TECHNICAL EVALUATION

&

PRELIMINARY DETERMINATION

APPLICANT

Shady Hills Power Company, LLC
120 Long Ridge Road
Stamford, CT 06927

Shady Hills Generating Station
ARMS Facility ID No. 1010373

PROJECT

Draft Permit No. PSD-FL-280A
Project No. 1010373-009-AC

Combustion Turbine Heat Input Increases

COUNTY

Pasco County, Florida
Combustion Turbine Heat Input Increases

PERMITTING AUTHORITY

Florida Department of Environmental Protection
Division of Air Resource Management
Bureau of Air Regulation
New Source Reveiw Section
2600 Blair Stone Road, MS# 5505
Tallahassee, Florida 32399-2400

September 15, 2008

1. GENERAL PROJECT INFORMATION

Facility Description and Location

The facility is an electrical generating power plant with a Standard Industrial Classification Code of SIC No. 4911. The facility is located in Pasco County at 14240 Merchant Energy Way, Spring Hill, Florida. The UTM coordinates are Zone 17, 347 km East, and 3139 km North.

This facility consists of three, dual-fuel, nominal 170 megawatt (MW) General Electric Frame 7FA combustion turbine-electrical generators (Model PG7241 7FA), three exhaust stacks that are 18 feet in diameter and 75 feet tall, and one 2.8-million gallon distillate fuel oil storage tank. The combustion turbine units can operate in simple-cycle mode and intermittent duty mode. The units are equipped with Dry Low-nitrogen oxides (NO_X) combustors and water injection capability. The three combustion turbines are regulated under Phase II of the Federal Acid Rain Program. This facility operates during peak hours of electrical use.

Primary Regulatory Categories

- The facility is not a major source of hazardous air pollutants (HAP).
- The facility has 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 213, Florida Administrative Code (F.A.C.).
- The facility is a major stationary source in accordance with Rule 62-212.400, F.A.C

Project Description

The applicant requests a heat input rate increase for the three 170 MW simple cycle units (Emissions Unit (EU)-001, EU-002 and EU-003) from 1,612 to 1,704 million Btu per hour (MMBtu/hr) when firing natural gas and an increase from 1,806 to 1,889 MMBtu/hr when firing distillate oil. The increases are requested to correct estimates provided by the gas turbine vendor that underestimate the actual performance of the installed turbines. No physical changes are necessary to realize the requested heat input increases. No increase in the emissions standards (concentrations or mass emissions rates) are requested to accommodate the change. The applicant does not expect any increased utilization as a result of the change. The emissions units will continue to comply with all applicable provisions of the air construction and operation permits.

Processing Schedule

June 23, 2008 Department received the application, application complete.

2. APPLICABLE REGULATIONS

State Regulations

This project is subject to the applicable rules and regulations defined in the following F.A.C. Chapters: 62-4 (Permitting Requirements); 62-204 (Ambient Air Quality Requirements, Prevention of Significant Deterioration (PSD Increments), and Federal Regulations Adopted by Reference); 62-210 (Permits Required, Public Notice, Reports, Stack Height Policy, Circumvention, Excess Emissions, and Forms); 62-212 (Preconstruction Review, PSD Review and BACT, and Non-attainment Area Review and LAER); 62-213 (Title V Air Operation Permits for Major Sources of Air Pollution); 62-296 (Emission Limiting Standards) and 62-297 (Test Methods and Procedures, Continuous Monitoring Specifications, and Alternate Sampling Procedures). PSD applicability and the preconstruction review requirements of Rule 62-212.400, F.A.C. are discussed in Section 3 of this report. This project will not result in any newly applicable state regulations.

Federal Regulations

The Environmental Protection Agency establishes air quality regulations in Title 40 of the Code of Federal Regulations (CFR). Part 60 identifies New Source Performance Standards (NSPS) for a variety of industrial

activities. Part 61 specifies National Emissions Standards for Hazardous Air Pollutant (NESHAP) based on specific pollutants. Part 63 specifies NESHAP provisions based on the Maximum Achievable Control Technology (MACT) for given source categories. Federal regulations are adopted in Rule 62-204.800, F.A.C.

This project will trigger applicability of NSPS Subpart KKKK, Standards of Performance for Stationary Combustion Turbines. This applicability is due to the fact that this request constitutes a change in the actual hourly emission rate of a regulated pollutant, commencing after February 18, 2005. This NSPS regulates sulfur dioxide ($SO_{2)}$ and nitrogen oxides (NO_x). The facility uses pipeline quality natural gas as its primary fuel and distillate oil containing less than 0.05 percent sulfur, which will enable the turbines to meet the SO_2 limits with a large margin of compliance. The NSPS NO_x emissions limit is less stringent than the current permit limit. Therefore the facility, as permitted, will meet the allowable requirements in the NSPS. The recordkeeping and testing requirements of Subpart KKKK are attached as Appendix NKKKK in Section 5.

3. PSD APPLICABILITY REVIEW

General PSD Applicability

The Department regulates major stationary sources in accordance with Florida's PSD program pursuant to Rule 62-212.400, 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. As defined in Rule 62-210.200, F.A.C., a facility is considered a "major stationary source" if it emits or has the potential to emit 5 tons per year of lead, 250 tons per year or more of any PSD pollutant, or 100 tons per year or more of any PSD pollutant and the facility belongs to one of the 28 listed PSD major facility categories. PSD pollutants include: 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}); volatile organic compounds (VOC); lead (Pb); Fluorides (Fl); 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 nonmethane organic compounds (NMOC); and mercury (Hg).

For major stationary sources, PSD applicability is based on emissions thresholds known as the "significant emission rates" as defined in Rule 62-210.200, F.A.C. Emissions of PSD pollutants from the project exceeding these rates are considered "significant" and the Best Available Control Technology (BACT) must be employed to minimize emissions of each PSD pollutant. Although a facility may be "major" for only one PSD pollutant, a project must include BACT controls for any PSD pollutant that exceeds the corresponding significant emission rate. In addition, applicants must provide an Air Quality Analysis for each PSD pollutant.

PSD Applicability for the Project

The project is located in Pasco County, which is in an area that is currently in attainment with the state and federal AAQS or otherwise designated as unclassifiable. The existing plant emits or has the potential to emit 250 tons per year or more of at least one PSD pollutant. Therefore, the facility is a major stationary source and the project is subject to a PSD applicability review.

The applicant provided the following data to summarize the projected NO_x emissions increases based on the highest past actual 2-year average annual emissions and the requested 6 percent heat input limit increase:

Emission Unit	Highest 2 Year Average (TPY)	Projected Increase (TPY)
EU-001, EU-002 and EU-003, 170 MW Simple Cycle Units	153.9	9.2

The Department reviewed emissions test data for the last seven years conducted at or near 100% of the current maximum heat input rates. The following table summarizes the projected NO_x emissions increases based on this data, the requested heat input rate increases of 92 MMBtu/hr when firing natural gas and 83 MMBtu/hr when firing distillate oil, 2390 hours per year of natural gas firing and 1000 hours per year of distillate oil firing.

Emission Unit	NO_x Test Data (lb/MMBtu)		Potential NO_x Increase (TPY)
	Gas	Oil	
EU-001	41.3	309.5	10.0
EU-002	43.8	313.5	10.3
EU-003	40.0	294.6	9.5

The estimated potential emissions increase of 29.8 tons per year is well below the PSD significant emissions rate of 40 tons/year. The use of pipeline natural gas as the primary fuel source with No. 2 distillate fuel oil serving as a backup fuel will insure any potential emissions increases of CO, $PM/PM_{10}/PM_{2.5}$, SO_2 and VOC would also be well below the PSD significant emissions rates. Therefore, the draft permit will authorize the requested revised heat input rates.

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. Bruce Thomas is the project engineer responsible for reviewing the application and drafting the permit changes. Additional details of this analysis may be obtained by contacting the project engineer at the Department's Bureau of Air Regulation at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.