Title V Air Operation Permit Revision
Permit No. 0110037-010-AV

APPLICANT

The applicant for this project is Florida Power and Light Company. The applicant's responsible official and mailing address are: Mr. Dwayne Harper, Plant General Manager, 700 Universe Boulevard, Juno Beach, Florida 33408.

FACILITY DESCRIPTION

The applicant operates the Lauderdale Plant, which is located 2 miles West of Ravenswood Road, Fort Lauderdale, Broward County, Florida.

This existing facility consists primarily of two combined-cycle generating units (Unit 4 and Unit 5), two banks of twelve simple-cycle gas turbine units, and six fuel storage tanks. Each combined-cycle unit consists of two combustion turbines (CT) which each exhaust through a separate heat recovery steam generator (HRSG). Each HRSG converts the heat from the CT exhaust into steam. The steam produced from the two HRSG units drives one single-reheat turbine generator. Each combined-cycle unit has a net summer continuous capability of 430 megawatts (MW). Each bank of simple-cycle gas turbines has a combined net capability of 504 MW.

Also included in this permit are regulated units for solvent usage, an emergency diesel fire pump engine and auxiliary boiler; in addition, there are miscellaneous unregulated/insignificant emissions units (EU) and/or activities.

PROJECT DESCRIPTION

The purpose of this permitting project is to revise the existing Title V permit for the above referenced facility dealing with excess emissions.

PROCESSING SCHEDULE AND RELATED DOCUMENTS

July 11, 2013: Air construction permit application and concurrent Title V air operations permit revision received and deemed incomplete.

July 16, 2013: Request for additional information letter sent.

September 16, 2013: Response received. Application deemed complete.

October 15, 2013: Draft/Proposed Permit issued.

PRIMARY REGULATORY REQUIREMENTS

Title III: The facility is identified as a major source of hazardous air pollutants (HAP).

Title IV: The facility operates units subject to the acid rain provisions of the Clean Air Act.

Title V: The facility is a Title V major source of air pollution in accordance with Chapter 62-213, Florida Administrative Code (F.A.C.).

PSD: The facility is a Prevention of Significant Deterioration (PSD)-major source of air pollution in accordance with Rule 62-212.400, F.A.C.

NSPS: The facility operates units subject to the New Source Performance Standards (NSPS) of 40 Code of Federal Regulations (CFR) 60.

CAM: Compliance Assurance Monitoring (CAM) does not apply to the two combined-cycle generating units because the existing nitrogen oxides (NO_X) continuous emissions monitoring systems (CEMS) are used to demonstrate compliance with emissions limits. The other emissions units have no add-on pollution control devices.

GHG: The facility is identified as a major source of green house gas (GHG) pollutants.

PROJECT REVIEW

Because FPL is striving to gain more consistency in its Title V permits for the combustion turbine fleet, it has proposed common language to certain specific conditions that pertain to like combustion turbines. This common language has evolved as FPL has gained experience in operating and maintaining these turbines and developing proper protocol. These changes, primarily affecting excess emissions identification during startup (both cold and hot), shutdown and malfunction periods, and during fuel switching sessions are acceptable to the Department because proper operator management of these transient conditions results in less steady state emissions and is therefore beneficial to the environment. Excluding such identified periods of excess emissions from compliance data computations using appropriate time spans is sound policy.

These changes will not increase the potential to emit (PTE) of any pollutant. Based on the foregoing analysis, the project constitutes a non-major modification with respect to the Department's rules and requires a construction permit. Concurrent air construction permit No. 0110037-009-AC implements this change.

The part of the facility addressed by this specific condition includes four combined-cycle combustion turbines (CT 4A, CT 4B, CT 5A and CT 5B) that are identical in configuration. Each CT is connected to an electrical generator, and each CT generates heat which produces steam in a heat recovery steam generator (HRSG). Each CT and HRSG pairing is called a CT/HRSG system. The steam from the two HRSG units is then routed to a steam turbine-generator-set to provide additional electrical power. The combined CT 4A/HRSG and CT 4B/HRSG units are designated Unit 4; in like manner, the combined CT 5A/HRSG and CT 5B/HRSG units are designated Unit 5.

In the discussion below, the CT 4A/HRSG and CT 4B/HRSG (or CT5A/HRSG and CT 5B/HRSG) systems interconnected to their respective steam turbine generators are designated as 2-on-1 Combined Cycle Systems.

The applicant provided operational data which they felt supported their requested periods of excludable emissions data. Based on this data, the Department was able to justify approving some periods of excludable emissions data, but was not able to justify approving the full time periods requested. The operational data are included with this technical evaluation.

Based on the Department's review of the submitted data, allowable periods of excess emissions, which may be excluded from the compliance demonstration data, are established as a new specific condition through the issuance of air construction Permit No. 0110037-009-AC. This Title V air operation permit revision changes Specific Condition **A.15.** of air operation permit No. 0110037-008-AV as follows:

A.15. ~~Excess Emissions Allowed. Excess emissions resulting from startup, shutdown or malfunction of any emissions unit shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration. [Rule 62-210.700(1), F.A.C.]~~

A.15. Excess Emissions Allowed. As specified in this condition, excess emissions resulting from startup, shutdown, fuel switches and documented malfunctions are allowed provided that operators employ the best operational practices to minimize the amount and duration of emissions during such incidents. For each CT/HRSG system, excess emissions of NO_X resulting from startup, shutdown, or documented malfunctions may be excluded from the CEMS data in any 24-hour period ("any 24-hour period" means a calendar day, midnight to midnight) for the following conditions (these conditions are considered separate events and each event may occur independently within any 24-hour period):

a. *Steam Turbine Cold Startup.* For cold startup of the steam turbine, excluded emissions from any CT/HRSG system shall not exceed three hours in any 24-hour period and shall not exceed five hours total for both CT/HRSG systems during the entire Steam Turbine Cold Startup event. A "cold startup of the steam turbine" is defined as startup of system when the steam turbine high pressure metal temperature is below 250 degrees F.

{Permitting Note: During a cold startup of the steam turbine, each CT/HRSG system may be sequentially brought on line at low load to gradually increase the temperature of the steam-electrical turbine to prevent thermal metal fatigue. Note that shutdowns and documented malfunctions are separately regulated in accordance with the requirements of this condition.}

b. *CT/HRSG System Cold Startup*. For cold startup of an individual CT/HRSG system, excluded emissions shall not exceed three hours in any 24-hour period. A "cold startup of a CT/HRSG system" is defined as a startup of the system when the pressure in the high-pressure (HP) steam drum is below 600 pounds per square inch gauge (psig).

c. *CT/HRSG System Hot Startup*. For hot startup of a CT/HRSG system, excluded emissions shall not exceed two hours in any 24-hour period (and shall not exceed six hours per 2-on-1 Combined Cycle System, with the additional provision of a limit of 2 hot startup periods per 24 hours per CT/HRSG system). A "hot startup of a CT/HRSG system" is defined as a startup when the pressure in the high-pressure (HP) steam drum is above 600 psig.

d. *Shutdown Combined Cycle Operation*. For shutdown of the entire 2-on-1 combined cycle system operation, excluded emissions from any CT/HRSG system shall not exceed two hours in any 24-hour period.

e. *CT/HRSG System Shutdown*. For shutdown of the CT/HRSG systems operation, excluded emissions from any CT/HRSG system shall not exceed one hour in any 24-hour period.

f. *Fuel Switching*: For fuel switching, excluded emissions shall not exceed one hour in any 24-hour period for each fuel switch and no more than two hours in any 24-hour period for any CT/HRSG system.

g. *Documented Malfunction*. For the CT/HRSG system, excess emissions of NO_X resulting from documented malfunctions shall not exceed two hours in any 24-hour period. A "documented malfunction" means a malfunction that is documented within one working day of detection by contacting the Compliance Authority by telephone, facsimile transmittal, or electronic mail.

[Rules 62-4.070, 62-210.700(1) & (5), F.A.C.; and, 0110037-009-AC, Specific Condition A.2.]

CONCLUSION

This project revises Title V air operation permit No. 0110037-008-AV, which will be effective on January 1, 2014. This Title V air operation permit is issued under the provisions of Chapter 403, Florida Statues (F.S.), and Chapters 62-4, 62-210, 62-213 and 214, F.A.C.