRS2    0.00   0.00   0.00   0.00   0.00   0.00
SO BUILDWID COMPRS2    0.00   0.00   0.00   0.00   0.00   0.00
SO BUILDWID COMPRS2    0.00   0.00   0.00   0.00   0.00   0.00
SO BUILDWID COMPRS2    0.00   0.00   0.00   0.00   0.00   0.00
SO BUILDWID COMPRS2    0.00   0.00   0.00   0.00   0.00  33.25
SO BUILDWID COMPRS2   31.77  29.32   0.00   0.00   0.00   0.00
SO BUILDLEN COMPRS2    0.00   0.00   0.00   0.00   0.00   0.00
SO BUILDLEN COMPRS2    0.00   0.00   0.00   0.00   0.00   0.00
SO BUILDLEN COMPRS2    0.00   0.00   0.00   0.00   0.00   0.00
SO BUILDLEN COMPRS2    0.00   0.00   0.00   0.00   0.00   0.00
SO BUILDLEN COMPRS2    0.00   0.00   0.00   0.00   0.00  27.42
SO BUILDLEN COMPRS2   30.41  32.48   0.00   0.00   0.00   0.00
SO XBADJ    COMPRS2    0.00   0.00   0.00   0.00   0.00   0.00
SO XBADJ    COMPRS2    0.00   0.00   0.00   0.00   0.00   0.00
SO XBADJ    COMPRS2    0.00   0.00   0.00   0.00   0.00   0.00
SO XBADJ    COMPRS2    0.00   0.00   0.00   0.00   0.00   0.00
SO XBADJ    COMPRS2    0.00   0.00   0.00   0.00   0.00 -113.90
SO XBADJ    COMPRS2 -116.12 -114.81   0.00   0.00   0.00   0.00
SO YBADJ    COMPRS2    0.00   0.00   0.00   0.00   0.00   0.00
SO YBADJ    COMPRS2    0.00   0.00   0.00   0.00   0.00   0.00
SO YBADJ    COMPRS2    0.00   0.00   0.00   0.00   0.00   0.00
SO YBADJ    COMPRS2    0.00   0.00   0.00   0.00   0.00   0.00
SO YBADJ    COMPRS2    0.00   0.00   0.00   0.00   0.00  12.95
SO YBADJ    COMPRS2   -4.64 -22.10   0.00   0.00   0.00   0.00


SO BUILDHGT COMPRS3    0.00   0.00   0.00   0.00   0.00   0.00
SO BUILDHGT COMPRS3    0.00   0.00   0.00   0.00   0.00   0.00
SO BUILDHGT COMPRS3    0.00   0.00   0.00   0.00   0.00   0.00
SO BUILDHGT COMPRS3    0.00   0.00   0.00   0.00   0.00   0.00
SO BUILDHGT COMPRS3    0.00   0.00   0.00   0.00   0.00  23.77
SO BUILDHGT COMPRS3   23.77  23.77   0.00   0.00   0.00   0.00
SO BUILDWID COMPRS3    0.00   0.00   0.00   0.00   0.00   0.00
SO BUILDWID COMPRS3    0.00   0.00   0.00   0.00   0.00   0.00
SO BUILDWID COMPRS3    0.00   0.00   0.00   0.00   0.00   0.00
SO BUILDWID COMPRS3    0.00   0.00   0.00   0.00   0.00   0.00
SO BUILDWID COMPRS3    0.00   0.00   0.00   0.00   0.00  33.25
SO BUILDWID COMPRS3   31.77  29.32   0.00   0.00   0.00   0.00
SO BUILDLEN COMPRS3    0.00   0.00   0.00   0.00   0.00   0.00
SO BUILDLEN COMPRS3    0.00   0.00   0.00   0.00   0.00   0.00
SO BUILDLEN COMPRS3    0.00   0.00   0.00   0.00   0.00   0.00
SO BUILDLEN COMPRS3    0.00   0.00   0.00   0.00   0.00   0.00
SO BUILDLEN COMPRS3    0.00   0.00   0.00   0.00   0.00  27.42
SO BUILDLEN COMPRS3   30.41  32.48   0.00   0.00   0.00   0.00
SO XBADJ    COMPRS3    0.00   0.00   0.00   0.00   0.00   0.00
SO XBADJ    COMPRS3    0.00   0.00   0.00   0.00   0.00   0.00
SO XBADJ    COMPRS3    0.00   0.00   0.00   0.00   0.00   0.00
SO XBADJ    COMPRS3    0.00   0.00   0.00   0.00   0.00   0.00
SO XBADJ    COMPRS3    0.00   0.00   0.00   0.00   0.00 -105.75
SO XBADJ    COMPRS3 -109.00 -108.93   0.00   0.00   0.00   0.00
SO YBADJ    COMPRS3    0.00   0.00   0.00   0.00   0.00   0.00
SO YBADJ    COMPRS3    0.00   0.00   0.00   0.00   0.00   0.00
SO YBADJ    COMPRS3    0.00   0.00   0.00   0.00   0.00   0.00
SO YBADJ    COMPRS3    0.00   0.00   0.00   0.00   0.00   0.00
SO YBADJ    COMPRS3    0.00   0.00   0.00   0.00   0.00  18.15
SO YBADJ    COMPRS3    1.90 -14.42   0.00   0.00   0.00   0.00
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SO BUILDHGT HEATER    0.00   0.00   0.00   0.00  23.77  23.77
SO BUILDHGT HEATER   23.77  23.77  23.77  23.77  23.77  23.77
SO BUILDHGT HEATER   23.77   0.00   0.00   0.00   0.00   0.00
SO BUILDHGT HEATER    0.00   0.00   0.00   0.00  23.77  23.77
SO BUILDHGT HEATER   23.77  23.77  23.77  23.77  23.77  23.77
SO BUILDHGT HEATER   23.77   0.00   0.00   0.00   0.00   0.00
SO BUILDWID HEATER    0.00   0.00   0.00   0.00  32.48  33.56
SO BUILDWID HEATER   33.62  32.65  31.60  33.16  33.72  33.25
SO BUILDWID HEATER   31.77   0.00   0.00   0.00   0.00   0.00
SO BUILDWID HEATER    0.00   0.00   0.00   0.00  32.48  33.56
SO BUILDWID HEATER   33.62  32.65  31.59  33.15  33.71  33.25
SO BUILDWID HEATER   31.77   0.00   0.00   0.00   0.00   0.00
SO BUILDLEN HEATER    0.00   0.00   0.00   0.00  29.32  25.98
SO BUILDLEN HEATER   21.86  17.07  13.94  19.06  23.60  27.42
SO BUILDLEN HEATER   30.41   0.00   0.00   0.00   0.00   0.00
SO BUILDLEN HEATER    0.00   0.00   0.00   0.00  29.32  25.98
SO BUILDLEN HEATER   21.86  17.07  13.94  19.06  23.60  27.42
SO BUILDLEN HEATER   30.41   0.00   0.00   0.00   0.00   0.00
SO XBADJ    HEATER    0.00   0.00   0.00   0.00  11.96 -64.60
SO XBADJ    HEATER  -65.56 -64.52 -62.62  28.55  25.22  21.12
SO XBADJ    HEATER   16.38   0.00   0.00   0.00   0.00   0.00
SO XBADJ    HEATER    0.00   0.00   0.00   0.00 -41.28  38.62
SO XBADJ    HEATER   43.70  47.46 -89.97 -91.62 -90.50 -48.54
SO XBADJ    HEATER  -46.79   0.00   0.00   0.00   0.00   0.00
SO YBADJ    HEATER    0.00   0.00   0.00   0.00 -27.38  21.91
SO YBADJ    HEATER   12.62   2.94  -6.83   2.80   9.37  15.65
SO YBADJ    HEATER   21.46   0.00   0.00   0.00   0.00   0.00
SO YBADJ    HEATER    0.00   0.00   0.00   0.00  27.38 -21.91
SO YBADJ    HEATER  -12.62  -2.94   2.04 -12.40 -26.47 -15.65
SO YBADJ    HEATER  -21.46   0.00   0.00   0.00   0.00   0.00

   SRCGROUP CTS     GA1035 GB1035 GC1035
   SRCGROUP CTSHTR  GA1035 GB1035 GC1035 HEATER
   SRCGROUP ALL

SO FINISHED
**
****************************************
** ISCST3 Receptor Pathway
****************************************
**
**
RE STARTING
   INCLUDED PEM1.rou
RE FINISHED
**
****************************************
** AERMOD Meteorology Pathway
****************************************
**
**
ME STARTING
   SURFFILE s:\amodmet\FLL1M5Y.SFC
   PROFFILE s:\amodmet\FLL1M5Y.PFL
   SURFDATA 12849 2006 Fort_Lauderdale_Hollywood_Intl_AP
   UAIRDATA 92803 2006 Miami_-_FL_Intl_Univ
   PROFBASE 11 FEET
   STARTEND 06 01 01 10 12 31
ME FINISHED
**
****************************************
** AERMOD Output Pathway
****************************************
**
**
OU STARTING
   RECTABLE ALLAVE SECOND FOURTH
OU FINISHED
```

*** AERMOD - VERSION 11353 *** *** FPL FUTURE SO2 AAQS WITH MHI "J" CLASS GAS 1/11/12 *** 01/12/12
*** FT. LAUDERDALE/MIAMI FIU MET 2006-2010 *** 09:07:25
PAGE 862
**MODELOPTs: RegDFAULT CONC ELEV

*** THE SUMMARY OF MAXIMUM PERIOD (43824 HRS) RESULTS ***

** CONC OF SO2 IN MICROGRAMS/M**3 **

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	NETWORK OF TYPE	GRID-ID
CTS	1ST HIGHEST VALUE IS	0.27032 AT	(586800.00, 2885900.00, 3.00, 3.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.26959 AT	(586900.00, 2885900.00, 3.00, 3.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.26459 AT	(586900.00, 2885800.00, 2.61, 2.61, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.26390 AT	(586800.00, 2885800.00, 3.00, 3.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.26245 AT	(586800.00, 2886000.00, 3.00, 3.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.25896 AT	(586700.00, 2885900.00, 3.00, 3.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.25594 AT	(586700.00, 2886000.00, 3.00, 3.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.25412 AT	(586700.00, 2885800.00, 3.00, 3.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.25410 AT	(586900.00, 2886000.00, 3.00, 3.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.25057 AT	(586800.00, 2885700.00, 2.67, 2.67, 0.00)	DC	
CTSHTR	1ST HIGHEST VALUE IS	0.28450 AT	(586900.00, 2885800.00, 2.61, 2.61, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.28409 AT	(586800.00, 2885900.00, 3.00, 3.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.28334 AT	(586900.00, 2885900.00, 3.00, 3.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.28097 AT	(586800.00, 2885800.00, 3.00, 3.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.27263 AT	(586800.00, 2886000.00, 3.00, 3.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.27195 AT	(586700.00, 2885900.00, 3.00, 3.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.26832 AT	(587000.00, 2885800.00, 2.47, 2.47, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.26666 AT	(586700.00, 2885800.00, 3.00, 3.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.26601 AT	(586700.00, 2886000.00, 3.00, 3.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.26454 AT	(586800.00, 2885700.00, 2.67, 2.67, 0.00)	DC	
ALL	1ST HIGHEST VALUE IS	0.31980 AT	(586900.00, 2885800.00, 2.61, 2.61, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.31152 AT	(586800.00, 2885800.00, 3.00, 3.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.31068 AT	(586800.00, 2885900.00, 3.00, 3.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.30911 AT	(586900.00, 2885900.00, 3.00, 3.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.30252 AT	(587000.00, 2885800.00, 2.47, 2.47, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.30132 AT	(587000.00, 2885700.00, 1.42, 1.42, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.29808 AT	(586900.00, 2885700.00, 2.10, 2.10, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.29620 AT	(586700.00, 2885900.00, 3.00, 3.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.29274 AT	(586800.00, 2886000.00, 3.00, 3.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.29004 AT	(586700.00, 2885800.00, 3.00, 3.00, 0.00)	DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** AERMOD - VERSION 11353 *** *** FPL FUTURE SO2 AAQS WITH MHI "J" CLASS GAS 1/11/12 *** 01/12/12
*** FT. LAUDERDALE/MIAMI FIU MET 2006-2010 *** 09:07:25
PAGE 863
**MODELOPTs: RegDFAULT CONC ELEV

*** THE SUMMARY OF HIGHEST 24-HR RESULTS ***

** CONC OF SO2 IN MICROGRAMS/M**3 **

GROUP ID		AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	NETWORK OF TYPE	GRID-ID
CTS	HIGH 2ND HIGH VALUE IS	2.41169	ON 07103124: AT	(586200.00, 2884800.00, 3.00, 3.00, 0.00)	DC	
	HIGH 4TH HIGH VALUE IS	1.75007	ON 10062424: AT	(586600.00, 2885400.00, 2.14, 2.14, 0.00)	DC	
CTSHTR	HIGH 2ND HIGH VALUE IS	2.42134	ON 07103124: AT	(586200.00, 2884800.00, 3.00, 3.00, 0.00)	DC	
	HIGH 4TH HIGH VALUE IS	1.78944m	ON 07053024: AT	(586700.00, 2885400.00, 2.00, 2.00, 0.00)	DC	
ALL	HIGH 2ND HIGH VALUE IS	2.54409	ON 07103124: AT	(586400.00, 2884900.00, 3.00, 3.00, 0.00)	DC	

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      HIGH   4TH HIGH VALUE IS      2.00884  ON 09042724: AT (  586700.00,  2885500.00,     2.16,     2.16,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
 *** AERMOD - VERSION  11353 ***   *** FPL FUTURE SO2 AAQS WITH MHI "J" CLASS GAS 1/11/12                ***        01/12/12
                                   *** FT. LAUDERDALE/MIAMI FIU MET 2006-2010                      ***        09:07:25
                                                                                         PAGE 864
 **MODELOPTs:  RegDFAULT CONC                                             ELEV


                                        *** THE SUMMARY OF HIGHEST  3-HR RESULTS ***


                                 ** CONC OF SO2      IN MICROGRAMS/M**3                          **

                                            DATE                                             NETWORK
GROUP ID                         AVERAGE CONC     (YYMMDDHH)            RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

CTS      HIGH   2ND HIGH VALUE IS      4.95277  ON 07103024: AT (  586300.00,  2884800.00,     3.00,     3.00,    0.00)  DC
         HIGH   4TH HIGH VALUE IS      4.60408  ON 10051212: AT (  586700.00,  2885500.00,     2.16,     2.16,    0.00)  DC

CTSHTR   HIGH   2ND HIGH VALUE IS      4.96428  ON 07103024: AT (  586300.00,  2884800.00,     3.00,     3.00,    0.00)  DC
         HIGH   4TH HIGH VALUE IS      4.62972  ON 10051212: AT (  586700.00,  2885500.00,     2.16,     2.16,    0.00)  DC

ALL      HIGH   2ND HIGH VALUE IS      5.11806  ON 07103024: AT (  586400.00,  2884900.00,     3.00,     3.00,    0.00)  DC
         HIGH   4TH HIGH VALUE IS      4.86659  ON 08083015: AT (  586700.00,  2885500.00,     2.16,     2.16,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
 *** AERMOD - VERSION  11353 ***   *** FPL FUTURE SO2 AAQS WITH MHI "J" CLASS GAS 1/11/12                ***        01/12/12
                                   *** FT. LAUDERDALE/MIAMI FIU MET 2006-2010                      ***        09:07:25
                                                                                         PAGE 865
 **MODELOPTs:  RegDFAULT CONC                                             ELEV


                                        *** THE SUMMARY OF HIGHEST  1-HR RESULTS ***


                                 ** CONC OF SO2      IN MICROGRAMS/M**3                          **

                                            DATE                                             NETWORK
GROUP ID                         AVERAGE CONC     (YYMMDDHH)            RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

CTS      HIGH   2ND HIGH VALUE IS      5.56212  ON 07103018: AT (  586300.00,  2884800.00,     3.00,     3.00,    0.00)  DC
         HIGH   4TH HIGH VALUE IS      5.38008  ON 07103019: AT (  586400.00,  2884900.00,     3.00,     3.00,    0.00)  DC

CTSHTR   HIGH   2ND HIGH VALUE IS      5.57363  ON 07103018: AT (  586300.00,  2884800.00,     3.00,     3.00,    0.00)  DC
         HIGH   4TH HIGH VALUE IS      5.39436  ON 07103019: AT (  586400.00,  2884900.00,     3.00,     3.00,    0.00)  DC

ALL      HIGH   2ND HIGH VALUE IS      5.69344  ON 07103018: AT (  586300.00,  2884800.00,     3.00,     3.00,    0.00)  DC
         HIGH   4TH HIGH VALUE IS      5.55929  ON 07103019: AT (  586400.00,  2884900.00,     3.00,     3.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
 *** AERMOD - VERSION  11353 ***   *** FPL FUTURE SO2 AAQS WITH MHI "J" CLASS GAS 1/11/12                ***        01/12/12
                                   *** FT. LAUDERDALE/MIAMI FIU MET 2006-2010                      ***        09:07:25
                                                                                         PAGE 866
 **MODELOPTs:  RegDFAULT CONC                                             ELEV

 *** Message Summary : AERMOD Model Execution ***

 --------- Summary of Total Messages --------
```

A Total of 0 Fatal Error Message(s)
A Total of 6 Warning Message(s)
A Total of 2306 Informational Message(s)

A Total of 43824 Hours Were Processed

A Total of 1269 Calm Hours Identified

A Total of 1037 Missing Hours Identified (2.37 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

******** WARNING MESSAGES ********

```
CO W361    8 COCARD:Multiyear PERIOD/ANNUAL values for NO2/SO2 require MULTYEAR Opt
CO W362    8 COCARD:Multiyear 1h NO2/SO2 processing not applicable for   24-hr Ave
CO W362    8 COCARD:Multiyear 1h NO2/SO2 processing not applicable for    3-hr Ave
CN W305   47 WAKFLG:Stack height > or = EPA formula height for SRCID:    GA1035
CN W305   47 WAKFLG:Stack height > or = EPA formula height for SRCID:    GB1035
CN W305   47 WAKFLG:Stack height > or = EPA formula height for SRCID:    GC1035
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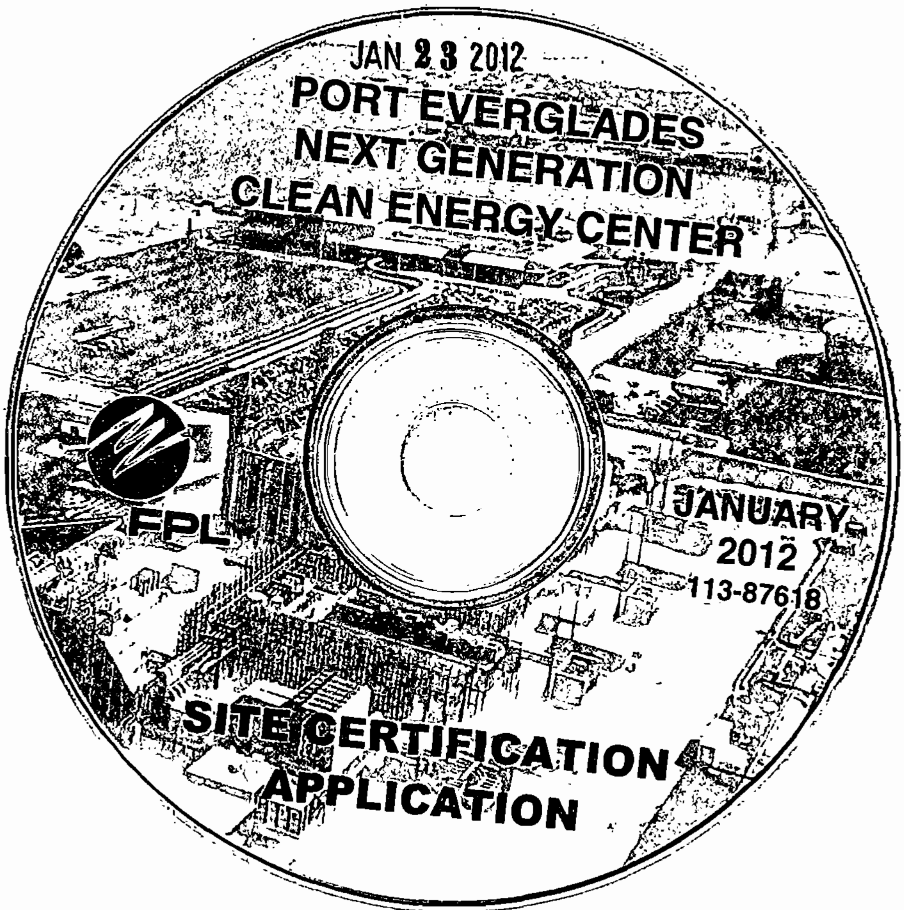
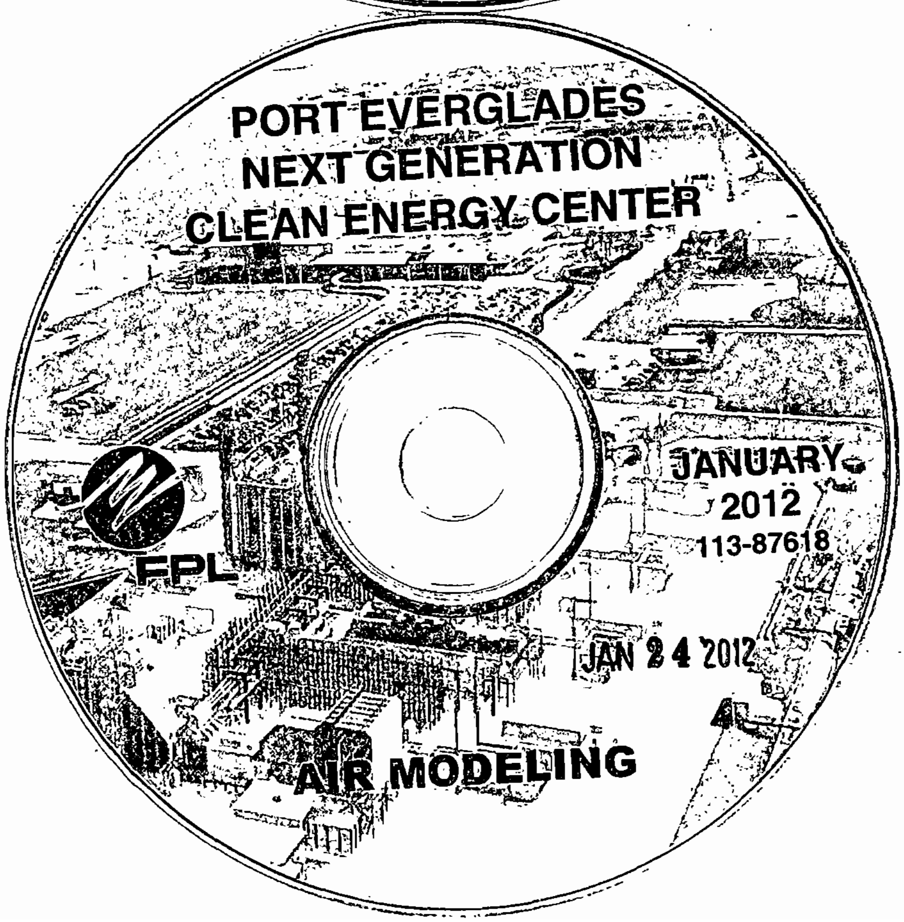
****
*** AERMOD Finishes Successfully ***
****


JAN 23 2012
PORT EVERGLADES
NEXT GENERATION
CLEAN ENERGY CENTER
FPL
JANUARY
2012
113-87618
SITE CERTIFICATION
APPLICATION


PORT EVERGLADES
NEXT GENERATION
CLEAN ENERGY CENTER
FPL
JANUARY
2012
113-87618
JAN 24 2012
AIR MODELING