

FINAL DETERMINATION

Air Construction Permit
Florida Power and Light Riviera Beach Energy Center
DEP File No. 0990042-006-AC

PERMITTEE

Florida Power and Light Company (FPL)
700 Universe Boulevard
Juno Beach, Florida 33408

PERMITTING AUTHORITY

Florida Department of Environmental Protection (Department)
Division of Air Resource Management
Bureau of Air Regulation, Special Projects Section
2600 Blair Stone Road, MS #5505
Tallahassee, Florida 32399-2400

PROJECT

DEP File No. 0990042-006-AC
FPL Riviera Beach Energy Center
Plant Conversion Project
Palm Beach County

The project is a plant conversion that includes the construction of a nominal 1,250 MW natural gas-fueled combined cycle unit (Unit 5) and requires the permanent shutdown and dismantlement of residual oil and natural gas-fueled Units 3 and 4 at the FPL Riviera Plant. The project did not require a review under the rules for the prevention of significant deterioration of air quality (PSD) or a determination of best available control technology (BACT). The converted plant will be called the Riviera Beach Energy Center (RBEC). The plant is located at 200-300 Broadway, Riviera Beach in Palm Beach County.

Unit 5 will consist of:

- Three G-class or H-class combustion turbine-electrical generators (CTG) with evaporative inlet cooling systems;
- Three heat recovery steam generators (HRSG) with duct burners (DB) for supplementary gas firing and with selective catalytic reduction (SCR) reactors;
- Three 149-foot exhaust stacks; and
- One 500 MW steam-electrical generator (STG).

Unit 5 will use ultralow sulfur distillate (ULSD) fuel oil as backup fuel. Unit 5 will rely on some of the existing infrastructure including the water intake structures for once-through cooling and one of the fuel oil storage tanks.

Additional ancillary equipment to be installed includes: a permanent auxiliary boiler; a temporary boiler used during the construction phase; two emergency generators; two process (fuel) heaters; a diesel fire pump; a 6.3 million distillate fuel oil storage tank and a gas compression station.

Air pollution control will be accomplished by SCR for the control of nitrogen oxides (NO_x) and efficient combustion of inherently low polluting fuels to control emissions of particulate matter (PM/PM₁₀), sulfur oxides (SO₂ and sulfuric acid mist), carbon monoxide (CO) and volatile organic compounds (VOC).

NOTICE AND PUBLICATION

The Department distributed a draft minor air construction permit package on March 13, 2009. The applicant published the Public Notice in The Palm Beach Post on April 30, 2009. The Department received the proof of publication on May 8, 2009.

COMMENTS

No written comments on the draft permit were received from the public or any agencies. Written comments were received from the applicant on May 5 and June 5, 2009. The following summarizes the comments and the Department's response.

1. References in the facility description and elsewhere in the air construction permit should be corrected to indicate Units 3 and 4 rather than Units 1 and 2.

Department response: The Department agrees and will modify the permit to reflect the correct designation of Units 3 and 4.

2. References to existing structures should be corrected to indicate four rather than two fuel oil storage tanks.

Department response: The Department agrees and will modify the existing facility description to reflect four fuel oil storage tanks.

3. References to the new storage tank should be corrected to indicate the units of measure in gallons.

Department response: The Department agrees and will modify the permit to reflect "one nominal 6.3 million gallon distillate fuel oil storage tank."

4. References to existing storage tanks should be corrected to indicate that all (rather than one) will be shut down and dismantled.

Department response: The Department agrees and will modify the description and permit to reflect that four storage tanks will be shut down and dismantled.

5. Section III.A, page 10, Condition 10, footnote a. Add the following sentence which is consistent with FPL West County Energy Center Units 1, 2, and 3 permits: "The stack test limits apply only at high load (90-100% of the CTG capacity)."

Department response: The carbon monoxide (CO) stack tests will be conducted as initial performance tests and thereafter compliance will be maintained with a 30-day standard that applies irrespective of load. The initial CO stack test will be conducted at 90-100% of CTG capacity and it is not necessary to specify that the limits apply only at 90-100% of CTG capacity.

6. Section III.A, page 10, Condition 10: FPL requests addition of a footnote for CO as follows:

i. Enforcement discretion may be exercised for up to 12 months with respect to the 7.5 ppmvd @15% O2 limit for any CT/Duct-fired HRSG upon notification by the permittee of intent to install an oxidation catalyst. The permittee shall have 12 months to complete the oxidation catalyst installation. From time of notification to installation of the catalyst, all partial or complete months shall be excluded from the 30 unit operating days rolling average limit.

This language is similar to that used in the Unit 4 and 5 Repowering Project for the Progress Energy Florida's Bartow Power Plant (Air Permit No. 1030011-010-AC (PSD-FL-381)).

Department response: The reference to the Progress Energy project is to a best available control technology (BACT) determination for CO. The present case involves a limit to avoid applicability of the rules for the prevention of significant deterioration (PSD) and a BACT determination.

The Department will identify a new case for data exclusion within Section III.A, Condition 24, CEMS Data Requirements as follows:

e. Data Exclusion during Installation of Oxidation Catalyst: The permittee may exclude CO CEMS data in excess of the 7.5 ppmvd @15% O₂ from the 30 operating day rolling average calculation during the installation of the oxidation catalyst (which shall not exceed 12 months) provided all reasonable efforts are used to minimize such emissions. However, all CEMS data must be included when determining whether there is a net emission increase (as defined in Section 62-210.200 (definitions), F.A.C.) of CO greater than or equal to the significant emissions rate of 100 tons per year.

7. Section III.A, page 12, Condition 17: FPL requests revisions of the condition as follows:

17. DLN Tuning: CEMS data collected during initial or other major DLN tuning sessions shall be excluded from the CEMS compliance demonstration provided the tuning session is performed in accordance with the manufacturer's specifications. A "major tuning session" ~~would~~ may occur after completion of initial construction, ~~a combustor change-out, a major repair or maintenance to a combustor,~~ or other similar circumstances. Prior to performing any major tuning session, where the intent is to exclude data from the CEMS compliance demonstration, the permittee shall provide the Compliance Authority with an advance notice of at least 7 days that details the activity and proposed tuning schedule. The notice may be by telephone, facsimile transmittal, or electronic mail. [Design; Rule 62-4.070(3), F.A.C.]

Department response: The provision was developed to avoid the necessity of issuing future permit modification for such tuning sessions. The language in the draft permit is the same as included in the FPL Turkey Point Unit 5 permit and in the WCEC permit. The Department will make the requested changes as they appear to reduce the occasions of CEMS data exclusion prompting notification to the Department. However exclusion of the data will be allowed rather than required. The condition will read as follows:

17. DLN Tuning: CEMS data collected during initial or other major DLN tuning sessions ~~shall~~ may be excluded by the permittee from the CEMS compliance demonstration provided the tuning session is performed in accordance with the manufacturer's specifications. A "major tuning session" ~~would~~ may occur after completion of initial construction, ~~a combustor change-out, a major repair or maintenance to a combustor,~~ or other similar circumstances. Prior to performing any major tuning session, where the intent is to exclude data from the CEMS compliance demonstration, the permittee shall provide the Compliance Authority with an advance notice of at least 7 days that details the activity and proposed tuning schedule. The notice may be by telephone, facsimile transmittal, or electronic mail. [Design; Rule 62-4.070(3), F.A.C.]

8. **Withdrawn.** A request relating to testing schedule relief for the first CTG in the event that the Siemens H technology is selected for the project.

Department response: No action is necessary.

9. Section III.B, page 18, Condition 9. FPL requests the following: "The hours of operation of the temporary boiler shall not exceed ~~500~~ 1,000 hours per year and the temporary boiler shall not operate beyond the expiration date of this permit." This request for an increase in hours of operation does not change any of the standards that RBEC would be required to meet.

In a follow up discussion held on June 2, 2009 FPL requested that there be no limit in the hours of operation of the temporary boiler.

Department response: The temporary boiler will be used primarily during construction including periods of steam blows and not when the facility is fully functional. Its operation will not cause annual emissions increases of any pollutant from the facility to equal or exceed the respective PSD-pollutant SER. The Department will modify the permit to reflect the requested 1,000 hours per year for the temporary boiler. The follow up request for additional hours beyond 1,000 was made after the 14-day comment period that began on April 30, 2009.

10. Section III.B, Condition 2: FPL requests the following- “The hours of operation of the auxiliary boiler shall not exceed ~~500~~ 750 hours per year.” This request for an increase in hours of operation does not change any of the standards that RBEC would be required to meet.

Department response: The auxiliary boiler will be used during the initial startup and the infrequent subsequent startups of the steam turbine and heat recovery steam generators. Its operation will not cause annual emissions increases of any pollutant from the facility to equal or exceed the respective PSD-pollutant SER. The Department will modify the permit to reflect the requested 750 hours per year for the auxiliary boiler.

11. Section III.D, page 21, Condition 6: As the applicable NSPS Subpart JJJJ does not regulate opacity, a standard of 20 percent was proposed by FPL. It is requested that the limit of 10 percent in the current draft permit be revised to the 20 percent value originally requested.

Department response: In fact a value of 10% was originally requested by the applicant per Section 5, page 28 of the application form. In Section 5, page 31 of the application form both a 20% emission limit (basis Section 62-296.320(4)(b)1, Florida Administrative Code) and a 10% requested limit (to limit particulate matter) were included. According to the application, the air emission controls are representative of best available control technology (BACT) emission limits that have been determined under PSD regulations for other similar combined cycle units [e.g., PSD-FL-396, July 30, 2008, for West County Energy Center (WCEC) Unit 3]. A 20% limit would be inconsistent with the particulate matter (PM) limits established for the subject natural gas-fueled compressors. The Department will leave the 10% limit.

12. Section III.G, page 24, Condition 1. Revise as follows: The distillate fuel oil tanks ~~are~~ is subject to Subpart Kb ...”

Department response: The Department will modify the condition permit as requested as to number of tanks. However the tank is not subject to Kb.

13. In the technical evaluation and preliminary determination (TEPD) document, page 13, the third paragraph, there is a discussion regarding the CTG allowable VOC emissions versus expected actual VOC emissions and the effect that this issue has on the permitted allowable hours of oil firing (see Permit Condition No. 7). The TE&PD states that “If VOC emissions are actually demonstrated to be as low as expected, FPL intends to apply for an increase in the allowable hours of ULSD FO to 3,000 hours (vs. the currently permitted 2,550 hours) aggregated over the three CTG during any calendar year.”

FPL requests that the permit language in Condition 7 be revised to reflect this understanding as follows: “Depending on the results of the initial VOC emissions compliance testing, fuel oil may be fired for a higher number of hours, up to a maximum of 3,000 hours aggregated over the three CTG during any calendar year.”

Department response: The Department acknowledges the discussion in the TEPD document in this Final Determination. It is not necessary to include it in the permit as any such change will nevertheless require an application and a permit modification.

14. In the TEPD document, Table 18 entitled “Ambient Air Quality Impacts Post-Conversion”, several of the values in the table were incorrect.

Department response: The Department agrees. The following table contains the correct values.

Table 18. Ambient Air Quality Impacts Post-Conversion

Pollutant	Averaging Time	Major Source Impact ($\mu\text{g}/\text{m}^3$)	Background Concentration 2005- 2008 ($\mu\text{g}/\text{m}^3$)	Total Impact ($\mu\text{g}/\text{m}^3$)	Total Impact Greater Than AAQS?	Florida AAQS ($\mu\text{g}/\text{m}^3$)
PM ₁₀	24-hour	8	60	68	NO	150
	Annual	1	26	27	NO	50
SO ₂	24-hour	9	10.5	20	NO	260
	Annual	1	4	5	NO	60
	3-hour	41.7	10.5	52	NO	1,300
NO ₂	Annual	17	18	35	NO	100
CO	1-hour	234	3,890	4,125	NO	40,000
	8-hour	93	2,517	2,610	NO	10,000

15. FPL submitted additional comments by electronic mail on June 5, 2009 requesting to use both the auxiliary boiler and the temporary boiler 4,000 hours per year (each) during the construction phase of the project.

Department response: The comments/requests are not timely since the 14-day comment period has expired. FPL can submit a subsequent permit modification application in the future.

CONCLUSION

The final action of the Department is to issue the permit with the minor changes, corrections and clarifications as described above.