Florida Department of Environmental Protection

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PERMITTEE

Florida Power and Light Company (FPL)
10650 State Road 80
Fort Myers, Florida 33905

Authorized Representative:
Ken Nusche, Regional Plant General Manager

Air Permit No. 0710002-030-AC
Permit Expires: July 1, 2020
Minor Air Construction Permit
Fort Myers Power Plant
Units 2A through 2F CT Upgrades

PROJECT

This is the final air construction permit, which authorizes the installation of upgrades to improve the performance of the existing 6-on-2 combined cycle unit (Unit 2). The purpose of this project is to install Dry Low-NO_X (DLN) 2.6+ combustor components, SAR turbine rotor upgrades, and improved combustor bucket material. The proposed work will be conducted at the existing Fort Myers Power Plant which is an electric utilities plant categorized under Standard Industrial Classification No. 4911. The existing facility is in Lee County at 10650 State Road 80, Fort Myers. The Universal Transverse Mercator (UTM) Coordinates are: Zone 17, 422.3 km East and 2952.9 km North. Latitude is: 26° 41' 49" North; and, Longitude is: 81° 46' 55" West.

This final permit is organized into the following sections: Section 1 (General Information); Section 2 (Administrative Requirements); Section 3 (Emissions Unit Specific Conditions); and Section 4 (Appendices). Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of Section 4 of this permit.

STATEMENT OF BASIS

This air pollution construction permit is issued under the provisions of: Chapter 403 of the Florida Statutes (F.S.) and Chapters 62-4, 62-204, 62-210, 62-212, 62-296 and 62-297 of the Florida Administrative Code (F.A.C.). The permittee is authorized to conduct the proposed work in accordance with the conditions of this permit. This project is subject to the general preconstruction review requirements in Rule 62-212.300, F.A.C. and is not subject to the preconstruction review requirements for major stationary sources in Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.

Upon issuance of this final permit, any party to this order has the right to seek judicial review of it under Section 120.68 of the Florida Statutes by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel (Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000) and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within 30 days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida

David Lyle Read, P.E.

David Lyle Read, P.E.
2018.06.05 14:51:48 -04'00'

For:
Syed Arif, P.E., Program Administrator
Office of Permitting and Compliance
Division of Air Resource Management

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Final Air Construction Permit package was sent by electronic mail, or a link to these documents made available electronically on a publicly accessible server, with received receipt requested before the close of business on the date indicated below to the following persons.

Ken Nusche, FPL: Ken.Nusche@fpl.com
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Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to Section 120.52(7), Florida Statutes, with the designated agency clerk, receipt of which is hereby acknowledged.

Lynn Scearce

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FACILITY DESCRIPTION

The Fort Myers Power Plant consists of two simple cycle combustion turbines (CTs), six combined-cycle generating units (Units 2A through 2F) each with an unfired heat recovery steam generator (HRSG), one emergency diesel-fired fire pump engine and four modern simple cycle CTs (Units 3A to 3D). The facility also includes six direct-fired natural gas heaters with a 30-foot stack to heat the natural gas prior to use during simple cycle operation and cold start-ups.

The existing facility consists of the following emissions units (EU).

EU No.	Brief Description
003	Combustion Turbine GT #1.
011	Combustion Turbine GT #9.
018	Combustion Turbine 2A, Combined-Cycle Unit with Non-Fired HRSG.
019	Combustion Turbine 2B, Combined-Cycle Unit with Non-Fired HRSG.
020	Combustion Turbine 2C, Combined-Cycle Unit with Non-Fired HRSG.
021	Combustion Turbine 2D, Combined-Cycle Unit with Non-Fired HRSG.
022	Combustion Turbine 2E, Combined-Cycle Unit with Non-Fired HRSG.
023	Combustion Turbine 2F, Combined-Cycle Unit with Non-Fired HRSG.
024	Six Natural Gas Pre-Heaters.
027	Combustion Turbine 3A, Simple-Cycle Peaking Unit.
028	Combustion Turbine 3B, Simple-Cycle Peaking Unit.
033	One diesel fire pump, manufactured by Caterpillar, serial number 03Z17257, Model 3208, 2300 RPM, 187 HP, in service 2001, 8 cylinders, 646 cubic inches.
034	Combustion Turbine 3C, Simple-Cycle Peaking Unit
035	Combustion Turbine 3D, Simple-Cycle Peaking Unit

The facility also includes miscellaneous unregulated/insignificant emissions units and/or activities.

PROPOSED PROJECT

Fort Myers Unit 2 consists of six combustion turbine electrical generator sets each, which includes General Electric (GE) FA.04 turbines/generators, heat recovery steam generators, and a steam turbine electric generator. The proposed project will replace “like-kind” component parts normally associated with maintenance outages with DLN 2.6+ combustor components and 3SAR turbine rotor upgrades. The project also involves increased capacity when the ambient temperature is equal to or above 90°F; this is referred to as “Enhanced Hot Day” (EHD) improvements. FPL also plans on performing steam turbine generator (STG) improvements within the maximum generator nameplate rating. These upgrades offer greater output and greater efficiency without sacrificing reliability, availability, or operational flexibility. These upgrades will be installed at the same time as the GE 7FA.05 components which were previously authorized by Permit Nos. 0710002-020-AC and 0710002-021-AC. The 7FA.05 and DLN 2.6+ components with the 3SAR turbine rotor upgrades have a projected design heat input capacity that is higher than the current permitted capacity seen in the Title V Air Operation Permit No. 0710002-028-AV. Based on GE data, there will be no changes in the exhaust concentrations of nitrogen oxides (NO_X), carbon monoxide (CO) and volatile organic compounds (VOCs); however, while there are predicted reductions in emissions on a pound per megawatt-hour basis there may be a potential increase in mass emissions of NO_X and CO at baseload and ISO[1] conditions.

[1] International Standards Organization (ISO) conditions means 288 Kelvin, 60 percent relative humidity and 101.3 kilopascals pressure.

FACILITY REGULATORY CLASSIFICATION

- The facility is a major source of hazardous air pollutants (HAP).
- The facility operates units subject to the acid rain provisions of the Clean Air Act.
- The facility is a Title V major source of air pollution in accordance with Chapter 62-213, F.A.C.
- The facility is a major stationary source in accordance with Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.
- The facility operates units subject to the New Source Performance Standards (NSPS) of 40 Code of Federal Regulations (CFR) 60.
- The facility operates units subject to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) of 40 CFR 63.

SECTION 2. ADMINISTRATIVE REQUIREMENTS

1. Permitting Authority: The permitting authority for this project is the Office of Permitting and Compliance (OPC) in the Division of Air Resource Management of the Department of Environmental Protection (Department). The OPC mailing address is 2600 Blair Stone Road (MS #5505), Tallahassee, Florida 32399-2400. All documents related to applications for permits to operate an emissions unit shall be submitted to the OPC.

2. Compliance Authority: All documents related to compliance activities such as reports, tests and notifications shall be submitted to the South District Office. The mailing address and phone number of the South District Office is: 2295 Victoria Avenue, Suite 364, P.O. Box 2549, Fort Myers, Florida 33902, (239) 344-5664.

3. Appendices: The following Appendices are attached as a part of this permit: Appendix A (Citation Formats and Glossary of Common Terms); Appendix B (General Conditions); Appendix C (Common Conditions); and Appendix D (Common Testing Requirements).

4. Applicable Regulations, Forms and Application Procedures: Unless otherwise specified in this permit, the construction and operation of the subject emissions units shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403, F.S.; and Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296 and 62-297, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations.

5. 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.]

6. Modifications: The permittee shall notify the Compliance Authority upon commencement of construction. No new emissions unit shall be constructed and no existing emissions unit shall be 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.]

7. Construction and Expiration: The expiration date shown on the first page of this permit provides time to complete the physical construction activities authorized by this permit, complete any necessary compliance testing, and obtain an operation permit. Notwithstanding this expiration date, all specific emissions limitations and operating requirements established by this permit shall remain in effect until the facility or emissions unit is permanently shut down. For good cause, the permittee may request that a permit be extended. Pursuant to Rule 62-4.080(3), F.A.C., such a request shall be submitted to the Permitting Authority in writing before the permit expires. [Rules 62-4.070(3) & (4), 62-4.080 & 62-210.300(1), F.A.C.]

8. Source Obligation: At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by exceeding its projected actual emissions, then the requirements of subsections 62-212.400(4) through (12), F.A.C., shall apply to the source or modification as though construction had not yet commenced on the source or modification. [Rule 62-212.400(12), F.A.C.]

9. Application for Title V Permit: This permit authorizes construction of the permitted emissions units and initial operation to determine compliance with Department rules. A Title V air operation permit is required for regular operation of the permitted emissions unit. The permittee shall apply for a Title V air 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 appropriate Permitting Authority with copies to the Compliance Authority. [Rules 62-4.030, 62-4.050 and Chapter 62-213, F.A.C.]

10. Actual Emissions Reporting: This permit is based on an analysis that compared baseline actual emissions with projected actual emissions and avoided the requirements of subsection 62-212.400(4) through (12), F.A.C. for several pollutants. Therefore, pursuant to Rule 62-212.300(1)(e), F.A.C., the permittee is subject

to the following monitoring, reporting and recordkeeping provisions as described in **Section 3, Specific Condition No. 3**. [Application No. 0090006-013-AC; and Rules 62-212.300(1)(e) and 62-210.370, F.A.C.]

A. Combined Cycle Unit 2 (EU 018 through EU 023)

This section of the permit addresses the following emissions units.

EU No.	Brief Description
018	Combustion Turbine 2A, Combined-Cycle Unit with Non-Fired HRSG
019	Combustion Turbine 2B, Combined-Cycle Unit with Non-Fired HRSG
020	Combustion Turbine 2C, Combined-Cycle Unit with Non-Fired HRSG
021	Combustion Turbine 2D, Combined-Cycle Unit with Non-Fired HRSG
022	Combustion Turbine 2E, Combined-Cycle Unit with Non-Fired HRSG
023	Combustion Turbine 2F, Combined-Cycle Unit with Non-Fired HRSG

PREVIOUS APPLICABLE REQUIREMENTS

1. Other Permits. The conditions of this permit supplement all previously issued air construction and operation permits for these emissions units. Unless otherwise specified below, these conditions are in addition to all other applicable permit conditions and regulations. The facility remains subject to all of the requirements contained in all previously issued air construction permits for this facility. [Rule 62-4.070, F.A.C.]

NEW EQUIPMENT

This permit allows the installation of turbine upgrades to improve the performance of Unit 2 (designated as Units 2A through 2F).

2. Combustion Turbine Improvements on Unit 2: The permittee is authorized to conduct the following work on Unit 2 (designated as Units 2A through 2F) including STG improvements within the maximum generator nameplate rating:
   - DLN 2.6+ combustor components;
   - 3SAR turbine rotor upgrades; and,
   - Improved combustor bucket material.

   [Application No. 0710002-30-AC]

TESTING & REPORTING REQUIREMENTS

3. Actual Emissions Reporting: This permit is based on an analysis that compared baseline actual emissions with projected actual emissions and avoided the requirements of subsection 62-212.400(4) through (12), F.A.C. for several pollutants. Therefore, pursuant to Rule 62-212.300(1)(e), F.A.C., the permittee is subject to the following monitoring, reporting and recordkeeping provisions.
   a. The permittee shall monitor the emissions of any PSD pollutant that the Department identifies could increase as a result of the construction or modification and that is emitted by any emissions unit that could be affected; and, using the most reliable information available, calculate and maintain a record of the annual emissions, in tons per year on a calendar year basis, for a period of 10 years following resumption of regular operations after the change. Emissions shall be computed in accordance with the provisions in Rule 62-210.370, F.A.C., which are provided in Appendix C of this permit.
   b. The permittee shall report to the Department within 60 days after the end of each calendar year during the 10-year period setting out the unit's annual emissions during the calendar year that preceded submission of the report. The report shall contain the following:
      (1) The name, address and telephone number of the owner or operator of the major stationary source;
      (2) The annual emissions calculations pursuant to the provisions of 62-210.370, F.A.C., which are provided in Appendix C of this permit;
      (3) If the emissions differ from the preconstruction projection, an explanation as to why there is a

difference; and

(4) Any other information that the owner or operator wishes to include in the report.

c. The information required to be documented and maintained pursuant to subparagraphs 62-212.300(1)(e)1 and 2, F.A.C., shall be submitted to the Department, which shall make it available for review to the general public.

d. For this project, the permittee estimated the following baseline actual emissions: 28.37 tons per year (TPY) of carbon monoxide (CO); 919.76 TPY of nitrogen oxides (NO_X); 19.76 TPY of sulfur dioxide; 0.06 TPY of volatile organic compounds; 217.51 TPY of particulate matter; 3.03 TPY of sulfuric acid mist; and 3,921,274 TPY of carbon dioxide-equivalent.

e. The Department has identified CO and NO_X as the only PSD-pollutant that could reasonably increase as a result of this modification. For comparative purposes with baseline actual emissions, the permittee shall use the installed continuous emissions monitoring systems (CEMS) to determine and report the actual annual emissions of NO_X. The actual annual emissions for CO shall be measured by EPA Method 10.

f. 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 60 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.]

{Permitting Note: Continuous compliance with the NO_X standard will be demonstrated by CEMS. The required CO stack test may be conducted during the next scheduled period in accordance with existing permit conditions.}

[Application No. 0710002-030-AC; and Rules 62-212.300(1)(e) & 62-210.370, F.A.C.]

4. Test Requirements: The permittee shall notify the Compliance Authority in writing at least 15 days prior to any required tests. Tests shall be conducted in accordance with the applicable requirements specified in Appendix D (Common Testing Requirements) of this permit. [Rule 62-297.310(9), F.A.C.]

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

Method	Description of Method and Comments
1-4	Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content
10	Determination of Carbon Monoxide Emissions from Stationary Sources *{Note: The method shall be based on a continuous sampling train.}*

The above methods are described in Appendix A of 40 CFR 60 and are adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used unless prior written approval is received from the Department. [Rules 62-204.800, F.A.C.; and Appendix A of 40 CFR 60]

6. Test Reports: The permittee shall prepare and submit reports for all required tests in accordance with the requirements specified in Appendix D (Common Testing Requirements) of this permit. [Rule 62-297.310(10), F.A.C.]

PERMITS MODIFIED

The following revisions to Permit Nos. 0710002-023-AC and 014-AC are shown below:

7. *Permit No. 0710002-023-AC, Section III, Subsection A., Specific Condition 2.*

Turbine Capacity: The maximum heat input rates, based on the lower heating value (LHV) of the fuel to *each* combustion turbine at compressor inlet conditions of 59°F, 60% relative humidity, 100% load, and 14.7 psia shall not exceed ~~1,783~~1,916 million Btu per hour (MMBtu/hr). This maximum heat input rate will vary depending upon turbine inlet conditions and the combustion turbine characteristics. Manufacturer's curves

corrected for site conditions or equations for correction to other compressor inlet conditions have been provided to the Department of Environmental Protection (DEP). [~~Design,~~ Rule 62-210.200, F.A.C. (Definitions - Potential Emissions) and Application No. 0710002-~~023~~030-AC]

8. *Permit No. 0710002-014-AC, Specific Condition 3.*

Each gas turbine may operate in a high-temperature peaking mode to generate additional direct, shaft-driven electrical power to respond to peak demands. During any consecutive 12 months, each combined cycle gas turbine shall operate in this peaking mode for no more than 400 hours of operation. The maximum heat input rate to each gas turbine is ~~1838~~1,948 MMBtu per hour in peak mode operation (based on a compressor inlet air temperature of 85~~59~~° F, the lower heating value (LHV) ~~of each fuel, and 100% load~~). [~~Permit No. 0710002-014-AC, Specific Condition 3.~~ Application No. 0710002-030-AC]