TECHNICAL EVALUATION
&
PRELIMINARY DETERMINATION

APPLICANT

Florida Power and Light Company
700 Universe Boulevard
Juno Beach, FL 33408

Smith Electric Generating Plant
Facility ID No. 0050014

PROJECT

Project No. 0050014-035-AC
Application for Minor Source Air Construction Permit
Winter Upgrades to Unit 3

COUNTY

Bay County, Florida

PERMITTING AUTHORITY

Florida Department of Environmental Protection
Division of Air Resource Management
Office of Permitting and Compliance
2600 Blair Stone Road, MS#5505
Tallahassee, Florida 32399-2400

November 2, 2021

1. GENERAL PROJECT INFORMATION

1.1. Air Pollution Regulations

Projects at stationary sources with the potential to emit air pollution are subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.). The statutes authorize the Department of Environmental Protection (Department) to establish regulations regarding air quality as part of the Florida Administrative Code (F.A.C.), which includes the following applicable chapters: 62-4 (Permits); 62-204 (Air Pollution Control – General Provisions); 62-210 (Stationary Sources – General Requirements); 62-212 (Stationary Sources – Preconstruction Review); 62-213 (Operation Permits for Major Sources of Air Pollution); 62-296 (Stationary Sources - Emission Standards); and 62-297 (Stationary Sources – Emissions Monitoring). Specifically, air construction permits are required pursuant to Chapters 62-4, 62-210 and 62-212, F.A.C.

In addition, the U. S. Environmental Protection Agency (EPA) establishes air quality regulations in Title 40 of the Code of Federal Regulations (CFR). Part 60 specifies New Source Performance Standards (NSPS) for numerous industrial categories. Part 61 specifies National Emission Standards for Hazardous Air Pollutants (NESHAP) based on specific pollutants. Part 63 specifies NESHAP based on the Maximum Achievable Control Technology (MACT) for numerous industrial categories. The Department adopts these federal regulations in Rule 62-204.800, F.A.C.

1.2. Glossary of Common Terms

Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of this permit.

1.3. Facility Description and Location

The Smith Electric Generating Plant is an existing power plant, which is categorized under Standard Industrial Classification Code No. 4911. The Lansing Smith Plant is in Bay County at 4300 County Road 2300 in Lynn Haven, Florida. The UTM coordinates of the existing facility are Zone 16; 623.74 Kilometer (km) East and 3349.11 km North. Latitude is: 30º 16' 8.4566" North; and, Longitude is: 85º 42' 2.4149" West. This site is in an area that is in attainment (or designated as unclassifiable) for all air pollutants subject to Ambient Air Quality Standards (AAQS). The location of Bay County is shown in **Figure 1** while the location of the site within Bay County is shown in **Figure 2**. A satellite view of the Lansing Smith Plant is shown in **Figure 3** below.

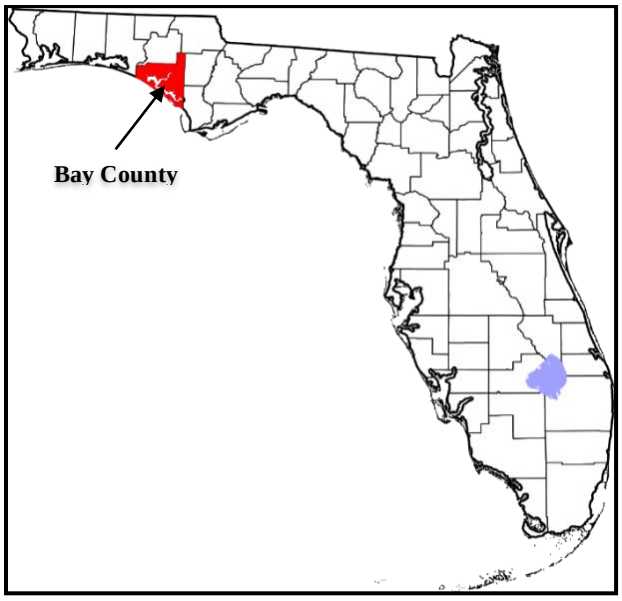

Figure 1. Location of Bay County.

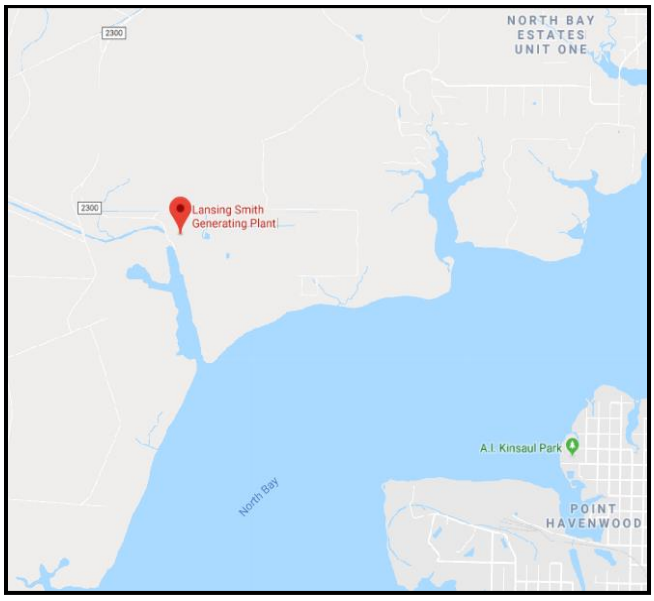

Figure 2. Location of Lansing Smith Plant.

Figure 3. Satellite View of Lansing Smith Plant.

This facility consists of a Pratt & Whitney Twin-Pac combustion turbine peaking unit, and two gas-fired combined-cycle combustion turbine (CCCT) electrical generators with duct-fired heat recovery steam generators (HRSG). The Twin-Pac system, designated as Unit A, has a maximum heat input of 542 million British thermal units per hour (MMBtu/hour) and is authorized to fire No. 2 fuel only. The two combined-cycle combustion turbines, designated as Units 3A & 3B, can achieve a nominal 610 megawatts (MW), at annual average site conditions, with duct burners, while firing exclusively natural gas. A list if the emission units (EU) at the facility are given in **Table 1**.

TABLE 1 – LIST OF EUs AT THE FACILITY.

EU No.	Description
003	Twin-Pac Combustion Turbine Peaking Unit (Unit A)
004	Gas Combustion Turbine with HRSG and Duct Burner (Unit 3A)
005	Gas Combustion Turbine with HRSG and Duct Burner (Unit 3B)
009	General Purpose Internal Combustion Engines (Emergency and Non-Emergency)
012	550 HP Emergency Diesel Generator at CCCT
013	153 HP Emergency Diesel Sump Pump (Big Blue)

1.4. Facility Regulatory Categories

- 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 Title 40 Part 60 of the Code of Federal Regulations (40 CFR 60).
- The facility operates units subject to the National Emissions Standards of Hazardous Air Pollutants (NESHAP) of 40 CFR 63.

1.5. Project Description

The applicant submitted an application to the Department on October 6, 2021, (Link to application, click "Public Oculus Login" button) requesting authorization to implement winter upgrades and AGP Tech 2.0 upgrades to Unit 3.

Table 2 list the EUs will be affected by this project.

TABLE 2. EUs AFFECTED BY THE PROJECT.

EU No.	Description
004	Gas Combustion Turbine with HRSG and Duct Burner (Unit 3A)
005	Gas Combustion Turbine with HRSG and Duct Burner (Unit 3B)

1.6. Processing Schedule

10/06/2021 Department received the application for an air pollution construction permit; application complete.

11/01/2021 Draft permit issued.

2. PSD APPLICABILITY

2.1. General PSD Applicability

For areas currently in attainment with the AAQS or areas otherwise designated as unclassifiable, the Department regulates major stationary sources of air pollution in accordance with Florida's PSD preconstruction review program as defined in Rule 62-212.400, F.A.C. Under preconstruction review, the Department first must determine if a project is subject to the PSD requirements ("PSD applicability review") and, if so, must conduct a PSD preconstruction review. A PSD applicability review is required for projects at new and existing major stationary sources. In addition, proposed projects at existing minor sources are subject to a PSD applicability review to determine whether potential emissions *from the proposed project itself* will exceed the PSD major stationary source thresholds. A facility is considered a major stationary source with respect to PSD if it emits or has the potential to emit:

- 250 tons per year or more of any regulated air pollutant; or
- 100 tons per year or more of any regulated air pollutant and the facility belongs to one of the following 28 PSD-major facility categories: fossil fuel-fired steam electric plants of more than 250 million British thermal units per hour heat input, coal cleaning plants (with thermal dryers), Kraft pulp mills, portland cement plants, primary zinc smelters, iron and steel mill plants, primary aluminum ore reduction plants, primary copper smelters, municipal incinerators capable of charging more than 250 tons of refuse per day, hydrofluoric, sulfuric, and nitric acid plants, petroleum refineries, lime plants, phosphate rock processing plants, coke oven batteries, sulfur recovery plants, carbon black plants (furnace process), primary lead smelters, fuel conversion plants, sintering plants, secondary metal production plants, chemical process plants, fossil fuel boilers (or combinations thereof) totaling more than 250 million British thermal units per hour heat input, petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels, taconite ore processing plants, glass fiber processing plants and charcoal production plants.

Once it is determined that a project is subject to PSD preconstruction review, the project emissions are compared to the "significant emission rates" defined in Rule 62-210.200, F.A.C. for the following pollutants: carbon monoxide (CO); nitrogen oxides (NO_X); sulfur dioxide (SO_2); particulate matter (PM); particulate matter with a mean particle diameter of 10 microns or less (PM_{10}); $PM_{2.5}$; volatile organic compounds (VOC); lead (Pb); fluorides (F); sulfuric acid mist (SAM); hydrogen sulfide (H_2S); total reduced sulfur (TRS), including H_2S; reduced sulfur compounds, including H_2S; municipal waste combustor organics measured as total tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans; municipal waste combustor metals measured as particulate matter; municipal waste combustor acid gases measured as SO_2 and hydrogen chloride (HCl); municipal solid

waste landfills emissions measured as non-methane organic compounds (NMOC); and mercury (Hg). In addition, significant emissions rate also means any emissions rate or any net emissions increase associated with a major stationary source or major modification which would construct within 10 kilometers of a Class I area and have an impact on such area equal to or greater than 1 micro grams per cubic meter ($\mu g/m^3$), 24-hour average.

The Smith Electric Generating Plant is a fossil fuel-fired steam electric plant of more than 250 million British thermal units per hour heat input, belonging to the list of 28 PSD-major facility categories, emitting more than 100 TPY of a PSD regulated pollutant. Consequently, the facility is subject to the significant emissions rates (SER) listed in **TABLE 3**.

TABLE 3. LIST OF SER BY PSD POLLUTANT

Pollutant [a]	SER (TPY)	Pollutant	SER (TPY)
CO	100	NO_X	40
$PM/PM_{10}/PM_{2.5}$	25/15/10	Ozone (VOC) [b]	40
$PM_{2.5}$ (NO_X)	40	$PM_{2.5}$ (SO_2) [b]	40
Ozone (NO_X) [b]	40	SAM	7
SO_2	40	Pb	0.6
H_2S	10	TRS	10
Hg	0.1	GHG (CO_2e) [c]	75,000

a. Excluding fluoride and those pollutants defined for Pulp and Paper, MWC, MSW landfills.
b. Ozone (O_3) is regulated by its precursors (VOC and NO_X). PSD for $PM_{2.5}$ can be triggered by its precursors (NO_X and SO_2).
c. "CO_2e" means carbon dioxide equivalents and refers to greenhouse gas (GHG) emissions. The calculation of GHG emissions is defined in 40 CFR 98, Subpart A, Table A-1.

If the potential emission equals or exceeds the defined significant emissions rate of a PSD pollutant, the project is considered "significant" for the pollutant and the applicant must employ the Best Available Control Technology (BACT) to minimize the emissions and evaluate the air quality impacts. Although a facility or project may be *major* with respect to PSD for only one regulated pollutant, it may be required to install BACT controls for several "significant" regulated pollutants.

2.2. PSD Applicability for Project

The project is located in Bay County, which is in an area that is currently in attainment with the AAQS or is otherwise designated as unclassifiable. As provided in the application, the **TABLE *4*** summarizes potential emissions and PSD applicability for the project.

TABLE 4. SUMMARY OF THE APPLICANT'S PSD APPLICABILITY ANALYSIS

Pollutant	Annual Emissions, Tons/Year				Subject to PSD?
	Baseline Actual [a]	Projected Actual [b] (Winter Peak)	Increase	SER	
CO	99.2	101.4	2.2	100	No
NO_X	502.4	513.5	11.1	40	No
PM	94.9	97.0	2.1	25/	No
PM_{10}	30.6	31.3	0.7	15/	No
$PM_{2.5}$	30.6	31.3	0.7	10	No
SO_2	6.5	6.6	0.1	40	No
VOC	15.1	15.4	0.3	40	No
CO_2e	1,871,038	1,912,201	41,163	75,000	No

Pollutant	Annual Emissions, Tons/Year				Subject to PSD?
	Baseline Actual [a]	Projected Actual [b] (Winter Peak)	Increase	SER	

a. Baseline actual emissions (BAE) were calculated based on the following highest consecutive 2-year average: 2017 and 2018 for CO; and 2018 and 2019 for NOx, PM, PM_{10}, $PM_{2.5}$, SO_2, VOC, and CO_2e.
b. Projected actual emissions (PAE) for each pollutant for the winter baseload were based on 6,000 hours of operation per year in winter peak mode with a maximum heat input rate of 2,450 MMBtu/hr. The heat input rate is expected to increase by up to 5 % in the winter peak mode; therefore PAE were calculated as PAE = BAE x [0.56 + 0.44x1.05] = 1.022 x BAE, where 0.44 accounts for the percent of the time the units could operate during winter peak, 1.05 accounts for 5% increase in emissions during 44% of the time, and 0.56 is the percent of the time the emissions will remain unchanged.
c. The increase in emissions from the project is the difference between the sum of PAE and BAE.

As shown in **Table 4**, total project emissions will not exceed the PSD significant emissions rates; therefore, the project is not subject to PSD preconstruction review.

3. DEPARTMENT REVIEW

3.1. Project Overview

The applicant seeks authorization to implement winter upgrades to Unit 3. According to the application, given the recent events in Texas related to record low temperatures during this past 2021 winter that resulted in significant power loss in that state, FPL is proactively trying to mitigate potential impacts related to weather extremes that might occur more frequently in the future. Accordingly, FPL is proposing to implement winter upgrades that will increase the turbine shaft control limits to accommodate the production of more MWs during operation at temperatures below 59°F.

3.2. Winter Upgrades

Winter upgrades include software changes that will increase the setting in the turbine shaft limit and will enable the production of more MWs at lower temperatures. These lower temperatures, i.e. temperatures at or below 59°F, are referred to as "winter baseload" or "winter peak" for the purposes of this project. As ambient inlet air temperature decreases, the air density increases which results in a greater air mass flow to the turbine. Generally, the higher the air mass flow, the greater the power output of the turbine. Under current turbine conditions, when the temperature decreases below 59°F, the air mass flow to the turbine is higher but the power output is not changed as it is limited by the limits set on the turbine shaft. Increasing the limit setting of the turbine shaft so that it can accommodate the higher air mass flow available at lower temperatures comes at a cost to the turbine. Higher shaft settings can result in shorter turbine maintenance intervals. As such, winter baseload/peak operation is expected to be used only when the higher power output from the facility is really needed. Specific modifications that are being proposed for winter upgrades include:

- Turbine shaft control limit setting changes from 207 MW to 225 MW; and
- Software changes to enable a winter peak firing mode of operation.

The facility anticipates performing the winter upgrades and testing the additional winter capability of the units during the winter months this year, during the November/December outage.

3.3. Brief Discussion of Emissions

Emissions from the project are as shown in **Table 4**. Since the total project emissions will not exceed the PSD significant emissions rates, the project is not subject to PSD preconstruction review.

3.4. Federal NSPS Provisions

EUs 004-005, Combined Cycle CTs with Unfired HRSG, are currently subject to 40 CFR 60, Subpart A – General Provisions and 40 CFR 60, Subpart KKKK – Standards of Performance for Stationary Combustion Turbines. The draft permit will not change any currently applicable requirements regarding these regulations.

3.5. Federal NESHAP Provisions

On March 5, 2004, EPA promulgated 40 CFR 63, Subpart YYYY – National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines built after January 14, 2003. EUs. 004-005 were under contractual obligations before this date and are, therefore, existing units. Currently, 'existing combustion turbines' are not required to meet the emission limitations, notifications, reporting or any other requirements of Subpart YYYY, in accordance with 40 CFR 63.6090(b)(4).

4. PRELIMINARY DETERMINATION

The Department makes a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations as conditioned by the draft permit. This determination is based on a technical review of the complete application, reasonable assurances provided by the applicant, and the conditions specified in the draft permit. No air quality modeling analysis is required because the project does not result in a significant increase in emissions. Pawan Subramaniam is the project engineer responsible for reviewing the application and drafting the permit. Additional details of this analysis may be obtained by contacting the project engineer at the Department's Office of Permitting and Compliance at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400 at 850/717-9033 or by email Pawan.Subramaniam@dep.state.fl.us.