



**TECHNICAL EVALUATION  
&  
PRELIMINARY DETERMINATION**

**APPLICANT**

Lake Cogeneration Ltd.  
39001 Golden Gem Drive  
Umatilla, Florida 32784

Lake Cogeneration Facility  
Facility ID No. 0694801

**PROJECT**

Project No. 0694801-012-AC  
Application for Minor Source Air Construction Permit  
Installation of Oxidation Catalyst Control Systems

**COUNTY**

Lake County, Florida

**PERMITTING AUTHORITY**

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

May 10, 2010

## **1. GENERAL PROJECT INFORMATION**

### **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 Rules 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 on a quarterly basis in Rule 62-204.800, F.A.C.

### **Facility Description and Location**

Lake Investment, Ltd. owns the Lake Cogeneration Facility, which is a combined cycle combustion turbine (CT) cogeneration plant. The facility consists of two General Electric (GE) LM-6000 CT units. Each unit is equipped with an inlet chiller and supplementary-fired duct burner and exhausts through a Heat Recovery Steam Generator (HRSG) stack. Natural gas is the primary fuel fired in the CT, with distillate oil used as a restricted alternate fuel. The facility is located in Lake County at 39001 Golden Gem Drive in Umatilla, Florida. The UTM coordinates of the existing facility are Zone 17, 434.00 km East, and 3198.80 km North. This site is in an area that is in attainment (or designated as unclassifiable) for all air pollutants subject to state and federal Ambient Air Quality Standards (AAQS).

### **Facility Regulatory Categories**

- The facility is a Title V major source of air pollution in accordance with Chapter 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.
- The facility has no units subject to the acid rain provisions of the Clean Air Act (CAA).
- The facility is not a major source of hazardous air pollutants (HAP).

### **Project Description**

The proposed project authorizes the installation of an oxidation catalyst system in the HRSG associated with each of the two CT units. The CT recently underwent a Spray Intercooling (SPRINT) upgrade for enhanced efficiency. The oxidation catalyst system is used to control or reduce carbon monoxide (CO) emissions. The catalyst (stainless steel foil coated with calcined alumina with platinum metal) enhances the chemical reaction between oxygen and CO and forms carbon dioxide. This project generally provides for emission control of CO in the range of 50 to 70%. The project will also result in an emission reduction of volatile organic compounds (VOC). The oxidation catalyst is proposed to be supplied by EmeraChem.

### **Processing Schedule**

02/19/2010 Received the application for a minor source air pollution construction permit; complete.

## **2. PSD APPLICABILITY**

### **General PSD Applicability**

For areas currently in attainment with the state and federal AAQS or areas otherwise designated as unclassifiable, the Department regulates major stationary sources of air pollution in accordance with Florida's PSD preconstruction review program as defined in Rule 62-212.400, F.A.C. Under preconstruction review, the Department first must determine if a project is subject to the PSD requirements ("PSD applicability review") and, if so, must conduct a PSD preconstruction review. A PSD applicability review is required for projects at new and existing major stationary sources. In addition, proposed projects at existing minor sources are subject to a PSD applicability review to determine whether potential emissions *from the proposed project itself* will exceed the PSD major stationary source thresholds. A facility is considered a major stationary source with respect to PSD if it emits or has the potential to emit:

- 5 tons per year or more of lead;
- 250 tons per year or more of any regulated air pollutant; or
- 100 tons per year or more of any regulated air pollutant and the facility belongs to one of the following 28 PSD-major facility categories: fossil fuel-fired steam electric plants of more than 250 million British thermal units per hour heat input, coal cleaning plants (with thermal dryers), Kraft pulp mills, portland cement plants, primary zinc smelters, iron and steel mill plants, primary aluminum ore reduction plants, primary copper smelters, municipal incinerators capable of charging more than 250 tons of refuse per day, hydrofluoric, sulfuric, and nitric acid plants, petroleum refineries, lime plants, phosphate rock processing plants, coke oven batteries, sulfur recovery plants, carbon black plants (furnace process), primary lead smelters, fuel conversion plants, sintering plants, secondary metal production plants, chemical process plants, fossil fuel boilers (or combinations thereof) totaling more than 250 million British thermal units per hour heat input, petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels, taconite ore processing plants, glass fiber processing plants and charcoal production plants.

Once it is determined that a project is subject to PSD preconstruction review, the project emissions are compared to the "significant emission rates" defined in Rule 62-210.200, F.A.C. for the following pollutants: CO; nitrogen oxides (NO<sub>x</sub>); sulfur dioxide (SO<sub>2</sub>); particulate matter (PM); particulate matter with a mean particle diameter of 10 microns or less (PM<sub>10</sub>); VOC; lead (Pb); fluorides (Fl); sulfuric acid mist (SAM); hydrogen sulfide (H<sub>2</sub>S); total reduced sulfur (TRS), including H<sub>2</sub>S; reduced sulfur compounds, including H<sub>2</sub>S; 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<sub>2</sub> and hydrogen chloride (HCl); municipal solid waste landfills emissions measured as non-methane organic compounds (NMOC); and mercury (Hg). In addition, significant emissions rate also means any emissions rate or any net emissions increase associated with a major stationary source or major modification which would construct within 10 kilometers of a Class I area and have an impact on such area equal to or greater than 1 micrograms per meter cubed (µg/m<sup>3</sup>), 24-hour average.

If the potential emission exceeds the defined significant emissions rate of a PSD pollutant, the project is considered "significant" for the pollutant and the applicant must employ the Best Available Control Technology (BACT) to minimize the emissions and evaluate the air quality impacts. Although a facility or project may be *major* with respect to PSD for only one regulated pollutant, it may be required to install BACT controls for several "significant" regulated pollutants.

### **PSD Applicability for Project**

According to the applicant, the project will not result in an emissions increase for any regulated pollutant. In fact, emissions of CO will be reduced in the range of 50 to 70%, while VOC emissions will be reduced by approximately 20%. Accordingly, the project will not trigger PSD and the associated BACT determinations for any regulated pollutant.

### **3. EMISSIONS STANDARDS**

#### **Project Description**

The addition of an oxidation catalyst system on the existing CT units will significantly reduce emissions of CO and have the collateral benefit of reducing emissions of VOC. The modification to the existing units will not result in an increase of any regulated pollutants. The oxidation catalyst will provide a margin of safety with respect to the CO permit limit, which will allow the facility to optimize the combustion process to further reduce NO<sub>x</sub> emissions. The draft permit authorizes the installation of the oxidation catalyst systems and requires initial stack tests to demonstrate compliance with current CO emission limits. CO emissions will be used as a surrogate for VOC emissions.

#### **State Requirements**

This project is subject to the applicable environmental laws specified in Section 403 of the F.S. The project is subject to the applicable rules and regulations defined in the following chapters of the F.A.C.:

- 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
- 62-297. Stationary Sources – Emissions Monitoring

#### **Federal NSPS Provisions**

This project is subject to the applicable federal provisions regarding air quality as established by the EPA in the following sections of the Code of Federal Regulations (CFR):

- CFR Part 60 Subpart A – General Provisions
- CFR Part 60 Subpart KKKK – Combustion Turbines

### **4. 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. Leigh Ann Pell is the project engineer responsible for reviewing the application and drafting the permit. 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.