TECHNICAL EVALUATION
&
PRELIMINARY DETERMINATION

APPLICANT

Seminole Electric Cooperative, Inc.
Post Office Box 272000
Tampa, Florida 33688-2000

Seminole Generating Station Units 1 and 2
Facility ID No. 1050004

PROJECT

Project No. 1070025-019-AC (PSD-FL-018B)
Application for Minor Source Air Construction Permit
Establishment of Sulfur Dioxide Emission Standards
Removal of Petroleum Coke as Fuel

COUNTY

Putnam 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

July 25, 2012 (Revised August 2, 2012)

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 the permit.

1.3 Facility Description and Location

The Seminole Electric Cooperative Inc. (SECI) Seminole Generating Station is an existing power plant, which is categorized under Standard Industrial Classification Code No. 4911. The existing Seminole Generating Station is located in Putnam County at 890 North U.S. Highway 17, Palatka, Florida. The UTM coordinates of the existing facility are Zone 17, 438.8 km East and 3289.2 km North. 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).

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.

1.5 Project Description

This project removes petroleum coke as an authorized fuel for Units 1 and 2 and establishes sulfur dioxide (SO_2) emissions standards of 95 percent removal or 0.25 pounds per million Btu (lb/MMBtu) heat input on a 30-day rolling average. The resulting permit conditions shall become effective upon the effective date of EPA's approval of these specific requirements in the Florida Regional Haze State Implementation Plan and implemented as soon as practicable, but no later than March 1, 2016.

1.6 Processing Schedule

June 29, 2012: Received the application for a minor source air pollution construction permit.

July 5, 2010: Determined that the application was complete on date received.

July 16, 2012: Distributed Intent to Issue Air Permit package.

August 2, 2012: Withdrew, replaced and distributed revised Intent to Issue package.

2. PSD APPLICABILITY

2.1 General PSD Applicability

The Department regulates major stationary sources in accordance with Florida's PSD program pursuant to Rule 62-212.400(PSD), F.A.C. PSD preconstruction review is required in areas that are currently in attainment with the state and federal ambient air quality standards (AAQS) or areas designated as "unclassifiable" for these regulated pollutants.

Commonly addressed PSD pollutants in the power industry include: CO, SO_2, NO_X, PM, PM smaller than 10 micrometers (µm) (PM_{10}), PM smaller than 2.5 µm ($PM_{2.5}$), volatile organic compounds (VOC), sulfuric acid mist (SAM), lead (Pb), fluorides (F), and mercury (Hg).

Additional PSD pollutants that are more common to certain other industries include: hydrogen sulfide (H_2S), TRS including H_2S, reduced sulfur compounds (RSC) including H_2S, municipal waste combustor (MWC) organics measured as total tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans (dioxin/furan), MWC metals measured as PM; MWC acid gases measured as SO_2 and HCl, and municipal solid waste (MSW) landfill emissions as non-methane organic compounds (NMOC).

As defined in Rule 62-210.200(Definitions), F.A.C., a stationary source is a "major stationary source" (major PSD source) if it emits or has the potential to emit (PTE):

- 250 tons per year (tons/year) or more of any PSD pollutant; or
- 100 tons/year or more of any PSD pollutant and the facility belongs to one of the 28 listed PSD major facility categories.

The list given in the citation includes the category of "fossil fuel-fired steam electric plants of more than 250 million British thermal units per hour heat input". The given category applies to the Seminole Generating Station. The Seminole Generating Station is a major stationary source based on actual emissions of and potential to emit 100 tons/year or more of several individual PSD pollutants.

For major stationary sources such as the Seminole Generating Station, PSD applicability for modification projects is based on thresholds known as the significant emission rates (SER) as defined in Rule 62-210.200(Definitions), F.A.C. Any "net emissions increase" as defined in Rule 62-210.200(Definitions), F.A.C. of a PSD pollutant from the project that equals or exceeds the respective SER is considered "significant". SER also means any emissions rate or any net emissions increase of a PSD pollutant associated with a major stationary source or major modification which would construct within 10 km of a Class I area and have an impact on such area equal to or greater than 1 gram per cubic meter, 24-hour average.

Although a facility may be "major" (i.e. emits or has the potential to emit 100 or 250 tons/year as applicable) for only one PSD pollutant, a project must include Best Available Control Technology (BACT) for any PSD pollutant increase in that equals or exceeds the corresponding significant emission rate given in Table1.

Table 1. List of Significant Emission Rates by PSD-Pollutant Relevant to the Facility [2]

Pollutant	SER (tons/year)	Pollutant	SER (tons/year)
PM	25	PM_{10}	15
$PM_{2.5}$	10	$PM_{2.5}$ (NO_X) [1]	40
$PM_{2.5}$ (SO_2) [1]	40	CO	100
SO_2		NO_X	40
Ozone (NO_X) [1]	40	Ozone (VOC) [1]	40
Sulfuric acid mist (SAM)	7	fluoride	3
mercury	0.1	lead	0.6

1. $PM_{2.5}$ is also regulated through precursors (NO_X and SO_2); Ozone (O_3) is regulated through precursors (VOC and NO_X).
2. There is federal SER of 75,000 tons/year for Greenhouse Gases (GHG) as carbon dioxide equivalent (CO_2e) that has not been incorporated into Department rules.

According to 40 CFR 52.21, six greenhouse gases (GHG), are also subject to regulation at new stationary sources that will emit or have the potential to emit 100,000 tons/year (SER equal to 75,000 tons/year) expressed as the carbon dioxide equivalent emissions (CO_2e). This requirement has not been incorporated into Department rules but is a separate requirement of the EPA.

2.2 PSD Applicability for Project

The project is located in Putnam County, which is in an area that is currently in attainment with the state and federal AAQS or otherwise designated as unclassifiable.

Methodology for Calculations of Baseline Actual Emissions and Projected Actual Emissions

To determine whether the project causes net emissions increases equal to or greater than the respective SER (triggering PSD) requires a comparison of recent "baseline actual emissions" with future "projected actual emissions". According to Rule 62-210.200(Definitions), F.A.C., for any existing electric utility steam generating unit:

"Baseline actual emissions" means the average rate, in tons per year, at which the unit actually emitted the pollutant during any consecutive 24-month period selected by the owner or operator within the 5-year period immediately preceding the date a complete permit application is received by the Department. The Department shall allow the use of a different time period upon a determination that it is more representative of normal source operation".

1. The average rate shall include fugitive emissions to the extent quantifiable, and emissions associated with startups and shutdowns.
2. The average rate shall be adjusted downward to exclude any non-compliant emissions that occurred while the source was operating above any emission limitation that was legally enforceable during the consecutive 24-month period.
3. For a PSD pollutant, when a project involves multiple emissions units, only one consecutive 24-month period must be used to determine the baseline actual emissions for the emissions units being changed. A different consecutive 24-month period can be used for each PSD pollutant.
4. The average rate shall not be based on any consecutive 24-month period for which there is inadequate information for determining annual emissions, in tons per year, and for adjusting this amount if required by subparagraph 2., above.

According to Rule 62-210.200(Definitions), F.A.C., for an existing unit (other than an electric steam generating unit):

"Projected Actual Emissions" means the maximum annual rate, in tons/year, at which an existing emissions unit is projected to emit a PSD pollutant in any one of the 5 years following the date the unit resumes regular operation after the project, or in any one of the 10 years following that date, if the project involves increasing the emissions unit's design capacity or its potential to emit that PSD pollutant and full utilization of the unit would result in a significant emissions increase or a significant net emissions increase at the major stationary source. One year is one 12-month period. In determining the projected actual emissions, the Department:

(a) Shall consider all relevant information, including historical operational data, the company's own representations, the company's expected business activity and the company's highest projections of business activity, the company's filings with the State or Federal regulatory authorities, and compliance plans or orders, including consent orders; and

(b) Shall include fugitive emissions to the extent quantifiable and emissions associated with startups and shutdowns; and

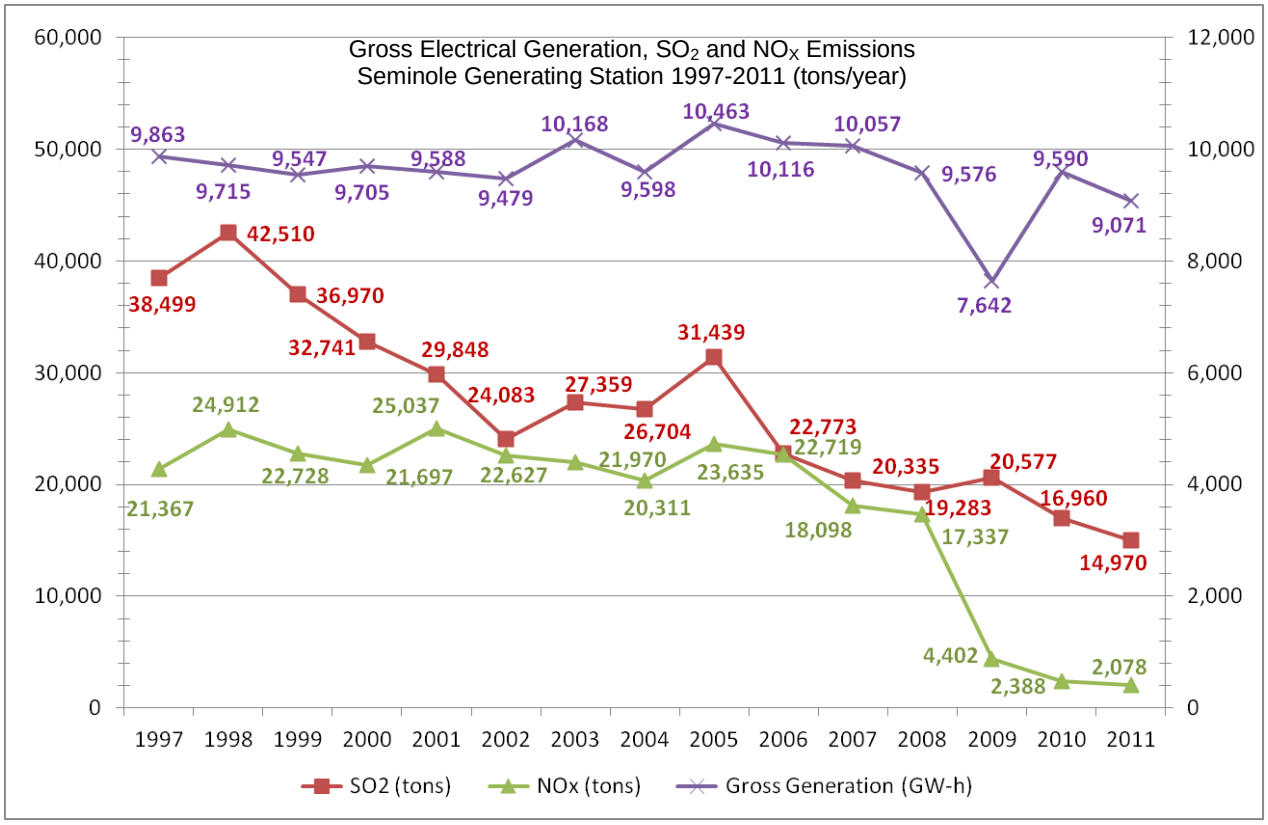
(c) Shall exclude that portion of the unit's emissions following the project that an existing unit could have accommodated during the consecutive 24-month period used to establish the baseline actual emissions and that are also unrelated to the particular project including any increased utilization due to product demand growth; or

(d) In lieu of using the method set out in paragraphs (a) through (c) above, may be directed by the owner or operator to use the emissions unit's potential to emit, in tons per year.

Department's Assessment of PSD Applicability

Petroleum coke (petcoke) is characterized by a significantly greater sulfur content than coal. In 1997, the Department issued a permit to SECI to fire a blend of coal with a maximum petcoke content of 30 percent (%). Petcoke generally tends to emit more carbon monoxide, nitrogen oxides, SO_2 and sulfuric acid mist. The Department required SECI to implement measures (such as increased scrubbing) to insure that the project did not cause significant increases in emissions.

Despite the use of petcoke, emissions of SO_2 were considerably reduced as shown in the figure below while annual electrical generation did not vary appreciably.



In 2009, emissions of NO_X fell dramatically due to the installation of selective catalytic reduction (SCR) systems. Generation is within 10% of the average historical levels while SO_2 and NO_X have dropped by 65 and 95% respectively from the highest values in 1998. The reductions in SO_2 were due to improvements on existing scrubbers.

Removing the ability to burn petcoke will not cause any emission increases. SECI proposes to further restrict SO_2 emissions to values much less than required by their present permits by performing further scrubber improvements. Thus any estimates of "baseline actual emissions" to "projected actual emissions" suggest no significant emissions increase or significant net emissions. Therefore, a PSD review is not required.

3. 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. Alvaro Linero is the project engineer responsible for reviewing the application and drafting the permit. Additional details of this analysis may be obtained by contacting Mr. Linero at 850-717-9076 alvaro.linero@dep.state.fl.us .