



**Environmental Consulting & Technology, Inc.**

October 12, 2001

**SENT VIA OVERNIGHT MAIL ON OCTOBER 12, 2001**

*Received 10/15  
A. A. Linero  
Bureau of Air Regulation*

Mr. A.A. Linero, P.E.  
Administrator, New Source Review Section  
Florida Department of Environmental Protection  
Division of Air Resources Management  
2600 Blair Stone Road, MS #5505  
Tallahassee, FL 32399-2400

**Re: El Paso Merchant Energy Company  
DEP File No. 0990594-001-AC (PSD-FL-317)  
Belle Glade Energy Center  
Comments on Draft Permit**

Dear Mr. Linero:

On behalf of El Paso Merchant Energy Company (EPMEC), comments on the Department's draft Prevention of Significant Deterioration (PSD) permit for the Belle Glade Energy Center are attached for your consideration. To facilitate your review, a marked up electronic version of the Department's draft PSD permit showing the requested revisions are also being sent to you via electronic mail.

Your review of these comments and continued processing of the EPMEC Belle Glade Energy Center PSD permit application is appreciated. Please contact Mr. Krish Ravishankar at (713) 420-5563 or the undersigned at (352) 332-6230, Ext. 351 if there are any questions regarding these comments.

**ENVIRONMENTAL CONSULTING & TECHNOLOGY, INC.**

Thomas W. Davis, P.E.  
Principal Engineer

Attachments

cc: Mr. Krish Ravishankar

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**PERMITTEE:**

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*Authorized Representative:*  
William Mack, Sr., Managing Director

Facility Name: Belle Glade Energy Center
Project No. 0990594-001-AC
Air Permit No. PSD-FL-317
Facility ID No. 0990594
SIC No. 4911
Expires: December 1, 2004

**PROJECT AND LOCATION**

This permit authorizes the construction of a new nominal 600-megawatt electrical generating plant, the Belle Glade Energy Center, to be located 0.33 Mile East of SR 80, South of Curlee Road in Belle Glade, Palm Beach County. UTM coordinates are: Zone 17; 533.5 km East; 2,954.1 km North. The plant will consist of one combined cycle gas turbine, two simple cycle gas turbines, and associated equipment.

**STATEMENT OF BASIS**

This PSD air pollution construction permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.) and Title 40, Part 52, Section 21 of the Code of Federal Regulations. Specifically, this permit is issued pursuant to the requirements for the Prevention of Significant Deterioration (PSD) of Air Quality, Rule 62-212.400, F.A.C. The permittee is authorized to install the proposed equipment in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department.

**CONTENTS**

- Section I. General Information
- Section II. Administrative Requirements
- Section III. Emissions Units Specific Conditions
- Section IV. Appendices

(DRAFT)

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Howard L. Rhodes, Director  
Division of Air Resources Management

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(Date)

## SECTION I. GENERAL INFORMATION

### FACILITY DESCRIPTION

The proposed project is for a new electrical power plant, the Belle Glade Energy Center, which will generate a nominal 600 MW of electricity. The plant will consist of one combined cycle gas turbine unit (250 MW, total) and two simple cycle gas turbine units (175 MW, each).

### NEW EMISSIONS UNITS

This permit authorizes construction and installation of the following new emissions units.

ID	Emission Unit Description
001	<b>Combined Cycle Unit No. CC-1</b> consists of a natural gas fired 175 MW General Electric Model PG7241FA gas turbine-electrical generator set, an unfired heat recovery steam generator, and a separate steam turbine-electrical generator.
002	<b>Simple Cycle Unit No. SC-1</b> consists of a natural gas fired General Electric Model PG7241FA gas turbine-electrical generator set with a nominal capacity of 175 MW.
003	<b>Simple Cycle Unit No. SC-2</b> consists of a natural gas fired General Electric Model PG7241FA gas turbine-electrical generator set with a nominal capacity of 175 MW.
004	<b>Cooling Tower</b> consisting of one 5-cell freshwater mechanical draft freshwater cooling tower.
005	<b>Other Emissions Units</b> include one 2600-hp diesel generator, one 250-hp diesel fire pump, a 12.8 MMBtu/hr (HHV) gas-fired fuel heater, an aqueous ammonia storage tank, and small diesel storage tanks.

### REGULATORY CLASSIFICATION

Title III: Based on available data, the new facility is not a major source of hazardous air pollutants (HAP).

Title IV: The new gas turbines are subject to the acid rain provisions of the Clean Air Act.

Title V: Because potential emissions of at least one regulated pollutant exceed 100 tons per year, the new facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C. Regulated pollutants include pollutants such as carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), particulate matter (PM/PM<sub>10</sub>), sulfur dioxide (SO<sub>2</sub>), and volatile organic compounds (VOC).

PSD: The project is located in an area designated as "attainment" or "unclassifiable" for each pollutant subject to a National Ambient Air Quality Standard. The facility is considered a "fossil fuel fired steam electric plant of more than 250 million BTU per hour of heat input", which is one of the 28 PSD source categories with the lower PSD applicability threshold of 100 tons per year. Potential emissions of at least one regulated pollutant exceed 100 tons per year. Therefore, the facility is classified as a major source of air pollution with respect to Rule 62-212.400, F.A.C, the Prevention of Significant Deterioration (PSD) of Air Quality.

NSPS: The new gas turbines are subject to the New Source Performance Standards of 40 CFR 60, Subpart GG. The gas fired fuel heater is subject to the New Source Performance Standards of 40 CFR 60, Subpart Dc.

NESHAP: No emission units are identified as being subject to a National Emissions Standards for Hazardous Air Pollutants (NESHAP).

SITING: The project is not subject to Section 403.501-518, F.S., Florida Electrical Power Plant Siting Act, based on information regarding gross electrical power generated from the steam (Rankine) cycle submitted by the applicant and reviewed by the Department.

## SECTION I. GENERAL INFORMATION

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### PERMITTING AUTHORITY

All documents related to applications for permits to construct, operate or modify an emissions unit shall be submitted to the Bureau of Air Regulation of the Florida Department of Environmental Protection (DEP) at 2600 Blair Stone Road (MS #5505), Tallahassee, Florida 32399-2400.

### COMPLIANCE AUTHORITIES

All documents related to compliance activities such as reports, tests, and notifications shall be submitted to the Air Quality Division of the Palm Beach County Health Department, P.O. Box 29, West Palm Beach, Florida 33402-0029. Copies of all such documents shall be submitted to the Air Resources Section of the Southeast District Office, Florida Department of Environmental Protection, Post Office Box 15425, West Palm Beach, Florida 33416-5425.

### APPENDICES

The following Appendices are attached as part of this permit.

Appendix BD. Final BACT Determinations and Emissions Standards

Appendix GC. General Conditions

Appendix GG. NSPS Subpart GG Requirements for Gas Turbines

Appendix SC. Standard Conditions

Appendix XS. Continuous Monitor Systems Semi-Annually Report

### RELEVANT DOCUMENTS

The documents listed below are not a part of this permit; however, they are specifically related to this permitting action and are on file with the Department.

- Permit application received on 03/28/01 and all related completeness correspondence.
- Draft permit package issued on 09/07/01.
- Comments received from the public, the applicant, the EPA Region 4 Office, and the National Park Service.

## SECTION II. ADMINISTRATIVE REQUIREMENTS

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1. **General Conditions:** The owner and operator are subject to, and shall operate under, the attached General Conditions listed in Appendix GC of this permit. General Conditions are binding and enforceable pursuant to Chapter 403 of the Florida Statutes. [Rule 62-4.160, F.A.C.]
2. **Applicable Regulations, Forms and Application Procedures:** Unless otherwise indicated in this permit, the construction and operation of the subject emissions unit shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403 of the Florida Statutes (F.S.); Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.); and the Title 40, Parts 51, 52, 60, 72, 73, and 75 of the Code of Federal Regulations (CFR), adopted by reference in Rule 62-204.800, F.A.C. The terms used in this permit have specific meanings as defined in the applicable chapters of the Florida Administrative Code. The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C. and follow the application procedures in Chapter 62-4, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations. [Rules 62-204.800, 62-210.300 and 62-210.900, F.A.C.]
3. **PSD Expiration:** Approval to construct shall become invalid if construction is not commenced within 18 months after receipt of such approval, or if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time. The Department may extend the 18-month period upon a satisfactory showing that an extension is justified. [40 CFR 52.21(r)(2)]
4. **Completion of Construction:** The permit expiration date is December 1, 2004. Physical construction shall be completed by September 1, 2004. The additional time provides for testing, submittal of results, and submittal of the Title V permit application to the Department.
5. **Permit Expiration:** For good cause, the permittee may request that this PSD air construction permit be extended. Such a request shall be submitted to the Department's Bureau of Air Regulation at least sixty (60) days prior to the expiration of this permit. [Rules 62-4.070(4), 62-4.080, and 62-210.300(1), F.A.C.]
6. **BACT Determination:** In conjunction with an extension of the 18-month period to commence or continue construction, phasing of the project, or an extension of the permit expiration date, the permittee may be required to demonstrate the adequacy of any previous determination of Best Available Control Technology (BACT) for the source. [Rule 62-212.400(6)(b), F.A.C. and 40 CFR 51.166(j)(4)]
7. **New or Additional Conditions:** For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]
8. **Modifications:** No emissions unit or facility subject to this permit shall be constructed or modified without obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]
9. **Application for Title IV Permit:** At least 24 months before the date on which the new unit begins serving an electrical generator greater than 25 MW, the permittee shall submit an application for a Title IV Acid Rain Permit to the Department's Bureau of Air Regulation in Tallahassee and a copy to the Region 4 Office of the U.S. Environmental Protection Agency in Atlanta, Georgia. [40 CFR 72]
10. **Title V Permit:** This permit authorizes construction of the permitted emissions units and initial operation to determine compliance with Department rules. A Title V operation permit is required for regular operation of the permitted emissions unit. The permittee shall apply for a Title V operation permit at least 90 days prior to expiration of this permit, but no later than 180 days after commencing operation. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. The application shall be submitted to the Department's Bureau of Air Regulation, and copies to each Compliance Authority. [Rules 62-4.030, 62-4.050, 62-4.220, and Chapter 62-213, F.A.C.]

## SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

### A. COMBINED CYCLE GAS TURBINE

This section of the permit addresses the following new emissions unit.

#### **Emissions Unit 001: Combined Cycle Gas Turbine No. CC-1**

*Description:* The combined cycle unit consists of a General Electric Model PG7241FA gas turbine-electrical generator set with a nominal capacity of 175 MW, an unfired heat recovery steam generator (HRSG), and a separate steam turbine-electrical generator set. Ancillary equipment includes an automated gas turbine control system, an inlet air filtration system, and an evaporative inlet air-cooling system.

*Fuel:* The combined cycle unit is fired exclusively with pipeline-quality natural gas.

*Capacity:* At a compressor inlet air temperature of 35° F, the combined cycle gas turbine produces approximately 180 MW when firing approximately 1700 MMBtu (LHV) per hour of natural gas.

*Controls:* The efficient combustion of pipeline-quality natural gas at high temperatures minimizes emissions of CO, PM/PM<sub>10</sub>, SAM, SO<sub>2</sub>, and VOC. A selective catalytic reduction (SCR) system combined with Dry Low-NO<sub>x</sub> (DLN) combustion technology reduces NO<sub>x</sub> emissions.

*Stack Parameters:* When operating at 100% load and at an inlet temperature of 35° F, exhaust gases exit a 135 feet tall stack that is 19.0 feet in diameter with a flow rate of approximately 1,040,000 acfm at 187° F.

#### **APPLICABLE STANDARDS AND REGULATIONS**

1. **BACT Determinations:** The emissions standards specified for this unit represent Best Available Control Technology (BACT) determinations for carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), particulate matter (PM/PM<sub>10</sub>), sulfuric acid mist (SAM), and sulfur dioxide (SO<sub>2</sub>). See Appendix BD of this permit for a summary of the final BACT determinations. [Rule 62-212.400(BACT), F.A.C.]

#### **EQUIPMENT**

2. **Combined Cycle Gas Turbine:** The permittee is authorized to install, tune, maintain and operate a new combined cycle unit consisting of a General Electric Model PG7241FA gas turbine-electrical generator set, an unfired heat recovery steam generator (HRSG), and a steam turbine-electrical generator set. The combined cycle unit shall be designed as a system to generate a nominal 175 MW of shaft-driven electrical power and less than 75 MW of steam-generated electrical power. Ancillary equipment includes an automated gas turbine control system, an inlet air filtration system, an evaporative inlet air cooling system, a single exhaust stack that is 135 feet tall and 19.0 feet in diameter, and associated support equipment. ~~A separate bypass stack and damper may be installed to facilitate startup of the steam cycle while operating the combustion turbine in Low Emissions Modes 5, 5Q, and 6Q.~~ [Applicant Request; Design]

EPMEC Comment: EPMEC does not consider a bypass stack system to be a cost-effective BACT approach for reducing emissions during startups. Detailed comments on this issue will be provided to the Department at a later date.

3. **DLN Combustion Technology:** The permittee shall tune, maintain and operate the General Electric DLN-2.6 combustion system to control NO<sub>x</sub> emissions from the combined cycle gas turbine. Prior to the initial emissions performance tests for each gas turbine, the DLN combustors and automated gas turbine control system shall be tuned to reduce NO<sub>x</sub> emissions. Thereafter, each system shall be maintained and tuned in accordance with the manufacturer's recommendations. [Design; Rule 62-212.400(BACT), F.A.C.]
4. **(SCR) System:** The permittee shall install, tune, maintain and operate a selective catalytic reduction (SCR) system to control NO<sub>x</sub> emissions from the combined cycle gas turbine. The SCR system consists of an

## SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

### A. COMBINED CYCLE GAS TURBINE

ammonia injection grid, catalyst, aqueous ammonia storage, monitoring and control system, and electrical, piping and other auxiliary equipment. The SCR system shall be designed to reduce NO<sub>x</sub> emissions and ammonia slip below the permitted levels. [Rule 62-212.400(BACT), F.A.C.]

#### PERFORMANCE RESTRICTIONS

5. Permitted Capacity: The maximum heat input rate to the combined cycle gas turbine shall not exceed 1742 MMBtu per hour based on a compressor inlet air temperature of 35° F, the lower heating value (LHV) of natural gas, and 100% load. Heat input rates will vary depending upon gas turbine characteristics, ambient conditions, alternate methods of operation, and evaporative cooling. The permittee shall provide manufacturer's performance curves (or equations) that correct for site conditions to the Permitting and Compliance Authorities within 45 days of completing the initial compliance testing. Operating data may be adjusted for the appropriate site conditions in accordance with the performance curves and/or equations on file with the Department. [Rule 62-210.200(PTE), F.A.C.]
6. Authorized Fuel: The combined cycle gas turbine shall fire only pipeline-quality natural gas with a maximum of 1.5 grains of sulfur per 100 standard cubic feet of natural gas. [Applicant Request; Rules 62-210.200(PTE) and 62-212.400(BACT), F.A.C.]
7. Restricted Operation: The hours of operation for the combined cycle gas turbine are not limited (8760 hours per year). [Rules 62-210.200(PTE) and 62-212.400(BACT), F.A.C.]
8. Power Augmentation: As an alternate method of operation, the permittee may inject steam into the combined cycle gas turbine for power augmentation. ~~Power augmentation is permitted 2000 hours per 12 consecutive months and is not limited if oxidation catalyst is installed. The 2000 hour limit may be revised at the request of the applicant based upon review of actual performance and control equipment cost-effectiveness following proper public notice.~~ [Rule 62-212.400 (BACT), F.A.C.]  
  
EPMEC Comment: The 2,000 hour per year limit on steam mass flow augmentation may be insufficient to meet plant operational objectives. The March 2001 Air Construction Permit Application submitted to the Department requested up to 8,760 hours per year of steam mass flow augmentation. EPMEC will provide additional comments on this issue to the Department at a later date.
9. Power Generated Limitation: Electrical power from the steam-electrical generator shall be limited to 74.9 MW (gross) on an hourly basis. The owner or operator shall be capable of demonstrating to the Department, continuous compliance with the 74.9 MW limit by the stored information in the power plant's electronic data system. [Applicant Request]

#### EMISSIONS STANDARDS

*{Permitting Note: The following standards apply to the combined cycle gas turbine. Unless otherwise noted, the mass emission limits are based a compressor inlet temperature of 35° F and 100% load. For comparison to the standard, actual measured concentrations shall be corrected to this compressor inlet temperature with manufacturer's data on file with the Department. Emissions standards with continuous monitoring requirements apply at all loads. Appendix BD provides a summary of the emissions standards of this permit.}*

10. Ammonia Slip: Ammonia slip shall not exceed 5 ppmvd corrected to 15% oxygen based on a 3-hour test average as determined by EPA Method CTM-027. [Rule 62-4.070(3), F.A.C.]
11. Carbon Monoxide (CO)

## SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

### A. COMBINED CYCLE GAS TURBINE

- a. *Initial Test, Standard Operation:* When not operating in the power augmentation mode, CO emissions shall not exceed 31.0 pounds per hour nor 8.0 ppmvd corrected to 15% oxygen based on a 3-hour test average as determined by an initial performance test conducted in accordance with EPA Method 10.
- b. *Continuous Compliance, Standard Operation:* When not operating in the power augmentation mode, CO emissions shall not exceed 8.0 ppmvd corrected to 15% oxygen based on a 3-hour block average as determined by valid data collected from the certified CEM system.
- c. *Initial Test, Power Augmentation:* When injecting steam for power augmentation and a compressor inlet temperature of 59° F, CO emissions shall not exceed ~~48.0~~ 48.4 pounds per hour nor 12.0 ppmvd corrected to 15% oxygen based on a 3-hour test average as determined by an initial performance test conducted in accordance with EPA Method 10.

EPMEC Comment: Requested limit represents maximum hourly CO emission rate at 100% load and steam augmentation; reference Appendix C, Table C-2A of the March 2001 Air Construction Permit Application.

- d. *Continuous Compliance, Power Augmentation:* When injecting steam for power augmentation, CO emissions shall not exceed 12.0 ppmvd corrected to 15% oxygen based on a 3-hour block average as determined by valid data collected from the certified CEM system. [Rule 62-212.400(BACT), F.A.C.]

EPMEC Comment: Draft NO<sub>x</sub> emission limits are inconsistent with limits requested in the March 2001 Air Construction Permit Application. Reconsideration by the Department of the draft NO<sub>x</sub> limits is requested. EPMEC will provide the Department with additional comments on this issue at a later date.

#### 12. Nitrogen Oxides (NO<sub>x</sub>)

- a. *Initial Test:* NO<sub>x</sub> emissions shall not exceed ~~17.0~~ 23.8 pounds per hour nor ~~2.5~~ 3.5 ppmvd corrected to 15% oxygen based on a 3-hour test average as determined by EPA Method 7E.
- b. *Continuous Compliance:* NO<sub>x</sub> emissions shall not exceed ~~2.5~~ 3.5 ppmvd corrected to 15% oxygen based on a 24-hour block average as determined by valid data collected from the certified CEM system.

NO<sub>x</sub> emissions are defined as oxides of nitrogen expressed as NO<sub>2</sub>. [Rule 62-212.400(BACT), F.A.C.]

13. Particulate Matter (PM/PM<sub>10</sub>): The fuel specifications established in Condition No. 6 of this section combined with the efficient combustion design and operation of the combined cycle gas turbine represent the Best Available Control Technology (BACT) requirements for PM/PM<sub>10</sub> emissions. Compliance with the fuel specifications, CO standards, and visible emissions standards shall serve as indicators of good combustion. {Permitting Note: Particulate matter emissions are expected to be less than 11 pounds per hour as determined by EPA Method 5, front-half catch only.} [Rule 62-212.400(BACT), F.A.C.]
14. Sulfuric Acid Mist (SAM) and Sulfur Dioxide (SO<sub>2</sub>): The fuel sulfur specification established in Condition No. 6 of this section effectively limits the potential emissions of SAM and SO<sub>2</sub> from the combined cycle gas turbine. Compliance with the fuel sulfur specification shall be demonstrated by the sampling, analysis, record keeping and reporting requirements established in Section III.C of this permit. [Rule 62-212.400(BACT), F.A.C.]
15. Visible Emissions: As determined by EPA Method 9, visible emissions shall not exceed 10% opacity based on a 6-minute average. Except as allowed by Condition No. 17 of this section, this standard applies to all loads. [Rule 62-212.400(BACT), F.A.C.]
16. Volatile Organic Compounds (VOC): The efficient combustion of clean fuels and good operating practices for the combined cycle gas turbine represent the Best Available Control Technology (BACT) requirements for VOC emissions. Compliance with the fuel specification and CO standards shall serve as indicators of



## SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

### A. COMBINED CYCLE GAS TURBINE

good combustion. {Permitting Note: VOC emissions are expected to be less than  $\approx$  3.4 pounds per hour and  $\pm$  1.5 ppmvd corrected to 15% oxygen as determined by EPA Method 25A measured and reported as methane.} [Design; Rule 62-4.070(3), F.A.C.]

EPMEC Comment: Revised values represents maximum hourly VOC emission rate with steam augmentation; reference Appendix C, Table C-2A of the March 2001 Air Construction Permit Application.

#### EXCESS EMISSIONS

17. Excess Emissions Defined: The following permit conditions allow excess emissions or the exclusion of monitoring data for specifically defined periods of startup, shutdown, and malfunction of the combined cycle gas turbine. These conditions apply only if operators employ the best operational practices to minimize the amount and duration of excess emissions during such episodes.
- Visible Emissions*: For startups and shutdowns in a calendar day, visible emissions shall not exceed 10% opacity except for up to ten, 6-minute averaging periods, which shall not exceed 20% opacity.
  - ~~*Work Practice BACT*: The unit(s) will reach Mode 5Q (i.e. five burners plus quaternary pegs in operation) within 15 minutes following gas turbine ignition and crossfire.~~
  - ~~*Low-Load Restriction*: Except for startup and shutdown, operation under DLN Modes 1, 2, 3, and 4 is prohibited.~~
  - ~~*CEM System Data Exclusion*: Except for combined cycle cold startups, no more than two hourly average emission rate values in a calendar day shall be excluded from the continuous NO<sub>x</sub> and CO compliance demonstrations due to startup, shutdown, or documented unavoidable malfunction. No more than four hourly average emission rate values in a calendar day shall be excluded from the continuous NO<sub>x</sub> and CO compliance demonstrations due to combined cycle cold startups. No more than a total of four hourly average emission rate values shall be excluded from the continuous NO<sub>x</sub> and CO compliance demonstrations for all such episodes in any calendar day. A "combined cycle cold startup" is defined as startup after the combined cycle gas turbine has been shutdown for 48 hours or more. A "documented unavoidable malfunction" is a malfunction beyond the control of the operator that is documented within 24 hours of occurrence by contacting each Compliance Authority by telephone or facsimile transmittal.~~

[Design; Rules 62-4.070(3), 62-4.130, 62-210.700, and 62-212.400 (BACT), F.A.C.]

EPMEC Comment: Draft Condition 17.b. and d. requires the installation of a bypass stack system and does not allow for multiple daily startups. As noted previously, EPMEC does not consider a bypass stack system to be a cost-effective BACT approach for reducing emissions during startups. Detailed comments on this issue will be provided to the Department at a later date.

#### EMISSIONS PERFORMANCE TESTING

{Permitting Note: Performance test methods are specified in Gas Turbine Common Conditions, Section III.C.}

18. Initial Compliance Tests: The combined cycle gas turbine shall be tested initially and upon permit renewal to demonstrate compliance with the emission standards for CO, NO<sub>x</sub>, visible emissions and ammonia slip. The tests shall be conducted within 60 days after achieving at least 90% of the maximum permitted capacity, but not later than 180 days after initial operation of the combined cycle gas turbine. With appropriate flow measurements, certified CEM system data may be used to demonstrate compliance with the CO and NO<sub>x</sub> standards. NO<sub>x</sub> emissions recorded by the CEM system shall be reported for each ammonia slip test run. [Rule 62-297.310(7)(a)1., F.A.C.]
19. Annual Compliance Tests: During each federal fiscal year (October 1<sup>st</sup> to September 30<sup>th</sup>), the combined cycle gas turbine shall be tested to demonstrate compliance with the emission standards for NO<sub>x</sub>, CO, ammonia slip

## SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

### A. COMBINED CYCLE GAS TURBINE

and visible emissions. NO<sub>x</sub> emissions recorded by the CEM system shall be reported for each ammonia slip test run. Annual compliance with the applicable NO<sub>x</sub> and CO emissions standards can also be demonstrated with valid data collected by the required annual RATA at permitted capacity. {Permitting Note: Continuous compliance with the CO and NO<sub>x</sub> standards shall be demonstrated with certified CEMS system data.} [Rules 62-212.400 (BACT) and 62-297.310(7)(a)4., F.A.C.]

#### CONTINUOUS MONITORING REQUIREMENTS

20. CEM Systems: The permittee shall install, calibrate, maintain, and operate continuous emission monitoring (CEM) systems to measure and record the emissions of CO and NO<sub>x</sub> from the combined cycle gas turbine in a manner sufficient to demonstrate continuous compliance with the emission standards of this section. The CEM systems shall comply with the general monitoring requirements specified under "Gas Turbine Common Conditions" in Section III.C.
- The CO monitor shall have a span of no more than 25 ppmvd corrected to 15% oxygen. For purposes of determining compliance with the CEM emission standards of this permit, missing or excluded data shall not be substituted. Instead, the next valid hourly emission rate value (within the same period of operation) shall be used to complete the 3-hour block average for CO. Each monitoring system shall be installed, calibrated, and properly functioning prior to the initial performance tests and shall be used to demonstrate continuous compliance with the corresponding CO emissions standards specified in this section. [Rule 62-212.400(BACT), F.A.C.]
  - The NO<sub>x</sub> monitor shall have a span of no more than 10 ppmvd corrected to 15% oxygen. Compliance with the continuous NO<sub>x</sub> emissions standards shall be based on a 24-hour block average starting at midnight of each operating day. The 24-hour block average shall be calculated from 24 consecutive hourly average emission rate values. If a unit operates less than 24 hours during the block, the 24-hour block average shall be the average of available valid hourly average emission rate values for the 24-hour block. For purposes of determining compliance with the CEM emission standards of this permit, missing (or excluded) data shall not be substituted. Instead the block average shall be determined using the remaining hourly data in the 24-hour block. Each monitoring system shall be installed, calibrated, and properly functioning prior to the initial performance tests and shall be used to demonstrate continuous compliance with the corresponding NO<sub>x</sub> emissions standards specified in this section. [Rule 62-212.400(BACT), F.A.C.]

EPMEC Comment: The procedure for determining NO<sub>x</sub> compliance when data is missing or excluded appears to differ than the procedure described in Condition 20.a. for CO compliance. Clarification of these CEM compliance procedures is requested from the Department.

21. Ammonia Monitoring Requirements: In accordance with the manufacturer's specifications, the permittee shall install, calibrate, maintain and operate an ammonia flow meter to measure and record the ammonia injection rate to the SCR system. The permittee shall document the general range of ammonia flow rates required to meet permitted emissions levels over the range of load conditions allowed by this permit by comparing NO<sub>x</sub> emissions recorded by the CEM system with ammonia flow rates recorded using the ammonia flow meter. During NO<sub>x</sub> monitor downtimes or malfunctions, the permittee shall operate at the ammonia flow rate that is consistent with the documented flow rate for the combustion turbine load. [Rules 62-4.070(3) and 62-212.400(BACT), F.A.C.]

#### OTHER REQUIREMENTS

The combined cycle gas turbine is also subject to the "Gas Turbine Common Conditions" specified in Section III.C as well as the "Standard Conditions" included as Appendix SC in Section IV.

## SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

### B. SIMPLE CYCLE GAS TURBINES

This section of the permit addresses the following new emissions units.

#### **Emissions Units 002, and 003: Simple Cycle Gas Turbine Nos. SC-1 and SC-2**

*Description:* Each simple cycle unit consists of a General Electric Model PG7241FA gas turbine-electrical generator set with a nominal capacity of 175 MW. Ancillary equipment includes an automated gas turbine control system, an inlet air filtration system, and an evaporative inlet air-cooling system.

*Fuel:* Each simple cycle unit is fired exclusively with pipeline-quality natural gas.

*Capacity:* At a compressor inlet air temperature of 35° F and firing approximately 1700 MMBtu (LHV) per hour of natural gas, each unit produces approximately 180 MW.

*Controls:* Emissions of CO, PM/PM<sub>10</sub>, SAM, SO<sub>2</sub>, and VOC are minimized by the efficient combustion of pipeline-quality natural gas at high temperatures. NO<sub>x</sub> emissions are reduced by Dry Low-NO<sub>x</sub> (DLN) combustion technology.

*Stack Parameters:* When operating at 100% load and at an inlet temperature of 35° F, exhaust gases exit a 135 feet tall stack that is 19.0 feet in diameter with a flow rate of approximately 2,500,000 acfm at 1092° F.

#### **APPLICABLE STANDARDS AND REGULATIONS**

1. BACT Determinations: The emissions standards specified for these emissions units represent Best Available Control Technology (BACT) determinations for carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), particulate matter (PM/PM<sub>10</sub>), sulfuric acid mist (SAM), and sulfur dioxide (SO<sub>2</sub>). See Appendix BD of this permit for a summary of the final BACT determinations. [Rule 62-212.400(BACT), F.A.C.]

#### **EQUIPMENT**

2. Simple Cycle Gas Turbines: The permittee is authorized to install, tune, maintain and operate two new General Electric Model PG7241(FA) gas turbine-electrical generator sets. Each simple cycle unit shall be designed and operated to generate a nominal 175 MW of shaft-driven electrical power. Ancillary equipment includes an automated gas turbine control system, an inlet air filtration system, a compressor inlet air evaporative cooling system, a single exhaust stack that is 135 feet tall and 19.0 feet in diameter, and associated support equipment. [Applicant Request; Design]
3. DLN Combustion Technology: The permittee shall tune, maintain and operate the General Electric DLN 2.6 combustion system to control NO<sub>x</sub> emissions from each simple cycle gas turbine. Prior to the initial emissions performance tests for each gas turbine, the DLN combustors and automated gas turbine control system shall be tuned to reduce NO<sub>x</sub> emissions. Thereafter, each system shall be maintained and tuned in accordance with the manufacturer's recommendations. [Design; Rule 62-212.400(BACT), F.A.C.]

#### **PERFORMANCE REQUIREMENTS**

4. Simple Cycle Operation Only: Each gas turbine shall operate only in simple cycle mode. This restriction is based on the permittee's request, which formed the basis of the CO and NO<sub>x</sub> BACT determinations and resulted in the emission standards specified in this permit. Specifically, the CO and NO<sub>x</sub> BACT determinations eliminated several control alternatives based on technical considerations due to the elevated temperatures of the exhaust gas as well as costs related to restricted operation. Any request to convert these units to combined cycle operation or increase the allowable hours of operation shall be accompanied by a revised CO and NO<sub>x</sub> BACT analysis (as if never constructed) and the approval of the Department through a permit modification in accordance with Chapters 62-210 and 62-212, F.A.C. The results of this analysis

### SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

#### B. SIMPLE CYCLE GAS TURBINES

may validate the initial BACT determinations or result in the submittal of a full PSD permit application, new control equipment, and new emissions standards.

[Applicant Request; Rules 62-210.300 and 62-212.400, F.A.C.]

5. Permitted Capacity: The maximum heat input rate to each simple cycle gas turbine shall not exceed 1743 MMBtu per hour based on a compressor inlet air temperature of 35° F, the lower heating value (LHV) of natural gas, and 100% load. Heat input rates will vary depending upon gas turbine characteristics, ambient conditions, and evaporative cooling. The permittee shall provide manufacturer's performance curves (or equations) that correct for site conditions to the Permitting and Compliance Authorities within 45 days of completing the initial compliance testing. Operating data may be adjusted for the appropriate site conditions in accordance with the performance curves and/or equations on file with the Department.  
[Design; Rule 62-210.200(PTE), F.A.C.]
6. Fuel Specifications: Each simple cycle gas turbine shall fire only pipeline-quality natural gas with a maximum of 1.5 grains of sulfur per 100 standard cubic feet of natural gas.  
[Applicant Request; Rules 62-210.200(PTE) and 62-212.400(BACT), F.A.C.]
7. Restricted Operation: ~~The two combustion turbines shall operate no more than an average of 5,000 hours per installed unit during any consecutive 12-month period.~~ Each simple cycle gas turbine shall fire no more than 8,500,000 MMBtu of natural gas (LHV) during any consecutive 12-month period. {Permitting Note: This is approximately equivalent to 5000 hours of operation at 100% load.}  
[Applicant Request; Rules 62-212.400(BACT) and 62-210.200(PTE), F.A.C.]

EPMEC Comment: Deletion of the limitation on annual hours is requested since it is a redundant requirement and unnecessarily limits operational flexibility.]

#### EMISSIONS STANDARDS

*{Permitting Note: The following standards apply to each simple cycle gas turbine. Unless otherwise noted, the mass emission limits are based a compressor inlet temperature of 35° F and 100% load. For comparison to the standard, actual measured concentration shall be corrected to this compressor inlet temperature with manufacturer's data on file with the Department. Emissions standards with continuous monitoring requirements apply at all loads. Appendix BD provides a summary of the emissions standards of this permit.}*

8. Carbon Monoxide (CO): CO emissions from each simple cycle gas turbine shall not exceed 31.0 pounds per hour nor 8.0 ppmvd corrected to 15% oxygen based on a 3-hour test average as determined by EPA Method 10. [Rule 62-212.400(BACT), F.A.C.]
9. Nitrogen Oxides (NO<sub>x</sub>)
  - a. *Initial Performance Test*: NO<sub>x</sub> emissions from each simple cycle gas turbine shall not exceed 61.0 pounds per hour nor 9.0 ppmvd corrected to 15% oxygen based on a 3-hour test average conducted at base load as determined by EPA Method 7E.
  - b. *CEM System*: NO<sub>x</sub> emissions shall not exceed 9.0 ppmvd corrected to 15% oxygen based on a 24-hour block average as determined by valid data collected from the certified NO<sub>x</sub> CEM system.

NO<sub>x</sub> emissions are defined as oxides of nitrogen expressed as NO<sub>2</sub>. [Rule 62-212.400(BACT), F.A.C.]
10. Particulate Matter (PM/PM<sub>10</sub>): The fuel specifications established in Condition No. 6 of this section combined with the efficient combustion design and operation of the combined cycle gas turbine represent the Best Available Control Technology (BACT) requirements for particulate matter emissions. Compliance with the fuel specifications, CO standards, and visible emissions standards shall serve as

## SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

### B. SIMPLE CYCLE GAS TURBINES

indicators of good combustion. Particulate matter emissions are expected to be less than 9 pounds per hour as determined by EPA Method 5, front-half catch only. [Rule 62-212.400(BACT), F.A.C.]

11. Sulfuric Acid Mist (SAM) and Sulfur Dioxide (SO<sub>2</sub>): The fuel sulfur specification established in Condition No. 6 of this section effectively limits the potential emissions of SAM and SO<sub>2</sub> from each simple cycle gas turbine. Compliance with the fuel sulfur specification shall be demonstrated by the sampling, analysis, record keeping and reporting requirements established in Section III.C of this permit. [Rule 62-212.400(BACT), F.A.C.]
12. Volatile Organic Compounds (VOC)
  - a. *Initial Performance Test*: VOC emissions from each simple cycle gas turbine shall not exceed 3.0 pounds per hour nor 1.3 ppmvd corrected to 15% oxygen based on a 3-hour test average at base load as determined by EPA Method 25A, measured and reported in terms of methane. Optionally, EPA Method 18 may be used concurrently with EPA Method 25A to deduct emissions of methane and ethane from the measured VOC emissions. [Rule 62-4.070, F.A.C.; To Avoid Rule 62-212.400(BACT), F.A.C.]
  - b. *After Initial Performance Test*: The efficient combustion of a clean fuel and good operating practices minimize VOC emissions from each simple cycle gas turbine. Compliance with the fuel specifications and CO standards of this section shall serve as indicators of good combustion. Subsequent VOC emissions performance tests shall only be required when the Department has good reason to believe that a VOC emission standard is being violated pursuant to Rule 62-297.310(7)(b), F.A.C. [Rule 62-4.070, F.A.C.]

#### EXCESS EMISSIONS

13. Excess Emissions Defined: The following permit conditions allow excess emissions or the exclusion of monitoring data for specifically defined periods of startup, shutdown, and malfunction of each simple cycle gas turbine. These conditions apply only if operators employ the best operational practices to minimize the amount and duration of excess emissions during such episodes.
  - a. *Visible Emissions*: For startups and shutdowns in a calendar day, visible emissions shall not exceed 10% opacity except for up to ten, 6-minute averaging periods, which shall not exceed 20% opacity.
  - b. *Work Practice BACT*: The unit(s) will reach Mode 5Q (i.e. five burners plus quaternary pegs in operation) within 15 minutes following gas turbine ignition and crossfire.
  - c. *Low-Load Restriction*: Except for startup and shutdown, operation under DLN Modes 1, 2, 3, and 4 is prohibited.
  - d. *CEM System NO<sub>x</sub> Data Exclusion*: No more than two hourly average emission rate values shall be excluded from the continuous NO<sub>x</sub> compliance demonstrations due to startup, shutdown, or documented unavoidable malfunction. No more than a total of three hourly average emission rate values shall be excluded from the continuous NO<sub>x</sub> compliance demonstrations for such periods in any calendar day. A "documented unavoidable malfunction" is a malfunction beyond the control of the operator that is documented within 24 hours of occurrence by contacting each Compliance Authority by telephone or facsimile transmittal.

[Design; Rules 62-210.700, 62-4.130, and 62-212.400 (BACT), F.A.C.]

EPMEC Comment: Condition 13.b. and c. requires operation in DLN pre-mix mode within 15 minutes of commencement of gas turbine fuel ignition. EPMEC will review this requirement with the gas turbine vendor and provide the Department with additional comments as necessary.

## SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

### B. SIMPLE CYCLE GAS TURBINES

#### EMISSIONS PERFORMANCE TESTING

*{Permitting Note: Performance test methods are specified in Gas Turbine Common Conditions, Section III.C.}*

14. **Initial Tests Required:** Each simple cycle gas turbine shall be tested initially and upon permit renewal to demonstrate compliance with the emission standards for PM/PM<sub>10</sub>, CO, NO<sub>x</sub>, VOC and visible emissions. The initial tests shall be conducted within 60 days after achieving at least 90% of the maximum permitted capacity, but not later than 180 days after initial operation of each unit. With appropriate flow measurements, certified CEM system data may be used to demonstrate compliance with the NO<sub>x</sub> standards. Tests for CO and VOC emissions shall be conducted concurrently. [Rule 62-297.310(7)(a)1., F.A.C.]
15. **Annual Performance Tests:** During each federal fiscal year (October 1<sup>st</sup> to September 30<sup>th</sup>), each simple cycle gas turbine shall be tested to demonstrate compliance with the emission standards for NO<sub>x</sub>, CO and visible emissions. Annual compliance with the applicable NO<sub>x</sub> and CO emissions standards can also be demonstrated with valid data collected by the required annual RATA at permitted capacity. NO<sub>x</sub> emissions recorded by the CEM system shall be reported for each CO test run. {Permitting Note: Continuous compliance with the NO<sub>x</sub> standard shall be demonstrated with certified CEMS system data.} [Rule 62-297.310(7)(a)4., F.A.C.]

#### CONTINUOUS MONITORING REQUIREMENTS

16. **CEM Systems:** The permittee shall install, calibrate, maintain, and operate continuous emission monitoring (CEM) systems to measure and record NO<sub>x</sub> emissions from each simple cycle gas turbine in a manner sufficient to demonstrate continuous compliance with the emission standards of this section. Each CEM system shall comply with the general monitoring requirements specified under "Gas Turbine Common Conditions" in Section III.C. Each NO<sub>x</sub> monitor shall have a span of no more than 25 ppmvd corrected to 15% oxygen. Compliance with the continuous NO<sub>x</sub> emissions standards shall be based on a 24-hour block average starting at midnight of each operating day. The 24-hour block average shall be calculated from 24 consecutive hourly average emission rate values. If a unit operates less than 24 hours during the block, the 24-hour block average shall be the average of available valid hourly average emission rate values for the 24-hour block. For purposes of determining compliance with the CEM emission standards of this permit, missing (or excluded) data shall not be substituted. Instead the block average shall be determined using the remaining hourly data in the 24-hour block. Each monitoring system shall be installed, calibrated, and properly functioning prior to the initial performance tests and shall be used to demonstrate continuous compliance with the corresponding NO<sub>x</sub> emissions standards specified in this section. [Rule 62-212.400(BACT), F.A.C.]

#### OTHER REQUIREMENTS

Each simple cycle gas turbine is also subject to the "Gas Turbine Common Conditions" specified in Section III.C as well as the "Standard Conditions" included as Appendix SC in Section IV.

**SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS**

**C. GAS TURBINE COMMON CONDITIONS**

This section of the permit addresses the following new emissions units.

ID	Emission Unit Description
001	<b>Combined Cycle Unit No. CC-1</b> consists of a natural gas fired General Electric Model PG7241FA 175 MW gas turbine-electrical generator set, an unfired heat recovery steam generator, and a separate turbine-electrical generator.
002	<b>Simple Cycle Unit No. SC-1</b> consists of a natural gas fired General Electric Model PG7241FA gas turbine-electrical generator set with a nominal capacity of 175 MW.
003	<b>Simple Cycle Unit No. SC-2</b> consists of a natural gas fired General Electric Model PG7241FA gas turbine-electrical generator set with a nominal capacity of 175 MW.

**NEW SOURCE PERFORMANCE STANDARDS, SUBPART GG**

1. **NSPS Requirements:** The Department determines that compliance with the emissions performance and monitoring requirements of Sections III.A and B also demonstrates compliance with the New Source Performance Standards for gas turbines in 40 CFR 60, Subpart GG. For completeness, the applicable Subpart GG requirements are included in Appendix GG of this permit. [Rule 62-4.070(3), F.A.C.]

**PERFORMANCE REQUIREMENTS**

2. **Operating Procedures:** The Best Available Control Technology (BACT) determinations established by this permit rely on "good operating practices" to reduce emissions. Therefore, all operators and supervisors shall be properly trained to operate and maintain the combined cycle gas turbine and pollution control systems in accordance with the guidelines and procedures established by each manufacturer. The training shall include good operating practices as well as methods of minimizing excess emissions. [Rules 62-4.070(3) and 62-212.400(BACT), F.A.C.]

**EXCESS EMISSIONS**

3. **Excess Emissions Prohibited:** Excess emissions caused entirely or in part by poor maintenance, poor operation or any other equipment or process failure that may reasonably be prevented during startup, shutdown or malfunction shall be prohibited. All such emissions shall be included in any compliance demonstration based on continuous monitoring data. [Rule 62-210.700(4), F.A.C.]

**EMISSIONS PERFORMANCE TESTING**

4. **Test Methods:** Required tests shall be performed in accordance with the following reference methods.

Method	Description of Method and Comments
CTM-027	Procedure for Collection and Analysis of Ammonia in Stationary Source {Notes: This is an EPA conditional test method. The minimum detection limit shall be 1 ppm.}
5, 5B, or 17	Determination of Particulate Matter Emissions from Stationary Sources {Note: For gas firing, the minimum sampling time shall be two hours per run and the minimum sampling volume shall be 60 dscf per run.}
7E	Determination of Nitrogen Oxide Emissions from Stationary Sources
9	Visual Determination of the Opacity of Emissions from Stationary Sources

## SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

### C. GAS TURBINE COMMON CONDITIONS

#### Test Methods, Continued

Method	Description of Method and Comments
10	Determination of Carbon Monoxide Emissions from Stationary Sources {Notes: The method shall be based on a continuous sampling train. The ascarite trap may be omitted or the interference trap of section 10.1 may be used in lieu of the silica gel and ascarite traps.}
18	Measurement of Gaseous Organic Compound Emissions by Gas Chromatography {Note: EPA Method 18 may be used (optional) concurrently with EPA Method 25A to deduct emissions of methane and ethane from the measured VOC emissions.}
20	Determination of Nitrogen Oxides, Sulfur Dioxide and Diluent Emissions from Stationary Gas Turbines
25A	Determination of Volatile Organic Concentrations

Except for Method CTM-027, the above methods are described in 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. Method CTM-027 is published on EPA's Technology Transfer Network Web Site at "<http://www.epa.gov/ttn/emc/ctm.html>". No other methods may be used for compliance testing unless prior written approval is received from the Department.

[Rules 62-204.800 and 62-297.100, F.A.C.; 40 CFR 60, Appendix A]

#### CONTINUOUS MONITORING REQUIREMENTS

5. **CEM Systems:** Each continuous emissions monitoring (CEM) system shall comply with the following requirements:
- CO Monitors.** The CO monitor shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 4. Quality assurance procedures shall conform to the requirements of 40 CFR 60, Appendix F, and the Data Assessment Report of Section 7 shall be made each calendar quarter, and reported semi-annually to each Compliance Authority. The RATA tests required for the CO monitor shall be performed using EPA Method 10, of Appendix A of 40 CFR 60. The Method 10 analysis shall be based on a continuous sampling train, and the ascarite trap may be omitted or the interference trap of Section 10.1 may be used in lieu of the silica gel and ascarite traps.
  - NO<sub>x</sub> Monitors.** Each NO<sub>x</sub> monitor shall be certified pursuant to 40 CFR Part 75 and shall be operated and maintained in accordance with the applicable requirements of 40 CFR Part 75, Subparts B and C. Record keeping and reporting shall be conducted pursuant to 40 CFR Part 75, Subparts F and G. The RATA tests required for the NO<sub>x</sub> monitor shall be performed using EPA Method 20 or 7E, of Appendix A of 40 CFR 60.
  - O<sub>2</sub> or CO<sub>2</sub> Monitors.** The oxygen (O<sub>2</sub>) content or carbon dioxide (CO<sub>2</sub>) content of the flue gas shall also be monitored at the location where CO and/or NO<sub>x</sub> are monitored to correct the measured emissions rates to 15% oxygen. If a CO<sub>2</sub> monitor is installed, the oxygen content of the flue gas shall be calculated by the CEM system using F-factors that are appropriate for the fuel fired. Each O<sub>2</sub> and CO<sub>2</sub> monitor shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 3. Quality assurance procedures shall conform to the requirements of 40 CFR 60, Appendix F, and the Data Assessment Report of Section 7 shall be made each calendar quarter, and reported quarterly to each Compliance Authority. The RATA tests required for the O<sub>2</sub> or CO<sub>2</sub> monitors shall be performed using EPA Method 3B, of Appendix A of 40 CFR 60.



## SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

### C. GAS TURBINE COMMON CONDITIONS

- d. *Data Collection.* Each hourly average value shall be computed using at least one data point in each fifteen-minute quadrant of an hour, where the unit combusted fuel during that quadrant of an hour. Notwithstanding this requirement, an hourly value shall be computed from at least two data points separated by a minimum of 15 minutes (where the unit operates for more than one quadrant of an hour). The permittee shall use all valid measurements or data points collected during an hour to calculate the hourly averages. The CEM system shall be designed and operated to sample, analyze, and record data evenly spaced over an hour. If the CEM system measures concentration on a wet basis, the CEM system shall include provisions to determine the moisture content of the exhaust gas and an algorithm to enable correction of the monitoring results to a dry basis (0% moisture). Alternatively, the owner or operator may develop through manual stack test measurements a curve of moisture contents in the exhaust gas versus load for each allowable fuel, and use these typical values in an algorithm to enable correction of the monitoring results to a dry basis (0% moisture). Final results of the CEM system shall be expressed as ppmvd, corrected to 15% oxygen. The CEM system shall be used to demonstrate compliance with the CEM emission standards for CO and NO<sub>x</sub> as specified in this permit. Upon request by the Department, the CEM systems emission rates shall be corrected to ISO conditions to demonstrate compliance with the applicable standards of 40 CFR 60.332.
- e. *Data Exclusion.* All required emissions data shall be recorded by the CEM systems during episodes of startup, shutdown and malfunction. CO and NO<sub>x</sub> emissions data recorded during such episodes may be excluded from the corresponding compliance-averaging period subject to the conditions specified in Sections III.A and B of this permit. All periods of data excluded for any startup, shutdown or malfunction episode shall be consecutive for each episode. The permittee shall minimize the duration of data excluded for startup, shutdown and malfunctions, to the extent practicable. Data recorded during startup, shutdown or malfunction events shall not be excluded if the startup, shutdown or malfunction episode was caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure, which may reasonably be prevented. Best operational practices shall be used to minimize hourly emissions that occur during episodes of startup, shutdown and malfunction. Emissions of any quantity or duration that occur entirely or in part from poor maintenance, poor operation, or any other equipment or process failure, which may reasonably be prevented, shall be prohibited.
- f. *Data Exclusion Reports.* A summary report of the duration of data excluded from each compliance average calculation, and all instances of missing data from monitor downtime, shall be reported quarterly to each Compliance Authority. This report shall be consolidated with the report required pursuant to 40 CFR 60.7. For purposes of reporting "excess emissions" pursuant to the requirements of 40 CFR 60.7, excess emissions shall be defined to include the hourly emissions which are recorded by the CEM system during periods of data excluded for episodes of startup, shutdown and malfunction, as allowed above. The duration of excess emissions shall include the duration of the periods of data excluded for such episodes. Reports required by this paragraph and by 40 CFR 60.7 shall be submitted no less than quarterly, including periods in which no data is excluded or no instances of missing data occur.
- g. *Notification:* If a CEM system reports CO or NO<sub>x</sub> emissions in excess of an emissions standard, the permittee shall notify each Compliance Authority within one working day with a preliminary report of: the nature, extent, and duration of the excess emissions; the cause of the excess emissions; and the actions taken to correct the problem. In addition, the Department may request a written summary report of the incident.

## SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

### C. GAS TURBINE COMMON CONDITIONS

- h. *Availability.* Monitor availability for CO and NO<sub>x</sub> CEM systems shall be 95% or greater in any calendar quarter. The report required in Appendix XS of this permit shall be used to demonstrate monitor availability. In the event 95% availability is not achieved, the permittee shall provide the Department with a report identifying the problems in achieving 95% availability and a plan of corrective actions that will be taken to achieve 95% availability. The permittee shall implement the reported corrective actions within the next calendar quarter. Failure to take corrective actions or continued failure to achieve the minimum monitor availability shall be violations of this permit.

{Permitting Note: Compliance with these requirements will ensure compliance with the other applicable CEM system requirements such as: NSPS Subpart GG; Rule 62-297.520, F.A.C.; 40 CFR 60.7(a)(5) and 40 CFR 60.13; 40 CFR Part 51, Appendix P; 40 CFR 60, Appendix B - Performance Specifications; and 40 CFR 60, Appendix F - Quality Assurance Procedures.}

[Rules 62-4.070(3) and 62-212.400(BACT), F.A.C.]

#### RECORDS

6. Fuel Sulfur Records: The permittee shall demonstrate compliance with the fuel sulfur specification of this permit by maintaining records of the sulfur content of the natural gas being supplied based on the vendor's analysis for each month of operation. Methods for determining the sulfur content of the natural gas shall be ASTM methods D4084-82, D3246-81 (or more recent versions) in conjunction with the provisions of 40 CFR 75 Appendix D. [Rules 62-4.070(3) and 62-4.160(15), F.A.C.]
7. Monitoring of Operations: To demonstrate compliance with the fuel consumption limits, the permittee shall monitor and record the rates of fuel consumption for each gas turbine in accordance with the provisions of 40 CFR 75 Appendix D. To demonstrate compliance with the turbine capacity requirements, the permittee shall monitor and record the operating rate of each combined cycle gas turbine on a daily average basis, considering the number of hours of operation during each day (including the times of startup, shutdown and malfunction). Such monitoring shall be made using a monitoring component of the CEM system required above, or by monitoring daily rates of consumption and heat content of each allowable fuel in accordance with the provisions of 40 CFR 75 Appendix D. [Rules 62-4.070(3) and 62-212.400(BACT), F.A.C.]
8. Monthly Operations Summary: By the fifth calendar day of each month, the permittee shall record the monthly fuel consumption (million cubic feet of natural gas per month), heat input rates (million BTU per month), and hours of operation for each gas turbine for the previous month. The information shall be recorded in a written (or electronic log) and shall summarize the previous month of operation and the previous 12 months of operation. Information recorded and stored as an electronic file shall be available for inspection and printing within at least three days of a request by the Department. [Rule 62-4.070(3), F.A.C.]

#### REPORTS

9. Semi-Annually Excess Emissions Reports: Following the NSPS format provided in Appendix XS of this permit, emissions shall be reported as "excess emissions" when emission levels exceed the standards specified in this permit (including periods of startup, shutdown and malfunction). Within 30 days following the end of the six month period, the permittee shall submit a report to the Compliance Authority summarizing periods of excess emissions, periods of data exclusion, and CEMS systems monitor availability for the previous six month period.  
[Rules 62-4.130, 62-204.800, 62-210.700(6), F.A.C.; and 40 CFR 60.7]

### SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

#### D. OTHER EMISSIONS UNITS

This permit authorizes installation of the following emissions units.

ID	Emission Unit Description
004	<b>Cooling Tower</b> : One 5-cell mechanical draft fresh water cooling tower.
005	<b>Other Emissions Units</b> : One 2600 hp diesel generator, one 250 hp diesel fire pump, aqueous ammonia storage tank, a 12.8 MMBtu/hr (HHV) gas-fired fuel heater and two diesel fuel storage tanks (each less than 1000 gallons).

1. Cooling Tower: BACT for the Cooling Tower was determined to be the use of fresh water and drift eliminators designed and maintained to reduce drift to 0.0005 percent of the circulating water flow rate. {Permitting Note: Potential emissions in tons per year are expected to be less than 1.64 for PM and 0.99 for PM<sub>10</sub>}.
2. 2600 HP Diesel Generator: This unit is specifically exempted from permitting and BACT requirements according to Rules 62-210.300 (3) and 62-210.300 (3)(a)20. F.A.C., provided that fuel oil use does not exceed 32,000 gallons per year. The unit will be fired with No. 2 diesel fuel with a maximum sulfur content of 0.05%. {Permitting Note: Potential emissions in tons per year are expected to be less than 0.12 for PM, 3.26 for NO<sub>x</sub>, 0.73 for CO, 0.07 for SO<sub>2</sub> and 0.18 for TOC (total organic carbons)}.
3. 12.8 MMBtu/hr Gas-fired Natural Gas Fuel Heater: This unit is specifically exempted from permitting and BACT requirements according to Rules 62-210.300 (3) and 62-210.300 (3)(a)2 F.A.C., Categorical Exemptions. This unit is subject to applicable provisions of 40 CFR 60, Subpart Dc. New Source Performance Standards for Small Industrial-Commercial-Institutional Steam Generating Units.
4. 250 HP Diesel Fire Pump: This unit is specifically exempted from permitting and BACT requirements according to Rules 62-210.300 (3) and 62-210.300 (3)(a)21 F.A.C., Categorical Permit Exemptions. The unit will be fired with No. 2 diesel fuel with a maximum sulfur content of 0.05%. {Permitting Note: Potential emissions in tons per year are expected to be less than 0.013 for PM, 0.74 for NO<sub>x</sub>, 0.18 for CO, 0.0014 for SO<sub>2</sub> and 0.08 for TOC (total organic carbons)}.
5. Aqueous Ammonia Storage Tank: This unit will contain less than a 20 percent concentration of aqueous ammonia by volume and therefore is not subject to applicable provisions of 40 CFR 68, Chemical Accident Provisions.
6. Two Diesel Fuel Storage Tanks (each less than 1000 gallons): This unit is specifically exempted from permitting and BACT requirements according to Rules 62-210.300 (3) and 62-210.300 (3)(b)(iv) F.A.C., Generic and Temporary Exemptions.



Jeb Bush  
Governor

John O. Agwunobi, M.D., M.B.A.  
Acting Secretary

September 19, 2001

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SEP 24 2001

BUREAU OF AIR REGULATION

Mr. A. A. Linero, P.E.  
Bureau of Air Regulation, Mail Station #5505  
Florida Department of Environmental Protection  
Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

Re: DEP File No. 0990594-001-AC  
Belle Glade Energy Center  
Palm Beach County, Florida

Dear Al,

Please be advised that the Health Department received the Draft Permit and associated attachments on September 14, 2001 and has completed its initial review of the documents. Based on the review, the Health Department offers the following comments:

1. On the issue of "Gross" versus "Net" generating capacity from the steam turbine (Public Notice & Condition III.A.9.), the Health Department is aware that DEP's Siting Office recently determined that new facilities can be exempted from the Power Plant Siting Act provided the "net" steam capacity is below 75 megawatts. The Health Department suggests that the permit reflect "net" capacity for both consistency and environmental purposes.
2. On the issue of the maximum sulfur content of the natural gas (Conditions III.A.6. and III.B.6.), the Health Department believes that these limits are not enforceable by the compliance authority based on the compliance method (Condition III.C.6.). As proposed, compliance is based on monthly records and vendor data. It is suggested that the permit specify the ASTM methods as the reference methods. This will allow the compliance authority to collect samples and enforce the limits.
3. On the issue of power augmentation (Condition III.A.8.), the Health Department suggests that the relaxation on the hours of operation be tied to a performance standard versus installation of an oxidation catalyst. This is suggested since the amount of catalyst installed plays a significant role in the overall reduction efficiency of the system. Without specifying a performance standard, the permittee could install 3 grams of catalysts with no reduction in emissions and request relaxation of the restriction.
4. The CO emission standards (Conditions III.A.11 and III.B.8.) for normal operation do not appear to reflect the limitations described in the BACT determination (7.4 vs. 8 ppmvd). It is also suggested that the emission limitations clearly state whether or not emissions associated with startup, shut down, or malfunction are included. If excluded, the standard should include an annual cap on emissions. The Health Department also believes that CEMS on the SCGTs should be required given the large number of allowed operating hours each year and the potential for numerous startups.
5. The NOx emission standards (Conditions III.A.12 and III.B.9.) like the CO standards should clearly state whether or not emissions associated with start-up, shut down, or malfunction are included. If excluded, the standard should include an annual cap on emissions. The NOx emission limitations and limits on hours of operation do not reflex the NOx emissions reported in the Public Notice (375 vs. 365).

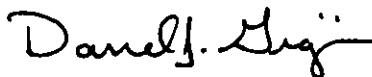
6. The VOC emission standards (Conditions III.A.16. and III.B.12.) are not consistent. For the CCGT, efficient combustion and good operating practices are listed BACT. For the SCGTs, emission limitations have been established and an initial compliance test required based on avoiding BACT. It is suggested that the proposed standards apply to both the CCGT and SCGT and that based on emissions, initial and renewal testing required as specified by the Department's rules. The special compliance testing can be a condition of the permit as well.
  7. Excess visible emissions (Conditions III.A.17.a. and III.B.13.a.) during startup and shutdown appear to be excessive for natural gas fired units, specifically the SCGTs. In addition, the allowed time period (ten 6-minute periods) is not consistent with the allowed startup and shutdown periods. It is suggested that if excess visible emissions will be allowed by the Department that the condition read as follows:  
  
Visible Emissions: Visible emissions in excess of 10% opacity shall be allowed during periods of startup and shutdown, as defined in Condition III.A.17.d., provided best operational practices are followed to minimize all emissions and visible emissions do not exceed 20% opacity. Visible emissions in excess of 10% opacity shall be allowed during periods of malfunctions, as defined in Condition III.A.17.d. or III.B.13.d., provided best operational practices are followed to minimize all emissions.
  8. Excess NOx emissions (Conditions III.A.17.d and III.B.13.d.) for the different periods are understandable for the CCGT but not the SCGTs. For the SCGTs, the exclusion of excess emissions associated with startup and shutdown for a 2-hour period (assumed to be on a per day basis) is acceptable. However, allowing a 3-hour exclusion during periods outside startup or shutdown is not nor is there justification. For malfunctions, excess emissions should be allowed provided best operating practices are followed.
  9. Section III.D. addresses the other emission units (Cooling Tower, Diesel Generator, Gas Fuel Heater, Fire Pump, NH3 Tank, and Fuel Oil Tanks) at the source. Under the PSD regulations, PSD review and BACT apply to each emission unit that emits a pollutant for which the source emits above the significance thresholds. The Department has applied the BACT requirement to the cooling tower for PM and PM10 emissions as would be expected even though the potential emissions are below the Generic Exemption level of Rule 62-210.300(3)(b), F.A.C. However, for the diesel generator, gas fuel heater, and the fire pump, all sources of NOx, CO, SO<sub>2</sub> and PM/PM10 the Department has permitted the exemption of the units and not determined BACT as required.  
  
Review of Rule 62-210.300(3), F.A.C. appears to exempt units from the permitting requirements of Chapter 62-212. However, the exemptions do not apply if the emissions unit is subject to any unit-specific applicable requirement. The unit-specific applicable requirements in this case include PSD review, BACT, and the conditions of the proposed PSD Permit. It is suggested that the Department redraft the section but address the exemption limitations as BACT.
  10. Cooling Tower (Condition III.D.1.) BACT limitations are not enforceable by the compliance authority from a practical standpoint. It is suggested that the condition include a limitation on total dissolved solids within the cooling tower water since the solids play a significant role in PM/PM10 emissions.
  11. Diesel Generator (Condition III.D.2.) is not exempt from PSD permitting or BACT. It is suggested that the Department deem the exemption criteria as BACT.
  12. Gas Fuel Heater (Condition III.D.3.) is not exempt from PSD permitting or PSD BACT. It is suggested that the Department deem Natural Gas firing as BACT for PM/PM10 and SO<sub>2</sub> and good combustion practices as BACT for NOx and CO. The condition should also limit fuel firing to clean pipeline quality natural gas to ensure compliance with the NSPS Subpart Dc requirements.
  13. Diesel Fire Pump (Condition III.D.4.) is not exempt from PSD permitting or BACT. It is suggested that the Department deem the exemption criteria as BACT.
  14. NH3 and Fuel Oil Tanks (Conditions III.D.5. and III.D.6.) are not subject to any unit-specific applicable requirements, are not subject to BACT review, and have emissions below the generic exemption levels. It is suggested that the Department delete the conditions.
  15. Appendix BD, page BD-7, paragraph 1, last sentence references fuel oil firing. It is suggested that the reference be deleted since the units are limited to firing natural gas.
-

16. Appendix BD, page BD-8, NOX Control Techniques, Wet Injection addresses fuel oil firing. It is suggested that the reference be deleted since the units are limited to firing natural gas.
17. Appendix BD, page BD-11 paragraph 2, references installation of a XONON system on a unit by the summer of 2001. The summer of 2001 is about to pass and it would be more appropriate for the Department to update the statement regarding actual installation of the system.
18. Appendix BD, page BD-11 paragraph 3 references fuel oil firing. It is suggested that the reference be deleted since the units are limited to firing natural gas.
19. Appendix BD, page BD-15, last paragraph contains a typo "establishment of establishment of startup..."
20. Appendix BD, page BD-16 paragraph 6 (full paragraph) states that "...startup emissions will not cause annual emissions greater than the potential-to-emit under continuous operation." If this is the case, it is suggested that the Department cap annual CO and NOx emissions from the facility.
21. Appendix BD, page BD-18, second bullet contains a typo "...Hot SCR is not be cost-effective..."
22. Appendix BD, page BD-19, fifth bullet references the North Broward County Resource Recovery Facility which is a significant distance from the proposed Belle Glade facility.
23. Appendix BD, page BD-19, sixth bullet references only Dry Low NOx for the CCGT when it is the combination of DLN and SCR that achieves the 0.07 lb/MWH performance.
24. Appendix BD, page BD-19, seventh and eighth bullets establish a work practice standard for the startup of the CCGT that includes use of a by-pass stack or duct. These requirements did not appear as permit conditions. It is suggested that if the Department establishes a work practice that the permit reflect the requirements as permit conditions.

If you have any questions, please contact me at the telephone numbers given below.

Sincerely,

For the Division Director  
Environmental Health and Engineering



Darrel J. Graziani, PE  
Air Pollution Control Section  
Phone: (561) 355-3136, ext. 1142  
Fax: (561) 804-9405

cc: I. Goldman, FDEP-Southeast District



Environmental Consulting & Technology, Inc.

September 19, 2001

SENT VIA OVERNIGHT MAIL ON SEPTEMBER 19, 2001

Mr. A.A. Linero, P.E.  
Administrator, New Source Review Section  
Florida Department of Environmental Protection  
Division of Air Resources Management  
111 S. Magnolia Drive, Suite 23  
Tallahassee, FL 32301

RECEIVED

SEP 20 2001

BUREAU OF AIR REGULATION

Re: El Paso Merchant Energy Company  
DEP File No. 0990594-001-AC (PSD-FL-317)  
Belle Glade Energy Center  
Public Notice Affidavit

Dear Mr. Linero:

The Public Notice of the draft Department Prevention of Significant Deterioration (PSD) permit for the Belle Glade Energy Center was published in The Palm Beach Post on September 14, 2001. A copy of the newspaper's affidavit of publication is attached.

Please contact the undersigned at (352) 332-6230, Ext. 351 if there are any questions regarding this notice.

ENVIRONMENTAL CONSULTING & TECHNOLOGY, INC.

*Thomas W. Davis*

Thomas W. Davis, P.E.  
Principal Engineer

Attachment

cc: Mr. Krish Ravishankar, El Paso

*J. Neuman ✓*  
*C. Halladay ✓*  
*G. Starnes, PBCHD ✓*  
*D. Goldman, DEP SED ✓*  
*B. Worley, EPA ✓*  
*G. Beatty, NPS ✓*

3701 Northwest  
98th Street  
Gainesville, FL  
32606

(352)  
332-0444

FAX (352)  
332-6722

# THE PALM BEACH POST

Published Daily and Sunday  
West Palm Beach, Palm Beach County, Florida

## PROOF OF PUBLICATION

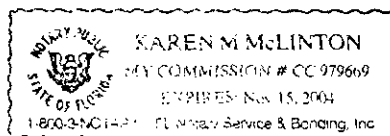
STATE OF FLORIDA  
COUNTY OF PALM BEACH

Before the undersigned authority personally appeared **Tyler Dixon**, who on oath says that is **Classified Advertising Manager, Inside Sales** of **The Palm Beach Post**, a daily and Sunday newspaper published at West Palm Beach in Palm Beach County, Florida; that the attached copy of advertising, being **Notice** in the matter of **Ref No. 0009640300 Intent to issue air construction permit** in the --- Court, was published in said newspaper in the issues of **September 14, 2001.**

Affiant further says that the said The Post is a newspaper published at West Palm Beach, in Palm Beach County, Florida, and that the said newspaper has heretofore been continuously published in said Palm Beach County, Florida, daily and Sunday and has been entered as a first class mail matter at the post office in West Palm Beach, in said Palm Beach County, Florida, for a period of one year next preceding the first publication of the attached copy of advertising and affiant further says that she/he has neither paid nor promised any person, firm or corporation any discount rebate, commission or refund for the purpose of securing this advertisement's publication in the said newspaper.

Sworn to and subscribed before this 14<sup>th</sup> day of September, A.D. 2001

Personally known XX or Produced Identification \_\_\_\_\_  
Type of Identification Produced \_\_\_\_\_





**NO. 351967**  
**PUBLIC NOTICE OF INTENT TO ISSUE**  
**AIR CONSTRUCTION PERMIT**

**STATE OF FLORIDA**  
**DEPARTMENT OF ENVIRONMENTAL PROTECTION**  
**DEP File No. 0990594-001-AC (PSD-FL-317)**  
**El Paso Belle Glade Energy Center**  
**Palm Beach County**

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit under the requirements for the Prevention of Significant Deterioration (PSD) of Air Quality to El Paso Merchant Energy Company. The permit is to construct a nominal 600-megawatt (MW) natural gas-fueled power plant 0.33 Miles East of SR 80, South of Curlee Road in Belle Glade, Palm Beach County. A Best Available Control Technology (BACT) determination was required for sulfur dioxide (SO<sub>2</sub>), particulate matter (PM/PM<sub>10</sub>), nitrogen oxides (NO<sub>x</sub>), sulfuric acid mist (SAM), and carbon monoxide (CO) pursuant to Rule 62-212.400, F.A.C. The applicant's name and address are El Paso Merchant Energy Company, 1001 Louisiana Street, Houston, Texas 77002.

El Paso proposes to construct three nominal 175-MW General Electric PG7241FA natural gas-fired combustion turbine-electrical generators. Two of the units will operate in simple cycle mode and intermittent duty. The other unit will operate in combined cycle mode and will include an unfired heat recovery steam generator and a separate steam-electrical generator.

Additional equipment includes three 135-foot stacks, a five-cell mechanical draft fresh water cooling tower, a 2,600-horsepower (hp) emergency diesel-fired electrical generator, a 250-hp emergency diesel-fired fire water pump, a natural gas fired heater, an aqueous ammonia storage tank, and raw and demineralized water storage tanks.

NO<sub>x</sub> emissions will be controlled by Dry Low NO<sub>x</sub> (DLN-2.6) combustors. The two simple cycle units must meet an emission limit of 9 parts per million by volume, dry, at 15 percent oxygen (ppmvd @ 15% O<sub>2</sub>). NO<sub>x</sub> emissions from the combined cycle unit will be further controlled by selective catalytic reduction (SCR) to achieve 2.5 ppmvd at 15% O<sub>2</sub>. Emissions of CO will be controlled to 8 ppmvd @ 15% O<sub>2</sub> except during periods of power augmentation when the limit for the combined cycle unit will be 12 ppmvd @ 15% O<sub>2</sub>.

Emissions of PM/PM<sub>10</sub>, SO<sub>2</sub>, sulfuric acid mist, volatile organic compounds, and hazardous air pollutants (HAP) will be controlled to very low levels by good combustion and use of inherently clean pipeline quality natural gas. Ammonia emissions (NH<sub>3</sub>) generated due to NO<sub>x</sub> control on the combined cycle unit will be limited to 5 ppmvd.

The combined maximum emissions from the three units in tons per year are summarized below. These include the minor emissions from the emergency diesel engines and the cooling towers.

Pollutant	Maximum Potential Emissions	PSD Significant Emission Rate
PM/PM <sub>10</sub> (filterable plus condensable)	181	25/15
CO	349	100
NO <sub>x</sub>	365	40
VOC	29	40
SO <sub>2</sub>	69	40
Sulfuric Acid Mist	10	7

Maximum predicted air quality impacts due to emissions from the El Paso project are less than the applicable PSD Class II significant impact levels, with the exception of 24-hour average PM<sub>10</sub>. Therefore, multi-source modeling was required for PM<sub>10</sub>. The maximum predicted PSD Class II PM<sub>10</sub> increments consumed in Palm Beach County by incremental consuming sources (since 1975-77) within 50 km of the project, will be as follows:

Averaging Time	All Sources/El Paso Project		All Sources/El Paso Project	
	(ug PM <sub>10</sub> /m <sup>3</sup> )	(percent)	(ug PM <sub>10</sub> /m <sup>3</sup> )	(percent)
24-hour	14/4		30	47/13

Maximum predicted air quality impacts due to emissions from the El Paso project are less than the applicable PSD Class I significant impact levels.

A CALPUFF modeling analysis for the El Paso project was submitted by the applicant to the National Park Service (NPS). On the basis of the submittal, NPS advised the Department that it "does not anticipate that the emissions from the proposed facility will have any significant impacts on resources at the Everglades National Park."

Based on the required analyses, the Department has reasonable assurance that the proposed project will not cause or significantly contribute to a violation of any ambient air quality standard or PSD increment.

The project is not subject to Section 403.501-518, F.S., Florida Electrical Power Plant Siting Act, based on information regarding gross electrical power generated from the steam cycle submitted by the applicant and reviewed by the Department.

The Department will issue the FINAL Permit, in accordance with the conditions of the DRAFT Permit, unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments and requests for a public meeting concerning the proposed permit issuance action for a period of 30 (thirty) days from the date of publication of this Public Notice of Intent to Issue Air Construction Permit. Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below. Mediation is not available in this proceeding.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how and when the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

A complete project file is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m.; Monday through Friday, except legal holidays, at:

Dept. of Environmental Protection Bureau of Air Regulation 111 S. Magnolia Drive, Suite 4	Dept. of Environmental Protection Southeast District Office 400 North Congress Avenue	Palm Beach County Health Department 901 Evernia Street Post Office Box 20
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of terms or conditions.

The Department will accept written comments and requests for a public meeting concerning the proposed permit issuance action for a period of 30 (thirty) days from the date of publication of this Public Notice of Intent to Issue Air Construction Permit. Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

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A petition that disputes the material facts upon which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

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Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

A complete project file is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m.;

Monday through Friday, except legal holidays at: Dept. of Environmental Protection Bureau of Air Regulation 111 S. Magnolia Drive, Suite 4 Tallahassee, Florida 32301 Telephone: 850/488-0114 Fax: 850/922-6979	Dept. of Environmental Protection Southeast District Office 400 North Congress Avenue West Palm Beach, Florida 33416 Telephone: 561/681-6600 Fax: 561/681-6755	Palm Beach County Health Department 901 Evernia Street Post Office Box 29 West Palm Beach, Florida 33402-0029 Telephone: 561/355-3070 Fax: 561/355-2442
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The complete project file includes the application, technical evaluations, Draft Permit, and the information submitted by the responsible official, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Administrator, New Resource Review Section at 111 South Magnolia Drive, Suite 4, Tallahassee, Florida 32301, or call 850/488-0114, for additional information. The draft permit, technical evaluation and preliminary BACT determination can be accessed at <http://www.myflorida.com/licensing/permitting/learn/environment/air/airpermit.html>

**PUBLISH: September 14, 2001**

Florida Department of  
Environmental Protection

Memorandum

---

TO: Clair Fancy  
THRU: Al Linero *alg* 9/6  
FROM: Teresa Heron  
DATE: September 6, 2001  
SUBJECT: El Paso Belle Glade Energy Center  
: 600 Megawatt Gas-fueled Power Plant  
Combustion Turbines  
DEP File No. 0990594-001-AC (PSD-FL-317)

Attached is the public notice package for construction of a 600 MW gas-fueled power plant in Belle Glade. The plant will consist of a 250 MW combined cycle and two intermittent duty, simple cycle, 175 MW GE 7FA combustion turbines. Ancillary facilities include inlet air chillers, one 5-cell freshwater mechanical draft cooling tower, a gas-fired heater, one 2600-hp diesel generator, one 250-hp diesel fire pump, aqueous ammonia storage tank, two 500 gallons diesel storage tanks, and three (possibly 4) 135-foot stacks.

Nitrogen Oxides (NO<sub>x</sub>) emissions from the gas turbine will be controlled by Dry Low NO<sub>x</sub> (DLN-2.6) combustion. The applicant proposed an NO<sub>x</sub> emission limit of 3.5 (combined cycle) and 9 ppmvd (simple cycle) @15% O<sub>2</sub>. The NO<sub>x</sub> BACT standard has been determined to be 2.5 ppmvd @15% O<sub>2</sub> in a 24-hr average time. The simple cycle units are limited to 5,000 hour per year per unit. The turbines will burn natural gas only. Emissions of carbon monoxide, volatile organic compounds, sulfur dioxide, sulfuric acid mist, and particulate matter (PM/PM<sub>10</sub>) will be very low because of the inherently clean pipeline quality natural gas and the design of the GE unit.

Maximum predicted air quality impacts due to emissions from the El Paso project are less than the applicable PSD Class II significant impact levels, with the exception of 24-hour average PM<sub>10</sub>. Therefore, multi-source modeling was required for PM<sub>10</sub>. The modeling showed that the available increment has not been consumed. The National Park Service reviewed the refined modeling performed by the applicant, including regional haze in the Class I Everglades National Park. NPS advised that it "does not anticipate that the emissions from the proposed facility will have any significant impacts on resources at the Everglades National Park."

We included startup and shutdown considerations. We gave El Paso the opportunity to review and comment on the Work Practice proposal. They did not see a problem, but obviously reserve the right to comment during the 30-day comment period.

September 9 (Sunday) will be Day 74. I recommend your approval of the attached Intent to Issue.

AAL/th

Attachments



# Department of Environmental Protection

Jeb Bush  
Governor

Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

David B. Struhs  
Secretary

## P.E. Certification Statement

**Permittee:**

DEP File No. 0990594-001-AC (PSD-FL-317)

El Paso Merchant Energy Company  
Belle Glade Energy Center  
Palm Beach County

**Project type:**

Project is construction of a 600 MW gas-fueled power plant consisting of three nominal 175-megawatt (MW) General Electric PG 7241FA combustion turbine-electrical generators .

Two of the units will operate in simple cycle mode and intermittent duty while the third will operate in combined cycle and continuous duty. The units will exhaust through separate 135-foot stacks. The units will be fired exclusively with pipeline natural gas. El Paso proposes to operate the simple cycle units up to 5,000 hours per year per unit.

The simple cycle units must meet a BACT nitrogen oxides limit of 9 parts per million by volume, dry, at 15% oxygen (ppmvd). The combined cycle unit must meet a limit of 2.5 ppmvd @15% O2 on a 24-hour basis by installing a selective catalytic reduction system. Other pollutants, including particulate matter (PM/PM<sub>10</sub>), carbon monoxide, volatile organic compounds, sulfur dioxide, and sulfuric acid mist will be controlled by good combustion and use of pipeline quality natural gas.

Projected impacts from the proposed project emissions are all less than the applicable significant impact limits (SILs) corresponding to the nearest Class I area (Everglades National Park). Except for PM<sub>10</sub>, projected impacts are less than the applicable SILs corresponding to Class II areas (e.g. all of Broward County). The project will not cause or contribute to a violation of any National Ambient Air Quality Standard or Increment. The National Park Service advised the Department that it "does not anticipate that the emissions from the proposed project will have any significant impacts on resources at the Everglades National Park."

*I HEREBY CERTIFY that the engineering features described in the above referenced application and subject to the proposed permit conditions provide reasonable assurance of compliance with applicable provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 62-4 and 62-204 through 62-297. However, I have not evaluated and I do not certify aspects of the proposal outside of my area of expertise (including but not limited to the electrical, mechanical, structural, hydrological, and geological features).*

 9/5/01

A A. Linero, P.E.

Date

Registration Number: 26032

Department of Environmental Protection

Bureau of Air Regulation

New Source Review Section

111 South Magnolia Drive, Suite 4

Tallahassee, Florida 32301

Phone (850) 921-9523

Fax (850) 922-6979

244 9/5

"More Protection, Less Process"

FLORIDA ELECTRICAL POWER PLANT SITING ACT APPLICABILITY  
DETERMINATION

El Paso Belle Glade Center

The meaning of electrical power plant, for the purpose of certification under the act “does not include any steam or solar electrical generating facility of less than 75 megawatts in capacity unless the applicant for such a facility elects to apply for certification under this act.” [403.503(13), F.S.]

“The provisions of the act shall apply to any electrical power plant as defined herein, except that the provisions of this act shall not apply to any electrical power plant or steam generating plant of less than 75 megawatts in capacity .....” [403.506(1), F.S.]

A combined cycle plant consists of two cycles. The first is the gas turbine cycle, also known as the *Brayton Cycle*. The second is the steam turbine or *Rankine Cycle*. [Steam, its Generation and Use, Babcock & Wilcox, 1992]

For combined cycles, the Department considers the Act to apply only when electricity generated from the electrical generator operated on the Rankine cycle equals or exceeds 75 MW, not including the separate electrical generator operated on the Brayton cycle.

In past permitting actions, the Department has accepted operational limitations on the gross electrical output from the steam turbine-electrical generator as the measure of capacity. [Okeelanta Cogeneration, Destec Tiger Bay, CPV Pierce]

The Department requires a clear description of the manner by which electrical power from the steam turbine-electrical generator will be limited to less than 75 MW.

The Department received an application from El Paso Merchant Energy Company for the Belle Glade Energy Center on March 28, 2001. The application included a copy of a letter from the Department dated August 25, 2000 acknowledging that the configurations proposed by Coastal (now El Paso) have the ability to equal or exceed 75 MW and requiring that any permit application to the Department “include description of engineering devices to limit delivery to the steam turbine” and “monitoring of the electric generation rate on a rolling hourly average to demonstrate that 75 MW is not equaled or exceeded.”

El Paso submitted a letter dated June 26, 2001 in response to the Department’s request for additional information following receipt of the application. El Paso stated the following:

*“The steam turbine electrical generator (STG) planned for the Belle Glade Energy Center (BEC) combined cycle (CC) unit will have a maximum generating capacity of 120 megawatts (MW). The CC unit will have a modern distributed control system (DCS) that will serve as a means to control STG operation utilizing plant instrumentation and equipment. In conjunction with the steam turbine governor, a control management system will be implemented that will limit the STG output to less than 75 MW. The power output of the STG will be recorded on the plant DCS for records purposes and reporting needs as required. The CC unit will feature hardware provisions that will allow diversion of steam produced by the heat recovery steam generator (HRSG) from the STG thereby*

limiting its output. The main hardware features that will limit STG electrical output include CTG steam mass augmentation, STG controls, and a STG steam bypass system. Each of the systems is described in the following sections.

#### **A. CTG Steam Mass Flow Augmentation**

- *The CC unit CTG will incorporate steam injection nozzles and design features that will allow a portion of the high-pressure steam generated by the HRSG to be diverted from the STG to the CTG. This introduction of steam to the CTG allows for a mass flow enhancement. The increased mass flow that results from steam injection will increase CTG output as well as fuel consumption. At ambient temperatures of about 50°F or less, steam mass flow augmentation will be limited by CTG equipment limitations. For instance, CTG backpressures could increase to levels beyond those recommended by the vendor. At these colder ambient temperature conditions, steam injection into the CTG will be curtailed and alternate means of steam diversion from the STG will be called on to a greater extent.*
- *The specifics of the limitations on CTG steam injection will be developed by the CTG vendor. Additionally, the specifics of steam introduction will be developed in conjunction with the CTG control systems for proper coordination with the dry low-NO<sub>x</sub> (DLN) combustor control algorithms.*
- *Steam flow to the CTG steam injection nozzles, including CTG control integration, will be controlled from a signal generated within the DCS. This control signal will operate a control valve that regulates steam flow by modulation of the valve seat or opening area thereby allowing steam flow modulation.*
- *Steam flow to the CTG injection nozzles will be measured with classical steam flow measurement devices such as an orifice plate or an annubar. The steam flow measurement device will have a differential pressure transmitter attached to pressure sensing lines that will monitor the process and produce a proportional 4-20 milliamp (ma) signal that will tie in to the plant DCS. This signal will be converted to flow and signals will be transmitted to the CTG combustion control systems as well as to the balance of the plant DCS. During base load operations, the steam flow to the CTG injection nozzles will likely be a fixed steam mass flow or fixed percent of CTG mass flow. Injection of steam will occur at 100 percent load only. During upsets/startups and conditions such as low ambient temperatures, the steam flow will be controlled to coordinate with CTG combustion control to allow stable operation and avoid surge and stall within the CTG. During these periods, alternate STG steam diversion paths will be used.*

### **B. Steam Turbine Generator (STG) Controls**

- *The STG will be fitted with an electronic governor and control system that will control the steam flow into the STG and hence the STG electrical output. Additional instrumentation will be used to adjust this control loop. For instance, condenser back pressure, intermediate pressure and low pressure steam flows, steam temperatures and pressure will each have a significant impact on the determination of the proper steam flow to the STG.*
- *The primary measurement of STG electrical output will be the main input to the STG governor control loops. This power measurement will be feed to the STG governor to compare to the primary set point. As an example, the primary set point may have a value of 74.9 MW. Following control system tuning, the set point will be adjusted to allow for control swings and upsets such that the hourly STG electrical production average will never exceed 75 MW.*

### **C. STG Steam Bypass System**

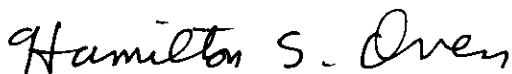
- *Whenever steam to the CTG injection nozzles and to all other locations are not sufficient to reduce STG output to the set point, the primary means of final control will be a STG steam bypass system. The STG steam bypass system will allow steam flow from the HRSG to bypass the STG and "dump" directly into the condenser. The DCS will generate a final control signal that will modulate this steam dump. A CC plant typically includes this hardware to allow for steam dumping during upsets or malfunctions. Additional control signals and associated hardware will regulate this dump steam as the final means of disposal of excess HRSG steam. In addition, an economizer bypass system may be used to reduce the flow of water passing through the economizer stage of the HRSG, which will reduce the flow-of steam produced.*

*The control systems described above will typically scan each instrument every second and recalculate and update the status and driving signals going to each field device. Following control system tuning, the control systems will regulate STG output to the required level.*

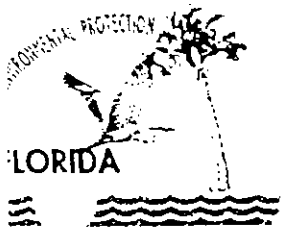
The Department accepts El Paso's operational description and concludes that the Belle Glade Energy Center project is not subject to the Florida Electrical Power Plant Siting Act.

 9/15

A. A. Linero, P.E. Administrator  
New Source Review Section



Hamilton Oven, P.E. Administrator  
Power Plant Siting Office



Jeb Bush  
Governor

# Department of Environmental Protection

Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

David B. Struhs  
Secretary

August 25, 2000

David M. Sims  
Regional Managing Director  
Coastal Power Company  
Coastal Tower  
Nine Greenway Plaza  
Houston, Texas 77046-0995

Dear Mr. Sims:

I have reviewed the combined cycle power plant configuration attached to your letter of August 23, 2000. Such a power plant could be exempt from the provisions of the Florida Electrical Power Plant Siting Act provided the steam turbine capacity is limited or restricted to less than 75 megawatts gross capacity. Since the configurations shown have the ability to equal or exceed 75 MW, any permit application to the department will have to include description of engineering devices to limit the steam delivery to the steam turbine. Additionally, the department will require the monitoring of the electric generation rate on a rolling hourly average to demonstrate that 75 MW is not equaled or exceeded.

Sincerely,

*Hamilton S. Over*  
Hamilton S. Over, P.E.  
Administrator, Siting  
Coordination Office

Cc: Scott Goorland  
Clair Fancy  
Al Linero