# Florida Department of Environmental Protection

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Tallahassee, Florida 32399-2400

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**PERMITTEE**

Florida Power Corporation
d/b/a Progress Energy Florida, Inc.
299 First Avenue, North
St. Petersburg, Florida 33701

Authorized Representative:
Robby Odom, Plant Manager

Air Permit No. 0170004-036-AC
Crystal River Power Plant Units 1 and 2
Standard Industrial Classification Code No. 4911
Expiration Date: December 31, 2018

Sulfur Dioxide Emission Standards/Controls
Citrus County

**PROJECT**

This is the final air construction permit, which establishes an additional sulfur dioxide ($SO_2$) emission standard for Units 1 and 2, authorizes installation of dry flue gas desulfurization (FGD) systems and authorizes physical changes to the electrostatic precipitators and plant components or installation of baghouses to facilitate installation of the dry FGD systems. The proposed work will be conducted at the existing Crystal River Power Plant, located in Citrus County at 15760 West Power Line Street in Crystal River, Florida. The UTM coordinates are Zone 17, 334.3 km East and 3204.5 km North.

This final permit is organized into the following sections: Section 1 (General Information); Section 2 (Administrative Requirements); Section 3 (Emissions Unit Specific Conditions); 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

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Jeffery F. Koerner, 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 Permit package (including the Final Determination and Final Permit with Appendices) 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.

Robby Odom, Plant Manager, PEF: robby.odom@pgnmail.com
Scott Osbourn, P.E., Golder Associates, Inc: sosbourn@golder.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.

## FACILITY DESCRIPTION

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

| E.U. No. | Brief Description |
|---|---|
| *Regulated Emission Units* | |
| 001 | Fossil Fuel Steam Generator, Unit 1 |
| 002 | Fossil Fuel Steam Generator, Unit 2 |
| 004 | Fossil Fuel Steam Generator, Unit 4 |
| 003 | Fossil Fuel Steam Generator, Unit 5 |
| 006 | Fly ash transfer (Source 1) from FFSG Unit 1 |
| 008 | Fly ash storage silo (Source 3) for FFSG Units 1 and 2 |
| 009 | Fly ash transfer (Source 4) from FFSG Unit 2 |
| 010 | Fly ash transfer (Source 5) from FFSG Unit 2 |
| 014 | Bottom ash storage silo for FFSG Units 1 and 2 |
| 012 | Relocatable diesel generators |
| 013 | Cooling towers for FFSG Units 1, 2, and 3 |
| 015 | Cooling towers for FFSG Units 4 and 5 |
| 016 | Material handling activities for coal-fired steam units |
| 020 | Portable Cooling Towers for Fossil Fuel Steam Generators Units 1 and 2 |
| 028 | 3500 kW diesel generator associated with Unit 3 |
| 029 | Diesel fire pump, south yard |
| 030 | Emergency generator (meteorological weather station) |
| *Unregulated Emissions Units and/or Activities* | |
| 017 | Fuel and lube oil tanks and vents |
| 018 | Sewage treatment, water treatment, lime storage |
| 019 | Two 3,500 kW diesel generators associated with Unit 3 |

## PROPOSED PROJECT

This project addresses coal-fired Units 1 and 2. The project supplements permit No. 0170004-017-AC (issued February 26, 2009) by providing additional options for complying with Florida's Regional Haze State Implementation Plan. The two emission reduction scenarios authorized by this project include:

A) Discontinuation of operation of Units 1 and 2 as coal-fired units by December 31, 2020; or

B) Installation and operation of a Dry Flue Gas Desulfurization (DFGD) system before January 1, 2018, or within 5 years of the effective date of EPA's approval of this specific requirement in the Florida Regional Haze State Implementation Plan, whichever is later, and establishment of emissions standards of 95 percent (%) sulfur dioxide $SO_2$ removal efficiency or 0.15 pounds per million Btu heat input (lb/MMBtu).

## 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 (CAA).
- 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(PSD), F.A.C.

## SECTION 2. ADMINISTRATIVE REQUIREMENTS

1. Permitting Authority: The permitting authority for this project is the Office of Permitting and Compliance in the Division of Air Resource Management of the Department of Environmental Protection (Department). The Office of Permitting and Compliance mailing address is 2600 Blair Stone Road (MS #5505), Tallahassee, Florida 32399-2400.

2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to the DEP Southwest District Office at: 13051 N. Telecom Parkway Temple Terrace, Florida 33637-0926.

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); and Appendix C (Common Conditions).

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: 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) & 62-212.300(1)(a), F.A.C.]

7. New Permit Specific Conditions: The applicant proposed three emission reduction scenarios to satisfy the Florida Regional Haze Implementation Plan for the eligible emissions units at the Crystal River Power Plant. The applicant shall make a decision regarding the scenario that will be pursued and shall notify the Department of this decision no later than January 1, 2015, at which time the scenarios (and corresponding permit conditions) which were not selected will become obsolete. Notwithstanding the three scenarios proposed, the applicant shall comply with one of the following two scenarios:

   a. Discontinuation of operation of Crystal River Units 1 and 2 as coal-fired units by December 31, 2020. Refer to Section 3, Scenario A. This scenario is currently in effect pursuant to Permit No. 0170004-AV with certain contingencies related to other projects planned by the applicant.

   b. Install and operate a sulfur dioxide ($SO_2$) Dry Flue Gas Desulfurization (DFGD) system before January 1, 2018, or within 5 years of the effective date of EPA's approval of this specific requirement in the Florida Regional Haze State Implementation Plan, whichever is later, and establish additional emissions standards of 95 percent sulfur dioxide $SO_2$ removal efficiency or 0.15 pounds per million Btu heat input (lb/MMBtu), whichever is less stringent, for Crystal River Units 1 and 2 as presumptive Best Available Retrofit Technology (BART). Refer to Section 3, Scenario B.

   [Application No. 0170004-036-AC; Rule 62-296.340(5)(c), F.A.C.; and, Rules 62-4.070(1)&(3), and 62-213.440(1), F.A.C.]

8. Application for Title V Permit: This permit establishes optional emissions reduction scenarios as detailed in Section 3. A Title V air operation permit is required for regular operation of the permitted emissions unit. If Scenario A is chosen, an application to revise the facility's Title V air operation permit shall be submitted by January 1, 2015. If Scenario B is chosen, an application to incorporate the conditions of Scenario B of this permit into the facility's Title V air operation permit shall be submitted within 180 days after completing the physical changes authorized by this permit, but no later than 90 days prior to the expiration date shown above. To apply for a Title V air operation permit, the applicant shall submit the appropriate application form 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, 62-4.220 and Chapter 62-213, F.A.C.]

**Emission Units 1 and 2**

This section of the permit addresses the following emissions units.

| ID No. | Emission Unit Description |
|---|---|
| 001 | Fossil Fuel Steam Generator, Unit 1 - 3,750 MMBtu/hour |
| 002 | Fossil Fuel Steam Generator, Unit 2 - 4,795 MMBtu/hour |

**SCENARIO A: CEASE OPERATION OF UNITS 1 & 2 AS COAL-FIRED UNITS BY 12/31/2020.**

**A.1.** Compliance With Permit No. 0170004-017-AC: If the chosen emission reduction scenario is to cease operating Units 1 and 2 as coal fired units by December 31, 2020, then PEF shall comply with the existing emissions and operation limitations contain in Permit No. 0170004-017-AC, except that Condition 3.C.16. is changed as follows (~~strike through~~ indicates deleted text, double underline indicates added text):

Shut Down of Units 1 and 2. Units 1 and 2 shall cease to be operated as coal-fired units by December 31, 2020. ~~This date assumes timely licensing, construction and commencement of commercial operation of PEF's proposed new nuclear units (Levy County Units 1 and 2). The shutdown (or repowering) of Units 1 and 2 coal-fired units is contingent upon completion of the first fuel cycle for Levy County Unit 2. PEF shall timely advise the Department of any developments that would delay the shutdown (or repowering) of Units 1 and 2 beyond the completion of the first fuel cycle for Levy County Unit 2. [Rule 62-296.340 (BART), F.A.C. and Applicant Request]~~ [Application No. 0170004-036-AC]

**SCENARIO B: INSTALL DRY FLUE GAS DESULFURIZATION (DFGD) SYSTEM.**

**Authorized Construction**

**B.1.** Previous Permits: The conditions of this section supplement all previously issued air construction permits and regulations affecting Units 1 and 2. Relevant provisions of these permits are incorporated in the Facility Title V Operation Permit No. 0170004-025-AV.

**B.2.** Sulfur Dioxide ($SO_2$) Control Project: For Units 1 and 2, the permittee is authorized to install a dry flue gas desulfurization (FGD) system including vessels, pumps, metering equipment, slaking equipment, bins, silos and other equipment required to store, feed and contact lime or similar sorbent with exhaust gas. [Application 0170004-036-AC]

**B.3.** Particulate Matter (PM) Control: If the permittee actually conducts the $SO_2$ Control Project on Units 1 and 2, then the permittee is required to make physical or operational changes to the PM control systems to avoid significantly increasing PM emissions caused by use of the dry FGD. The changes may include but are not limited to:

a. Replacement or addition of wires, collection plates, transformer/rectifier sets, rappers, dust hoppers, conveyors and duct work on the existing electrostatic precipitators (ESPs);

b. Conversion of ESPs or portions of ESPs to baghouses;

c. Addition of baghouses, hoppers and conveyance equipment; and

d. Installation of modern micro-processor controls.

[Application 0170004-036-AC]

**B.4.** Coal and Ash Handling Equipment: The permittee is authorized to make changes and improvements to the coal and ash handling equipment to facilitate the use of lower or higher sulfur coal blends and facilitate removal of dry FGD reaction products while achieving the $SO_2$ emission standard specified in Condition 6, below. [Application 0170004-036-AC]

**Performance Restrictions**

**B.5.** Emission Increases: This permit does not authorize major modifications or increases in capacity. [Rule 62-210.200, F.A.C. (Definitions: Major Modification, Potential-to-Emit, Actual Baseline Emissions; Projected Actual Emissions and Significant Emissions Rate)]

**B.6.** Sulfur Dioxide ($SO_2$) Emission Standard: When combusting coal in Units 1 and 2, the owner or operator shall not cause to be discharged into the atmosphere from either unit any gases that contain $SO_2$ in excess of 0.15 pounds per million of heat input (lb/MMBtu) or 5 percent of the potential combustion concentration (95 percent reduction) on a 30-day rolling average basis, whichever is less stringent. Compliance with the emission standard shall be determined on a 30-day rolling average basis in accordance with the procedures contained in 40 Code of Federal Regulation (CFR), Part 60, Subpart Da. This condition shall become effective no later than January 1, 2018, or within 5 years of the effective date of EPA's approval of this specific requirement in the Florida Regional Haze State Implementation Plan, whichever is later. [Application No. 0170004-036-AC]

*{Note: This condition will apply in addition to other $SO_2$ requirements contained in Facility Title V Air Operation Permit 0170004-025-AV, its renewals and its revisions. Reference is made to certain procedures contained in 40 CFR 60, Subpart Da strictly for convenience. Units 1 and 2 are not affected facilities under this subpart.}*

**B.7.** Particulate Matter (PM) Emissions: No later than January 1, 2018, or within 5 years of the effective date of EPA's approval of this specific requirement in the Florida Regional Haze State Implementation Plan, whichever is later, PM emissions shall not exceed 0.015 lb/MMBtu, as determined by EPA Method 5. [Rule 62-4.070, F.A.C.; avoidance of Rule 62-212.400 (PSD), F.A.C.]

**B.8.** Visible Emissions: No later than January 1, 2018, or within 5 years of the effective date of EPA's approval of this specific requirement in the Florida Regional Haze State Implementation Plan, whichever is later, visible emissions shall not exceed 15% opacity under normal operations and 20% opacity under soot blowing and load change operations, as determined by data collected from the existing COMS. [Rule 62-4.070, F.A.C.; avoidance of Rule 62-212.400 (PSD), F.A.C.]

**B.9.** $SO_2$ Continuous Emissions Monitoring Systems (CEMS): The permittee shall use data collected from each of the previously installed and certified Acid Rain $SO_2$ CEMS to demonstrate compliance with the emissions standards specified in this permit. An additional $SO_2$ CEMS shall be installed prior to the new DFGD and shall be calibrated and certified to record pre-control $SO_2$ emissions in order to demonstrate the $SO_2$ removal efficiency of the DFGD. The $SO_2$ CEMS shall be operated and data recorded during all periods of operation including periods of startup, shutdown, malfunction, or emergency conditions, except for continuous monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments. [40 CFR 60 Appendix A; 40 CFR 75]

**Testing Requirements**

**B.10.** Initial Compliance Tests: Following installation of the control devices authorized by Conditions B.2. and B.3., compliance tests shall be conducted for particulate matter and visible emissions to demonstrate compliance with the emissions standards specified in Conditions B.7. and B.8. Compliance with the PM standard shall be demonstrated on the average of the 3 required 1-hour test runs. [Rule 62-297.310, F.A.C.]

**Design Details and Projected Actual Emission Update**

**B.11.** Preliminary Design: The permittee shall as soon as practicable and no later than January 1, 2015, submit to the Department updated project details including the selection of implementation

strategies including but not limited to: the capacity and location of the DFGD systems and associated silos; approximate fuel sulfur specifications; contemplated improvements to the electrostatic precipitators, reorientation of components; and contemplated modifications and improvements to coal, ash and any new coal combustion products handling systems. [Rule 62-4.070, F.A.C. (Reasonable Assurance)]

**B.12.** Estimates of Projected Actual Emissions: The permittee shall as soon as practicable and no later than January 1, 2015, submit to the Department updated estimates of baseline actual emissions and future actual emissions of $SO_2$, Nitrogen oxides ($NO_X$), carbon monoxide (CO), PM, PM smaller than 10 microns ($PM_{10}$) and ($PM_{2.5}$) in accordance with the procedures specified in Rule 62-210.200, F.A.C. [Rules 62-4.070, F.A.C. (Reasonable Assurance) and Rule 62-210.200, F.A.C. (Definitions: Potential-to-Emit, Actual Baseline Emissions; Projected Actual Emissions and Significant Emissions Rate)]