

Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

July 30, 1999

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Mr. R. Douglas Neeley, Chief
Air, Radiation Technology Branch
US EPA Region IV
61 Forsyth Street
Atlanta, GA 30303

Re: Custom Fuel Monitoring Schedule
FPL Sanford Plant Repowering Project
DEP File 1270009-004-AC

Dear Mr. Neeley:

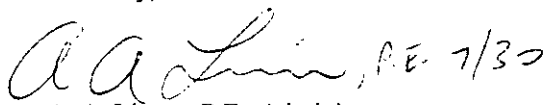
Enclosed are copies of a construction permit and the Department's Intent to Issue Permit to repower gas and residual fuel oil-fired Units 4 and 5 at the Florida Power & Light (FPL) Sanford Plant in Volusia County. The boilers will be replaced with eight highly efficient gas-fired combustion turbines and heat recovery steam generators. The project will reduce emissions of sulfur dioxide and nitrogen oxides by over 28,000 and 7,000 tons per year respectively while increasing generating capacity from 872 to 2200 megawatts.

Please send your written comments on or approval of the applicant's proposed custom fuel monitoring schedule. The plan is based on the enclosed letter dated January 16, 1996 from Region V to Dayton Power and Light. The Subpart GG limit on SO₂ emissions is 150 ppmvd @ 15% O₂ or a fuel sulfur limit of 0.8% sulfur. Neither of these limits could conceivably be violated by the use of pipeline quality natural gas, which has a maximum SO₂ emission rate of 0.0006 lb/MMBtu (40 CFR 75 Appendix D Section 2.3.1.4). The sulfur content of pipeline quality natural gas in Florida has been estimated at a maximum of 0.003 % sulfur. No. 2 fuel oil will be used with a sulfur content less than or equal to 0.05% sulfur. These requirements have been incorporated into the enclosed draft permit as Specific Conditions 8, 30 and 39 through 43.

Please comment on Specific Condition 29, which allows the use of the acid rain NO_x CEMS for demonstrating compliance as well as reporting excess emissions. The Subpart GG requirements for the water-to-fuel monitoring system do not apply because only combustion controls will be employed. Typically NO_x emissions will be less than 10 ppmvd @ 15% O₂ which is less than one-tenth of the applicable Subpart GG limit based on the efficiency of the unit. A CEMS requirement is stricter and more accurate than any Subpart GG requirement for determining excess emissions.

The Department recommends your approval of the custom fuel monitoring schedule and these NO_x monitoring provisions. We also invite your comments on the Intent to Issue. If you have any questions on these matters please contact Teresa Heron at 850/921-9529.

Sincerely,


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

AAL/th
Enclosures

"Protect, Conserve and Manage Florida's Environment and Natural Resources"

Printed on recycled paper.

Z 333 618 118

US Postal Service
Receipt for Certified Mail

No Insurance Coverage Provided.
Do not use for International Mail (See reverse)

Sent to	
Doug Neeley	
Street & Number	
U.S. EPA	
Post Office, State, & ZIP Code	
Atlanta GA	
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	7-30-99
1270019-004 AC	

PS Form 3800, April 1995

Is your RETURN ADDRESS completed on the reverse side?

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number
- The Return Receipt will show to whom the article was delivered and the date delivered

I also wish to receive the following services (for an extra fee):

- Addressee's Address
- Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Mr. Doug Neeley, Section Chief
Air, Radiation Technology Branch
Preconstruction/HAP Section
U.S. EPA - Region IV
61 Forsyth Street
Atlanta, GA 30303

4a. Article Number

Z 333 618 118

4b. Service Type

- Registered
- Certified
- Express Mail
- Insured
- Return Receipt for Merchandise
- COD

7. Date of Delivery

8-2-99

5. Received By: (Print Name)

Bruce Hoke

8. Addressee's Address (Only if requested and fee is paid)

6. Signature: (Addressee or Agent)

X

Thank you for using Return Receipt Service.

Golder Associates Inc.

6241 NW 23rd Street, Suite 500
Gainesville, FL 32653-1500
Telephone (352) 336-5600
Fax (352) 336-6603



June 28, 1999

9837571

Florida Department of Environmental Regulation
Bureau of Air Regulation
111 South Magnolia Drive, Suite 4
Tallahassee, Florida 32301

RECEIVED

JUN 29 1999

BUREAU OF
AIR REGULATION

Attention: Ms. Teresa Heron

RE: FLORIDA POWER & LIGHT COMPANY
SANFORD REPOWERING PROJECT

Dear Teresa:

Please find attached updates to the application for the FPL Sanford Repowering Project. The updates were described in my June 14, 1999 e-mail regarding the natural gas heaters. The maximum proposed heat input is 176 mmBtu/hr rather than 132 mmBtu/hr as presented in the original application. Portions of the application for this emission unit have been updated and several tables from the report have been updated. The proposed change does not change PSD applicability or any other regulatory requirement.

Please call if you have questions.

Sincerely,

GOLDER ASSOCIATES INC.

A handwritten signature in cursive script, appearing to read 'Kennard F. Kosky'.

Kennard F. Kosky
Principal
Professional Engineer Registration No. 14996

KFK/jkk

Enclosures

cc: Rich Piper, FPL-Juno Beach
Roxane Kennedy, FPL-Sanford Plant
John Gnecco, FPL-Juno Beach

7/5
SEAL

JADP\PROJECTS\98\9837\9837571a\4\2\#121tr.doc

**C. EMISSIONS UNIT DETAIL INFORMATION
(Regulated Emissions Units Only)**

Emissions Unit Details

1. Initial Startup Date:		
2. Long-term Reserve Shutdown Date:		
3. Package Unit: Manufacturer:	Model Number:	
4. Generator Nameplate Rating:	MW	
5. Incinerator Information:		
	Dwell Temperature:	°F
	Dwell Time:	seconds
	Incinerator Afterburner Temperature:	°F

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate:	176	mmBtu/hr
2. Maximum Incineration Rate:	lbs/hr	tons/day
3. Maximum Process or Throughput Rate:		
4. Maximum Production Rate:		
5. Operating Capacity Comment (limit to 200 characters):		
Based on 4 direct fired heaters.		

Emissions Unit Operating Schedule

1. Requested Maximum Operating Schedule:		
	hours/day	days/week
	weeks/yr	8,760 hours/yr

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)**Pollutant Detail Information:**

1. Pollutant Emitted: NO_x		
2. Total Percent Efficiency of Control:		%
3. Potential Emissions:	17.6 lb/hour	77.1 tons/year
4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
5. Range of Estimated Fugitive/Other Emissions:		
[<input type="checkbox"/>] 1 [<input type="checkbox"/>] 2 [<input type="checkbox"/>] 3 _____ to _____ tons/yr		
6. Emission Factor:		0.1 lb/MMBtu
Reference: Manufacturer		
7. Emissions Method Code:		
[<input type="checkbox"/>] 0 [<input type="checkbox"/>] 1 [<input checked="" type="checkbox"/>] 2 [<input type="checkbox"/>] 3 [<input type="checkbox"/>] 4 [<input type="checkbox"/>] 5		
8. Calculation of Emissions (limit to 600 characters):		
See Part II		
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters):		
Potential tons/year based on 100% capacity factor for 4 heaters.		

Emissions Unit Information Section 10 of 10
Allowable Emissions (Pollutant identified on front page)

A.

1. Basis for Allowable Emissions Code: OTHER		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	17.6 lb/hour	77.1 tons/year
5. Method of Compliance (limit to 60 characters):		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): Emissions based on manufacturer information.		

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lb/hour	tons/year
5. Method of Compliance (limit to 60 characters):		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):		

**H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)****Pollutant Detail Information:**

1. Pollutant Emitted: CO		
2. Total Percent Efficiency of Control:		%
3. Potential Emissions:	26.4 lb/hour	115.7 tons/year
4. Synthetically Limited? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
5. Range of Estimated Fugitive/Other Emissions:		
[<input type="checkbox"/>] 1 [<input type="checkbox"/>] 2 [<input type="checkbox"/>] 3 _____ to _____ tons/yr		
6. Emission Factor:		0.15 lb/MMBtu
Reference: Manufacturer		
7. Emissions Method Code:		
[<input type="checkbox"/>] 0 [<input type="checkbox"/>] 1 [<input checked="" type="checkbox"/>] 2 [<input type="checkbox"/>] 3 [<input type="checkbox"/>] 4 [<input type="checkbox"/>] 5		
8. Calculation of Emissions (limit to 600 characters):		
See Part II		
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters):		
Potential tons/year based on 100% capacity factor for 4 heaters.		

Emissions Unit Information Section 10 of 10
Allowable Emissions (Pollutant identified on front page)

Natural Gas Heater(s)
Carbon Monoxide

A.

1. Basis for Allowable Emissions Code: OTHER		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	26.4 lb/hour	115.7 tons/year
5. Method of Compliance (limit to 60 characters):		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): Emissions based on manufacturer information.		

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lb/hour	tons/year
5. Method of Compliance (limit to 60 characters):		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):		

Table 1-1. Net Emission Increase/Decrease for FPL Sanford Repowering Project

Pollutant	Potential (Permitted) for Unit 3, 4 and 5	Proposed Plant-Wide Emissions Cap	Units 4 and 5 Actual 1997-1998	Emissions Rate (TPY)			
				Repowered Units ^a	Net Decrease (-) or Increase (+) from Actual and Repowered only	Change (+) or (-) from Actual and All Units ^b	Change (+) or (-) from Potential and All Units ^b
PM as TSP	5,338	500	538	357	-181	-38	-4,838
PM10	5,338	500	538	357	-181	-38	-4,838
NO _x	29,662	4,500	9,984	2,680	-7,304	-5,484	-25,162
SO ₂	117,439	4,000	28,729	277	-28,452	-24,729	-113,439

^a Cooling tower and natural gas direct fired heaters not included in proposed emissions unit.

Table 2-1. Actual and Maximum Potential Pollutant Emissions for Sanford Units 4 and 5

Case	Year	Unit	Emission Rate (TPY)					
			SO ₂ ^a	NO _x ^a	PM ^b	CO ^c	VOC ^d	
Existing	1997	4	11,831	4,302	274	1,235	36.7	
		5	12,738	3,574	255	1,389	21.9	
		Total	24,569	7,876	529	2,624	58.6	
	1998	4	15,719	6,116	235	1,534	37.6	
		5	17,170	5,977	310.9	1,655	37.9	
		Total	32,889	12,093	546	3,189	75.5	
	Average	4	13,775	5,209	254	1,385	37.2	
		5	14,954	4,776	283	1,522	29.9	
	Total Actual			28,729	9,984	538	2,907	67.1
	Repowered Units							
Eight CTs ^e			277	2,680	357	1,603	119	
Cooling Tower ^f			--	--	25	--	--	
Direct-Fired Natural Gas Heaters ^g			2.2	77.1	4.7	115.6	4.6	
Total			279	2,757	387	1,719	124	
Net Emissions Change			-28,450	-7,227	-151	-1,188	56.5	

^a SO₂, NO_x based on 1997/1998 CEM emission data.

^b PM based on 1997/1998 CEM heat input rates and 1997/1998 PM stack test data assuming 21 hours and 3 hours of steady-state and soot-blowing, respectively.

^c CO based on 1997/1998 CEM heat input rates and assuming emission rates for Units 4 and 5 of 0.22 for gas firing and 0.15 lb/MMBtu for oil firing.

^d VOC based on AP-42.

^e Proposed emissions based on eight CTs operating at 100 percent load at ambient temperature of 35°F for gas and 32°F for oil using following emission rates (see Table 2-6):

SO₂ - 1 grain/ 100 cubic ft of gas and 0.05% sulfur oil.

NO_x - 9 parts per million volume dry (ppmvd) for gas and 42 ppmvd for oil, corrected to 15% oxygen (O₂)

PM - 10 lb/hr for gas and 17 lb/hr for oil (excludes H₂SO₄)

CO - 12 ppmvd for gas and 20 ppmvd for oil

VOC - 1.4 ppmvd (exclusive of background VOCs) for gas and 7 ppmvw for oil.

Oil limited to 500 hr/yr turbine on Unit 5

^f 24.8 tons PM from drift (half as PM₁₀); see Table 2-11.

^g See Table 2-12.

Table 2-12. Performance, Stack Parameters, and Emissions for Direct-Fired Natural Gas Heaters

	Data
<u>Performance</u>	
Fuel Usage (scf/hr/unit)	172,000
Heat Input (Btu/hr-HHV)	176.00
Hours per Year	8,760
Number of Units	4
<u>Stack Parameters</u>	
Diameter (ft)	2
Height (ft)	30
Temperature (°F)	635
Velocity (ft/sec)	74
Flow (acfm/unit)	13,949
<u>Emissions</u>	
SO ₂ -Basis (grains S/100 scf) ^a	1
(lb/hr)	0.49
(TPY)	2.15
NO _x - (lb/MMBtu) ^b	0.10
(lb/hr)	17.60
(TPY)	77.09
CO - (lb/MMBtu) ^b	0.15
(lb/hr)	26.40
(TPY)	115.63
VOC - (lb/MMBtu) ^b	0.01
(lb/hr)	1.06
(TPY)	4.63
PM/PM10 - (lb/10 ⁶ ft ³) ^c	6.20
(lb/hr)	1.07
(TPY)	4.67

^a Typical maximum for pipeline natural gas.

^b Manufacturer

^c AP-42 Table 1.4-2 Filterable PM; higher factor used if small heaters are used.

Table 3-3. Net Emission Changes Due to the Proposed FPL Sanford Repowering Project Compared to the PSD Significant Emission Rates

Pollutant	Pollutant Emissions (TPY) from Repowered Facility				PSD Review
	Actual Emissions Units 4 and 5	Potential Emissions ^a	Net Emissions Change	Significant Emission Rate	
Sulfur Dioxide	28,729	279	-28,450	40	No
Particulate Matter [PM(TSP)]	538	387	-151	25	No
Particulate Matter (PM ₁₀)	538	374	-164	15	No
Nitrogen Dioxide	9,984	2,757	-7,227	40	No
Carbon Monoxide	2,906	1,719	-1,188	100	No
Volatile Organic Compounds	67	124	+57	40	Yes
Lead	0.087	0.021	-0.066	0.6	No
Sulfuric Acid Mist	1,276	42.3	-1,234	7	No
Total Fluorides	96	0.064	-96	3	No
Total Reduced Sulfur	NEG	NEG	-	10	No
Reduced Sulfur Compounds	NEG	NEG	-	10	No
Hydrogen Sulfide	NEG	NEG	-	10	No
Mercury	0.0124	0.0013	-0.0111	0.1	No
MWC Organics (as 2,3,7,8-TCDD)	2.94 x 10 ⁻⁷	8.24 x 10 ⁻⁷	0.53 x 10 ⁻⁶	3.5x10 ⁻⁶	No
MWC Metals (as Be and Cd)	0.0257	0.007	-0.019	15	No
MWC Acid Gases (HCl) ^c	47.3	0.42	-47	40	No

Note: NEG = Negligible; MWC = Municipal Waste Combustor

^a Repowering Project. Refer to Tables 2-1 and 2-10.

^b Assumes one-half of the cooling tower drift emissions is PM₁₀.

^c Also includes SO₂; see SO₂ above.

F. SEGMENT (PROCESS/FUEL) INFORMATION
(Regulated and Unregulated Emissions Units)

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters): External Combustion Boilers - Natural Gas < 100 MMBtu/hr	
2. Source Classification Code (SCC): 1-01-006-03	
3. SCC Units: Million Cubic Feet	
4. Maximum Hourly Rate: 0.172	5. Maximum Annual Rate: 1,506
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur:	8. Maximum Percent Ash:
9. Million Btu per SCC Unit: 1,024	
10. Segment Comment (limit to 200 characters): Rates shown for 4 direct fired heaters.	



Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

June 16, 1999

Mr. R. Douglas Neeley, Chief
Air, Radiation Technology Branch
US EPA Region IV
61 Forsyth Street
Atlanta, GA 30303

Re: Florida Power & Light – Sanford Plant
1270009-004-AC, PSD-FL-270

Dear Mr. Neeley:

Enclosed is a copy of a construction permit application to install eight GE 7FA combined cycle units to replace (repower) two (2) residual oil-fired and gas-fired steam generators at the Sanford Plant near DeBary, Volusia County. The capacity of the eight-combined cycle units will be approximately 2,200 MW compared with the capacity of the two existing units of 874 MW.

Distillate oil will be used as back up on four of the combined cycle units in the event gas is not available. On those units, oil firing will be limited to an aggregate of 500 hours per year per turbine. The other four-combined cycle units will fire gas only, but will be capable of operating in simple cycle mode.

Following is FPL's comparison of emissions before and after repowering.

<u>Pollutants</u>	<u>Units 4/5 Emissions</u>	<u>After Repowering</u>	<u>Increase (decrease)</u>
PM/PM ₁₀	538	386/373	(152/165)
SAM	1,276	42.3	(1,234)
SO ₂	28,729	279	(28,450)
NO _x	9,984	2,738	(7,247)
VOC	67	123	56
CO	2,907	1,691	(1,216)

The company expects actual emissions reductions of over 30,000 tons per year. Although the project could net out of PSD for NO_x with a much higher emission limit, a limit of 9 ppmvd @15% O₂ is proposed. There will be no duct burners or power (steam) augmentation.

Because of the very clear benefits of this project, we plan to act on it promptly and request your assistance by sending us your comments soon. Your comments can be forwarded to my attention at the letterhead address or faxed to me at (850)922-6979. If you have any questions, please contact Teresa Heron at (850)921-9529.

Sincerely,

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

AAL/kt
Enclosures

"Protect, Conserve and Manage Florida's Environment and Natural Resources"



Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

June 16, 1999

Mr. John Bunyak, Chief
Policy, Planning & Permit Review Branch
NPS-Air Quality Division
Post Office Box 25287
Denver, CO 80225

Re: Florida Power & Light – Sanford Plant
1270009-004-AC, PSD-FL-270

Dear Mr. Bunyak:

Enclosed is a copy of a construction permit application to install eight GE 7FA combined cycle units to replace (repower) two (2) residual oil-fired and gas-fired steam generators at the Sanford Plant near DeBary, Volusia County. The capacity of the eight-combined cycle units will be approximately 2,200 MW compared with the capacity of the two existing units of 874 MW.

Distillate oil will be used as back up on four of the combined cycle units in the event gas is not available. On those units, oil firing will be limited to an aggregate of 500 hours per year per turbine. The other four-combined cycle units will fire gas only, but will be capable of operating in simple cycle mode.

Following is FPL's comparison of emissions before and after repowering.

<u>Pollutants</u>	<u>Units 4/5 Emissions</u>	<u>After Repowering</u>	<u>Increase (decrease)</u>
PM/PM ₁₀	538	386/373	(152/165)
SAM	1,276	42.3	(1,234)
SO ₂	28,729	279	(28,450)
NO _x	9,984	2,738	(7,247)
VOC	67	123	56
CO	2,907	1,691	(1,216)

The company expects actual emissions reductions of over 30,000 tons per year. Although the project could net out of PSD for NO_x with a much higher emission limit, a limit of 9 ppmvd @15% O₂ is proposed. There will be no duct burners or power (steam) augmentation.

Because of the very clear benefits of this project, we plan to act on it promptly and request your assistance by submitting comments soon. Your comments can be forwarded to my attention at the letterhead address or faxed to me at (850)922-6979. If you have any questions, please contact Teresa Heron at (850)921-9529.

Sincerely,

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

AAL/kt

Enclosures