Statement of Basis

Florida Power Corporation dba Progress Energy Florida, Inc.
Hines Energy Complex

Facility ID No.: 1050234
Polk County

Title V Air Operation Permit Renewal
DRAFT/PROPOSED Permit Project No.: 1050234-014-AV

This Title V air operation permit is being issued for the renewal of the initial Title V air operation permit, issued under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, 62-213, and 62-214. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents, attached hereto or on file with the permitting authority, in accordance with the terms and conditions of this permit.

EPA has agreed to treat the DRAFT Title V Permit as a PROPOSED Title V Permit and to perform its 45-day review provided by the law and regulations concurrently with the public comment period. Although EPA's 45-day review period will be performed concurrently with the public comment period, the deadline for submitting a citizen petition to object to the EPA Administrator will be determined as if EPA's 45-day review period is performed after the public comment period has ended. The FINAL Title V Air Operation Permit will be issued after the conclusion of the 45-day EPA review period so long as no adverse comments are received that results in a different decision or significant change of terms or conditions.

Facility:

The entire facility (inclusive of all Power Blocks 1, 2 & 3) has a total generating capacity of approximately 1560 MWs. This facility is a major source of hazardous air pollutants (HAPs). This facility consists of three power blocks (1, 2 and 3), each with two combined cycle combustion turbines with un-fired heat recovery steam generators (HRSGs), a 99 MMBtu/hr auxiliary boiler, a 97,570 barrel fuel oil storage tank, and a relocatable diesel generator that can be located at various Florida Power Corporation power plants, as needed. Emissions from each CT and HRSG combination are vented through a single stack for each. The combustion turbines may fire fuel oil or natural gas.

Power Block 1: Emission Units -001 (CT1A) and -002 (CT1B).

Emission units 001 and 002 each consist of a combined cycle Westinghouse 501FC Combustion Turbine, each with a nominal generator rating of 170 MW and each with a maximum heat input rating of 1,915 MMBtu/hr (HHV), while firing natural gas, and 2,020 MMBtu/hr (HHV), while firing fuel oil, based on a compressor inlet air temperature of 59 ºF, the HHV of each fuel, and 100% load. For the CTs, the primary fuel is natural gas (NG), which is supplemented with No. 2 fuel oil (FO) with a sulfur content not to exceed 0.05%, by weight. NO_x emissions are controlled with dry low NO_x burners (DLN) for natural gas firing and wet injection for fuel oil firing, complete with Selective Catalytic Reduction (SCR). Each combustion turbine incorporates an unfired heat recovery steam generator (HRSG). Steam from both HRSGs is delivered to a single steam turbine-electrical generator, which has a generating capacity of 160 MW. The total generating capacity of the "2-on-1" combined cycle unit is approximately 500 MW.

These emissions units are regulated under Acid Rain, Phase II; NSPS - 40 CFR 60, Subpart GG, Standards of Performance for Stationary Gas Turbines, adopted and incorporated by reference in Rule 62-204.800, F.A.C.; Rule 212.400(5), F.A.C., Prevention of Significant Deterioration (PSD); PSD-FL-195 and revisions (A, B &C); PPSA: PA 92-33; and, Rule 62-212.400(6), F.A.C.

Power Block 2: Emission Units -014 (CT2A) and -015 (CT2B).

Emission units 014 and 015 each consist of a combined cycle Westinghouse 501FD Combustion Turbine, each with a nominal generator rating of 170 MW and each with a maximum heat input rating of 2,048 MMBtu/hr (HHV), while firing natural gas, and 2,155 MMBtu/hr (HHV), while firing fuel oil, based on a compressor inlet air temperature of 59 ºF, the LHV of each fuel, and 100% load. For the CTs, the primary fuel is natural gas (NG), which is supplemented with No. 2 fuel oil (FO) with a sulfur content not to exceed 0.05%, by weight. NO_x emissions are controlled with dry low NO_x burners (DLN) for natural gas firing and wet injection for fuel oil firing, complete with Selective Catalytic Reduction (SCR). Each combustion turbine incorporates an unfired heat recovery steam generator (HRSG). Steam from both HRSGs is delivered to a single steam turbine-electrical generator, which has a generating capacity of 190 MW. The total generating capacity of the "2-on-1" combined cycle unit is approximately 530 MW.

These emissions unit are regulated under Acid Rain, Phase II; NSPS - 40 CFR 60, Subpart GG, Standards of Performance for Stationary Gas Turbines, adopted and incorporated by reference in Rule 62-204.800, F.A.C.; Rule 212.400(5), F.A.C., Prevention of Significant Deterioration (PSD); PSD-FL-296 and revisions (A & B); and, Rule 62-212.400(6), F.A.C.

Power Block 3: Emission Units -016 (CT3A) and -017 (CT3B).

Emission units (EU) 016 and 017 are each a Siemens Westinghouse 501FD gas turbine-electrical generator set with an automated gas turbine control system and an unfired heat recovery steam generator (HRSG). In addition, the project also includes a single steam turbine-electrical generator that serves both gas turbine/HRSG systems. Both of the gas turbine-electrical generator sets have a generating capacity of 170 MW for gas firing. Each gas turbine fires natural gas as the primary fuel and distillate oil as a restricted alternate fuel. Steam from both HRSGs is delivered to a single steam turbine-electrical generator, which has a generating capacity of 190 MW. The total generating capacity of the "2-on-1" combined cycle unit is approximately 530 MW. The maximum heat input rate is based on the higher heating value (HHV) of the fuel, which is 2,048 MMBtu/hr (HHV), while firing natural gas, and 2,155 MMBtu/hr (HHV), while firing fuel oil, based on a compressor inlet air temperature of 59 ºF, the HHV of each fuel, and 100% load.

The efficient combustion of natural gas and restricted firing of low sulfur distillate oil minimizes the emissions of CO, PM/PM_{10}, SAM, SO_2 and VOC. Dry low-NO_x (DLN) combustion technology for gas firing and water injection for oil firing reduce NO_x emissions. A selective catalytic reduction (SCR) system – in combination with DLN combustion technology for gas firing and a water injection system for oil firing – reduces NO_x emissions. The HRSGs are designed and constructed such that an oxidation catalyst can be readily installed if necessary to achieve compliance with CO emission limitations.

Each HRSG has a stack that is 125 feet tall and 19 feet in diameter. Each stack is equipped with continuous emissions monitoring systems (CEMS) to measure and record CO and NO_x emissions as well as flue gas oxygen or carbon dioxide content. The Department may require the permittee to perform additional air dispersion modeling should the actual specified stack dimensions change.

These emissions unit are regulated under Acid Rain, Phase II; NSPS - 40 CFR 60, Subpart GG, Standards of Performance for Stationary Gas Turbines, adopted and incorporated by reference in Rule 62-204.800, F.A.C.; Rule 212.400(5), F.A.C., Prevention of Significant Deterioration (PSD); PSD-FL-330 and revisions (A); and, Rule 62-212.400(6), F.A.C.

Incorporation of Air Construction Permits

In addition to the permit renewal, the renewal will be used to incorporate the terms and conditions of several Air Construction Permits:

- No. 1050234-006-AC/PSD-FL-330 [Power Block (PB) 3 – initial AC authorization];
- No. 1050234-013-AC/PSD-FL-330(A) [PB3 – change in heat input rate to each combustion turbine, CT3A and CT3B]; and,
- No. 1050234-015-AC/PSD-FL-195(D)/PSD-FL-296(C)/PSD-FL-330(B), PB1/PB2/PB3, respectively [PB1, PB2 & PB3 - changes in the ASTM methods for evaluating fuel quality; PB1 – allowing excess emissions for fuel switches (oil-to-gas or gas-to-oil); PB2 and PB3 - changing the timeframes for data exclusion of excess emissions for cold startups and fuel switches; and, the removal of the Emergency Diesel Generator (EU -004), which was never installed].

Miscellaneous

Also included in this permit are miscellaneous unregulated/insignificant emissions units and/or activities.