Duke Energy Florida, Inc. (DEF)
University of Florida Cogeneration Plant
Title V Air Operation Permit Renewal
Permit No. 0010001-016-AV

APPLICANT

The applicant for this project is Duke Energy Florida, Inc. (DEF). The applicant's responsible official and mailing address are: Mr. Brian Powers, Station Manager, Duke Energy Florida, Inc., University of Florida Cogeneration Plant, P.O. Box 112295, Gainesville, Florida 32611-2295.

FACILITY DESCRIPTION

The applicant operates the University of Florida Cogeneration Plant, which is located in Alachua County on Mowry Road at Building 82, University of Florida, Gainesville, Florida.

The existing facility consists of one nominal 48 megawatt (MW) combustion turbine (CT), one duct burner (DB) with a heat recovery steam generator, and two steam boilers. Emissions from the CT and DB are vented through a common stack. Nitrogen Oxide (NO_X) emissions are controlled with water/steam injection. The steam boilers, each having a separate exhaust stack, are used only as back-up sources. Compliance is demonstrated with a NO_X Continuous Emissions Monitoring System (CEMS). The facility is subject to 40 Code of Federal Regulations (CFR) Part 60, New Source Performance Standards, Subparts A (General Provisions), Db (Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units), and GG (Standards of Performance for Stationary Gas Turbines). This facility is not a major source of hazardous air pollutants.

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

PROJECT DESCRIPTION

The purpose of this permitting project is to renew the Title V air operation permit for the facility.

PROCESSING SCHEDULE AND RELATED DOCUMENTS

- May 16, 2014 Application for Title V Air Operation Permit Renewal received. Application deemed complete.
- July 25, 2014 Draft/Proposed permit package issued.

PRIMARY REGULATORY REQUIREMENTS

Title III: The facility is not 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.

NESHAP: The facility does not operate units subject to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) of 40 CFR 63.

CAIR: The facility is subject to the Clean Air Interstate Rule (CAIR) set forth in Rule 62-296.470, F.A.C.

CAM: Compliance Assurance Monitoring (CAM) does not apply to any of the units at the facility.

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

PROJECT REVIEW

Changes to the current Title V air operation permit were requested by the applicant. Duke Energy reports that the boilers are exempt from Boiler MACT (40 CFR Part 63 Subpart JJJJJJ) because they intend to operate them as "natural gas boilers" defined in 40 CFR Part 63 Subpart JJJJJJ. It is requested that permit No. 0010001-011-AC be revised to reflect that natural gas is the primary fuel and that if fuel oil firing is limited to 48 hours per year for periodic testing the units will be exempt from the Boiler MACT. Also, fuel oil firing is not limited during periods of gas curtailment or gas supply interruptions. Because the UF CoGen site is supplied by a single natural gas pipeline examples of periods of gas interruptions include, pressure testing of the gas supply pipeline, maintenance and repair of gas valves and gas leak repair. If a back-up boiler exceeds the fuel oil firing limitations and no longer meets the definition of "gas-fired boiler" contained in 40 CFR Part 63 Subpart JJJJJJ, the boiler shall comply with all the requirements of the subpart with in the deadlines delineated in this subpart. In addition, annual testing for opacity is not required for units firing natural gas. These changes were approved by the Department and are noted below.

Added text is shown in double underline format, while deleted text is shown in ~~strike through~~ format. All changes within the draft permit are further highlighted in yellow for ease of location.

A summary of the changes that were made in the Title V air operation permit are shown below:

A.3 Methods of Operation - Fuels. The fuels that are allowed to be burned in these units are:

a. No. 2 distillate fuel oil with a maximum sulfur content of 0.5% by weight, and
b. Natural gas with a maximum sulfur content of 2 grains of sulfur per 100 scf of natural gas (annual average based on vendor data).
c. The units are exempt from the requirements of NESHAP, Subpart JJJJJJ as long as fuel oil firing is limited to 48 hours per calendar year for periodic testing.
d. Fuel oil firing is not limited during periods of gas curtailment or gas supply interruptions.

{Permitting Note: Because the UF CoGen site is supplied by a single natural gas pipeline examples of periods of gas interruptions include, pressure testing of the gas supply pipeline, maintenance and repair of gas valves and gas leak repair. If a back-up boiler exceeds the fuel oil firing limitations and no longer meets the definition of "gas-fired boiler" contained in 40 CFR Part 63 Subpart JJJJJJ, the boiler shall comply with all the requirements of the subpart with in the deadlines delineated in this subpart.}

[Rules 62-212.400(12), F.A.C. and 62-213.410, F.A.C., and Permit No. 0010001-011-AC/PSD-FL-181B; 0010001-015-AC, Specific Condition 2.]

A.20. Annual VE Test Waiver. By this permit, annual emissions compliance testing for visible emissions is not required for these emissions units ~~while burning:~~

~~a. only gaseous fuel(s); or~~
~~b. gaseous fuel(s) in combination with any amount of liquid fuel(s) for less than 400 hours per year; or~~
~~c. only liquid fuel(s) for less than 400 hours per year~~.

[Rule 62-297.310(7)(a)4., F.A.C.; 0010001-015-AC, Specific Condition 2.]

B.23. Annual Compliance Tests. During each federal fiscal year (October 1st to September 30th), the combined cycle combustion turbine system shall be tested to demonstrate compliance with the CO ~~and visible emissions~~ standards. Due to safety considerations, stack testing while firing the duct burner when there is no demand for steam would require dumping excess steam, which presents a safety issue given the existing configuration. Therefore, subsequent periodic testing for CO emissions may be with the duct burner on or off, as dictated by the system demand. ~~Visible emissions for each backup steam boiler shall be conducted only if No. 2 fuel oil is fired for more than 400 hours during the federal fiscal year.~~ *{Permitting Note: A safety evaluation of the steam vent system indicated that it did not meet code and was deemed unsafe; therefore, it was dismantled.}* [Permit No. 0010001-011-AC/PSD-FL-181B; 0010001-015-AC, Specific Condition 3.]

In addition to the above changes the owner's name was changed to Duke Energy Florida, Inc. and a new section was added to include the applicable requirements of the emergency generator (emissions unit 009).

The one requested change *not adopted* was to delete the reference to the turbine manufacturer's performance curve of heat input vs. compressor inlet temperature curve in Appendix HI – Heat Input Rate vs. Compressor Inlet Temperature. The applicant claimed the condition was obsolete, but the Department believes is still valid since it was implemented as a permanent requirement of air construction permit No. 0010001-011-AC.

CONCLUSION

This project renews the Title V air operation permit for the facility. This Title V air operation permit renewal is issued under the provisions of Chapter 403, Florida Statues (F.S.), and Chapters 62-4, 62-210, 62-213 and 62-214, F.A.C.