

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301



BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: POWER GENERATION FACILITIES [] New¹ [X] Existing¹
APPLICATION TYPE: [] Construction [] Operation [] Modification [X] AMENDMENT
COMPANY NAME: FLORIDA POWER AND LIGHT COMPANY COUNTY: MARTIN
Identify the specific emission point source(s) addressed in this application (i.e. Line
Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) SEE ATTACHMENT A
SOURCE LOCATION: Street SR 710, 5 miles NW of Indiantown City INDIANTOWN
UTM: East 542.87 North 2992.43
Latitude 27 ° 03 ' 18 "N Longitude 80 ° 34 ' 02 "W
APPLICANT NAME AND TITLE: FLORIDA POWER AND LIGHT COMPANY
APPLICANT ADDRESS: JEN/GB PO BOX 088801, NORTH PALM BEACH, FL 33408-8801

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

4. APPLICANT

I am the undersigned owner or authorized representative* of FLORIDA POWER & LIGHT COMPANY
AN AMENDMENT OF PSD-FL-146

I certify that the statements made in this application for a permit are true, correct and complete to the best of my knowledge and belief. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed: _____

NANCY H. ROEN, DIRECTOR
Name and Title (Please Type)

Date: 1/29/93 Telephone No. 407-625-7610

5. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that

See Florida Administrative Code Rule 17-2.100(57) and (104)

the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed *William L. Yeager*
WILLIAM L. YEAGER
Name (Please Type)
FPL FLORIDA POWER & LIGHT COMPANY
Company Name (Please Type)
SR 710 5 miles NW of Indiantown 34956
Mailing Address (Please Type)

William L. Yeager

Florida Registration No. PE0041272 Date: Feb. 1, 1993 Telephone No. (407) 597-7108

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

SEE ATTACHMENT A

B. Schedule of project covered in this application (Construction Permit Application Only)
AUXILIARY BOILER AND DIESEL GENERATOR
Start of Construction May 1993 Completion of Construction June 1994

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

THE COST OF POLLUTION CONTROL SYSTEM(S) FOR THIS TYPE OF PROJECT IS
EMBEDDED IN THE COST OF THE EMISSION SOURCE SINCE THE POLLUTION CONTROL
SYSTEM(S) ARE INTEGRAL PART(S) OF THE DESIGN AND OPERATION OF THE
AUXILIARY BOILER AND DIESEL GENERATOR

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

PSD-FL-146 issued 6/5/91

SITE CERTIFICATION PA 89-27 issued 2/21/91

E. Requested permitted equipment operating time: hrs/day 24; days/wk 7; wks/yr 52; if power plant, hrs/yr 8760; if seasonal, describe: SEE ATTACHMENT A

F. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? NO
a. If yes, has "offset" been applied? _____
b. If yes, has "Lowest Achievable Emission Rate" been applied? _____
c. If yes, list non-attainment pollutants. _____

2. Does best available control technology (BACT) apply to this source? NO
If yes, see Section VI.

3. Does the State "Prevention of Significant Deterioration" (PSD) requirement apply to this source? If yes, see Sections VI and VII. NO

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? YES*

5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? NO

H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source? NO

a. If yes, for what pollutants? _____

b. If yes, in addition to the information required in this form, any information requested in Rule 17-2.650 must be submitted.

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

* AUXILIARY BOILER ONLY 40 CFR 60 Subpart Dc

FOR DETAILED INFORMATION REGARDING THE MARTIN CG/CC PROJECT, REFER TO THE PSD PERMIT APPLICATION CONTAINED IN SECTION 10.1.5 OF THE SITE CERTIFICATION APPLICATION AS FILED WITH DER IN DECEMBER, 1989.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

NOT APPLICABLE

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): _____

2. Product Weight (lbs/hr): _____

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

SEE ATTACHMENT A

Name of Contaminant	Emission ¹		Allowed ² Emission Rate per Rule 17-2	Allowable ³ Emission lbs/hr	Potential ⁴ Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/yr	T/yr	

¹See Section V, item 2.

²Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

³Calculated from operating rate and applicable standard.

⁴Emission, if source operated without control (See Section V, Item 3).

J. Control Devices: (See Section V, Item 4) SEE ATTACHMENT A

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
AUX BOILER GAS		0.016 MMCF/hr	16.3
DIESEL GENERATOR OIL		43.5 gal/hr	5.0

*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.

Fuel Analysis: SEE TABLE 2-10 & 2-11. ORIGINAL PSD APPLICATION (SCA SECTION 10.1.5)

Percent Sulfur: _____ Percent Ash: _____

Density: _____ lbs/gal Typical Percent Nitrogen: _____

Heat Capacity: _____ BTU/lb _____ BTU/gal

Other Fuel Contaminants (which may cause air pollution): _____

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average NOT APPLICABLE Maximum NOT APPLICABLE

G. Indicate liquid or solid wastes generated and method of disposal.

NO CHANGE FROM ORIGINALLY PERMITTED

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: SEE ATTACHMENT A ft. Stack Diameter: _____ ft.
 Gas Flow Rate: _____ ACFM _____ DSCFM Gas Exit Temperature: _____ °F.
 Water Vapor Content: _____ % Velocity: _____ FPS

SECTION IV: INCINERATOR INFORMATION

NOT APPLICABLE

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq. & Gas By-prod.)	Type VI (Solid By-prod.)
Actual lb/hr Incinerated							
Uncontrolled (lbs/hr)							

Description of Waste _____
 Total Weight Incinerated (lbs/hr) _____ Design Capacity (lbs/hr) _____
 Approximate Number of Hours of Operation per day _____ day/wk _____ wks/yr. _____
 Manufacturer _____
 Date Constructed _____ Model No. _____

	Volume (ft) ³	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: _____ ft. Stack Diameter: _____ Stack Temp. _____
 Gas Flow Rate: _____ ACFM _____ DSCFM* Velocity: _____ FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control device: Cyclone Wet Scrubber Afterburner
 Other (specify) _____

Brief description of operating characteristics of control devices: _____

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.):

NOTE: Items 2, 3, 4, 6, 7, 8, and 10 in Section V must be included where applicable.

SECTION V: SUPPLEMENTAL REQUIREMENTS
SEE ORIGINAL PSD APPLICATION (SCA SECTION 10.1.5)

Please provide the following supplements where required for this application.

1. Total process input rate and product weight -- show derivation [Rule 17-2.100(127)]
2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made.
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).
4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, design pressure drop, etc.)
5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3 and 5 should be consistent: actual emissions \times potential (1-efficiency).
6. An 8 1/2" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.
7. An 8 1/2" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map).
8. An 8 1/2" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation.
10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?

Yes No

Contaminant	Rate or Concentration
40 CFR 60 Subpart Dc for aux boiler	
SULFUR DIOXIDE	0.5 % S
PARTICULATE MATTER	NOT APPLICABLE

B. Has EPA declared the best available control technology for this class of sources (if yes, attach copy)

Yes No

Contaminant	Rate or Concentration

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration

D. Describe the existing control and treatment technology (if any).

- | | |
|---------------------------|--------------------------|
| 1. Control Device/System: | 2. Operating Principles: |
| 3. Efficiency:* | 4. Capital Costs: |

*Explain method of determining

5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant

Rate or Concentration

Contaminant	Rate or Concentration

10. Stack Parameters

- a. Height: ft.
- b. Diameter: ft.
- c. Flow Rate: ACFM
- d. Temperature: °F.
- e. Velocity: FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.

- a. Control Device:
- b. Operating Principles:
- c. Efficiency:¹
- d. Capital Cost:
- e. Useful Life:
- f. Operating Cost:
- g. Energy ²
- h. Maintenance Cost:
- i. Availability of construction materials and process chemicals:
- j. Applicability to manufacturing processes:
- k. Ability to construct with control device, install in available space, and operate within proposed levels:

2.

- a. Control Device:
- b. Operating Principles:
- c. Efficiency:¹
- d. Capital Cost:
- e. Useful Life:
- f. Operating Cost:
- g. Energy:²
- h. Maintenance Cost:
- i. Availability of construction materials and process chemicals:

¹Explain method of determining efficiency.

²Energy to be reported in units of electrical power - KWH design rate.

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

3.

a. Control Device:

b. Operating Principles:

c. Efficiency:¹

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:²

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

4.

a. Control Device:

b. Operating Principles:

c. Efficiency:¹

d. Capital Costs:

e. Useful Life:

f. Operating Cost:

g. Energy:²

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected:

1. Control Device:

2. Efficiency:¹

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:²

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

¹Explain method of determining efficiency.

²Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:¹

Contaminant

Rate or Concentration

Contaminant	Rate or Concentration

(8) Process Rate:¹

b. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:¹

Contaminant

Rate or Concentration

Contaminant	Rate or Concentration

(8) Process Rate:¹

10. Reason for selection and description of systems:

¹Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

NOT APPLICABLE FOR THIS AMENDMENT-THE RESULT OF THE ORIGINAL MODELING IS PROVIDED IN SECTION 7.0 OF THE ORIGINAL PSD APPLICATION CONTAINED IN SCA SECTION 10.1.5

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION

A. Company Monitored Data

1. _____ no. sites _____ TSP _____ () SO₂ _____ Wind spd/dic

Period of Monitoring _____ / _____ / _____ to _____ / _____ / _____
month day year month day year

Other data recorded _____

Attach all data or statistical summaries to this application.

Specify bubbler (B) or continuous (C).

2. Instrumentation, Field and Laboratory

a. Was instrumentation EPA referenced or its equivalent? [] Yes [] No

b. Was instrumentation calibrated in accordance with Department procedures?
[] Yes [] No [] Unknown

B. Meteorological Data Used for Air Quality Modeling

1. _____ Year(s) of data from _____ / _____ / _____ to _____ / _____ / _____
month day year month day year

2. Surface data obtained from (location) _____

3. Upper air (mixing height) data obtained from (location) _____

4. Stability wind rose (STAR) data obtained from (location) _____

C. Computer Models Used

1. _____ Modified? If yes, attach description.

2. _____ Modified? If yes, attach description.

3. _____ Modified? If yes, attach description.

4. _____ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate
TSP	_____ grams/sec
SO ₂	_____ grams/sec

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description of point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

ATTACHMENT A.

Florida Power & Light Company (FPL) obtained approval to construct and operate multiple combined-cycle (CC) units in several phases at the existing 11,300 acre Martin site pursuant to the Florida Electrical Power Plant Siting Act, Chapter 403, Part II, Florida Statutes, in February, 1991. A PSD permit for the Project was issued on June 3, 1991. Detailed information about the Martin CG/CC Project is contained in the 8 volume Site Certification Application filed in December, 1989 as amended.

The new units are capable of firing natural gas (primary), No. 2 fuel oil (backup), and coal-derived gas (future) and are identified as Martin Units 3 & 4 (Phase I) and Units 5 & 6 (Phase II (preliminary approval)). Units 3 & 4 are now under construction, with commercial operation scheduled to begin between November, 1993 and April, 1994. Each unit consists of two combustion turbines (CT), two heat recovery steam generators (HRSG), and one steam turbine (ST). Each CT/HRSG will exhaust to an individual stack.

The Project has been previously permitted but recent information and design refinements have necessitated FPL to request a modification of the Site Certification and amendment of the PSD permit. This application primarily focuses on data which is new/revised from the original application. Specifically this application addresses the following items:

1. Auxiliary Boiler for Units 3 & 4
 - change in short term emission rate
 - removal of operating restriction
 - change from single stack to two stacks
 - change in stack parameters
2. Emergency Diesel Generator for Units 3 & 4
 - change in short term emission rate
 - removal of operating restriction
 - change in stack parameters
 - change from single stack to dual stacks

Units 3 & 4 originally were designed to be supported by a 60,000 lb/hr auxiliary boiler capable of firing natural gas or oil and a 750 kw emergency diesel generator capable of firing diesel fuel. The original permit application was based on this design. The current design uses a 10,000 lb/hr natural gas- and oil-fired auxiliary boiler and a 500 kw generator.

Since the auxiliary boiler will generally be used to supply steam to Units 3 & 4, the operational schedule for the auxiliary boiler will be dependent on Units 3 & 4's operational schedule. Specific Condition 7 of the PSD permit and Condition II.A.7 of the Site Certification restrict operation of the auxiliary boiler to periods

of start-up and shut down. FPL requests that these operational restrictions be removed from the permit to also allow use of the auxiliary boiler when the units are in stand-by mode, thereby providing maximum operational flexibility to the Project. The request is supported by the PSD modeling conducted for the Project which included emissions from the auxiliary boiler operating 8760 hours a year (See Table 2-7 of the original PSD application in SCA section 10.1.5). Since the modeling shows acceptable impact with the auxiliary boiler operating at all times, FPL requests the operating flexibility this affords (See section 7.5 page 181 of the original PSD application in SCA section 10.1.5).

Specific Condition 7 of the PSD permit and Condition II.A.7 of the Site Certification also restrict the diesel generators to periods of emergency power generation. FPL requests that these operational restrictions be removed from the permit since the emergency diesel generator is also required to be tested monthly and may be needed to provide power to the plant even if the units are online. The request is also supported by the PSD modeling conducted for the Project which included the emergency diesel generator operating 8760 hours per year. (See Table 2-8 of the original PSD application in SCA section 10.1.5). Since the modeling shows acceptable impact with the emergency diesel generator operating at all times, FPL also requests the operating flexibility this affords (See section 7.5 page 181 of the original PSD application in SCA section 10.1.5).

While the new auxiliary boiler and the emergency diesel generator have a higher lb/MMBTU or grams hp/hr emission rate than originally permitted, the lb/hr value will be smaller than permitted because of the smaller unit size. The table titled Regulated Airborne Emissions provides the new emissions associated with these units and compares them to those originally permitted emission limits.

FPL selected the auxiliary boiler and emergency diesel generator which incorporate the best available controls within their design and normal operation. The use of clean fuels such as natural gas and No. 2 fuel oil are essentially control devices because of the low potential for airborne emissions as compared to other fuels. The emergency diesel generator has inlet air filters which further decrease particulate emissions.

The following stack parameters have been revised from those provided during the original certification proceeding. These stack changes should not alter the impact assessment performed during the original permitting process since all of the stacks were co-located for purposes of impact modeling. (PSD Application, page 123, paragraph 2). These final design parameters are provided for informational purposes.

Auxiliary Boiler (Natural Gas)

Stack Height - 42.0 ft

Stack Diam. - 1) Superheater - 10 in
2) Boiler - 24 in

Exhaust Stack Temp. -

1) Superheater - 550 F
2) Boiler - 608 F

Stack Exit Velocity -

1) Superheater - 5 ft/sec
2) Boiler - 37.2 ft/sec

Emerg. Diesel Generator (No. 2 Fuel Oil)

Stack Height - 12.5 ft

Stack Diam. - 6 in/stack (Dual stacks)

Exhaust Stack - Temp. 810 F

Stack Exit Velocity - 202 ft/sec

REGULATED AIRBORNE EMISSION

	PERMITTED VALUE		REVISED VALUE	
Auxiliary Boiler	<u>lb/MMBTU</u>	<u>lb/hr</u>	<u>lb/MMBTU</u>	<u>lb/hr</u>
NOx - Nat. Gas	0.1 ¹	7.2 ¹	<u>0.3</u> ²	4.89 ²
NOx - No. 2 Oil	0.2 ¹	10.8 ¹	<u>0.3</u> ²	4.89 ²
Emergency Diesel Generator	<u>grams hp/hr</u>	<u>lb/hr</u>	<u>grams hp/hr</u>	<u>lb/hr</u>
NOx - No. 2 Oil	12.0 ³	31.10 ³	<u>15.0</u> ⁴	25.51 ⁴

1. Based on a 60,000 lb/hr boiler
2. Based on a 10,000 lb/hr boiler
3. Based on a 750 kw generator
4. Based on a 500 kw generator

21.42
21.42

111.73

43000 lb/hr
 43000 lb/hr
 38.2
 12.86