



**TECHNICAL EVALUATION  
&  
PRELIMINARY DETERMINATION**

**APPLICANT**

City of Lakeland, Lakeland Electric  
501 East Lemon Street  
Lakeland, FL 33801-5079

C.D. McIntosh, Jr. Power Plant  
Facility ID No. 1050004

**PROJECT**

Draft Permit No. 1050004-034-AC  
Application for Minor Source Air Construction Permit  
NOx Emissions Limit for Unit 1 Project

**COUNTY**

Polk 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

April 2, 2014

**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 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.

**1.2. Facility Description and Location**

The C.D. McIntosh, Jr. Power Plant is an existing electrical generation plant categorized under Standard Industrial Classification Number (No.) 4911. This existing facility is located in Polk County at 3030 East Lake Parker Drive in Lakeland, Florida.

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).

This project affects the following emissions units (E.U.):

<b>Facility ID No.</b> 1050004	
<b>E.U. ID No.</b>	<b>E.U. Brief Description</b>
001	McIntosh Unit 1 - Fossil Fuel Fired Steam Generator

**1.3. Facility Regulatory Categories**

- The existing facility is a major source of HAP.
- The existing facility is subject to the acid rain and CAIR provisions of the Clean Air Act (CAA).
- The existing facility is a Title V major source of air pollution in accordance with Chapter 62-213, F.A.C.
- The existing facility is a major stationary source in accordance with Rule 62-212.400 (PSD), F.A.C.
- The proposed project is not a modification of a major stationary source in accordance with Rule 62-212.400 (PSD), F.A.C.

**1.4. Project Description**

The applicant applied on March 19, 2014, to the Department for a minor source air construction (AC) permit. The minor source AC permit is for a nitrogen oxides (NOx) emissions limit for Unit 1 at the C.D. McIntosh, Jr. Power Plant. The NOx emissions limit for Unit 1 is for purposes of Florida’s Regional Haze State Implementation Plan.

**1.5. Application Processing Schedule**

Application (by letter) for Air Construction Permit received on March 19, 2014 (complete application).

{Documents specifically related to this project are posted and available on the Department’s World Wide Web site at <http://appprod.dep.state.fl.us/air/emission/apds/default.asp> by entering the project number shown above.}

**Relevant Document(s)**

- Permit No. 1050004-033-AV, Most Recent Title V Air Operation Permit (a Renewal).

## 2. PSD APPLICABILITY

### 2.1. 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 Prevention of Significant Deterioration (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:

- 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" (SERs) defined in Rule 62-210.200, F.A.C. for the following pollutants: carbon monoxide (CO); 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>); volatile organic compounds (VOC); lead (Pb); fluorides (F); 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 PM; 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 µg/m<sup>3</sup>, 24-hour average.

If the increase in emissions from the project 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.

## 3. APPLICANT REQUEST

The applicant applied on March 19, 2014 by letter, to the Department for a minor source air construction (AC) permit. The minor source AC permit is for the establishment of a NO<sub>x</sub> emissions limit for Unit 1 at the C.D. McIntosh, Jr. Power Plant.

The applicant proposed that a NO<sub>x</sub> emissions limit for Unit 1 (Emissions Unit ID No. 001) be established at 0.46 lb/MMBtu of heat input, based on a 30-operating day rolling average. This emissions limit is based on Unit 1's historical NO<sub>x</sub> monitoring data. Lakeland Electric also proposes that this emissions limit apply to all permitted fuels for Unit 1 (natural gas, No. 6 fuel oil, used oil).

#### **4. DEPARTMENT REVIEW**

##### **4.1. Background - Project**

The applicant applied on March 19, 2014, to the Department for a minor source AC permit. The minor source AC permit is for the establishment of a NO<sub>x</sub> emissions limit for Unit 1 at the C.D. McIntosh, Jr. Power Plant. The AC permit establishes a NO<sub>x</sub> emissions limit for Unit 1 for purposes of Florida's Regional Haze State Implementation Plan.

##### **4.2. PSD Applicability for Project**

The request is not a 'modification' to Unit 1, therefore, a PSD applicability determination does not need to be performed.

##### **4.3. Unit 1 Description**

McIntosh Unit 1 is a forced draft boiler rated at a nominal load of 90 megawatts (MW). The unit is fired with natural gas at a maximum heat input rate of 985 million British thermal units per hour (MMBtu/hr) which equates to approximately 970 million cubic feet per hour of natural gas. No. 6 fuel oil with a maximum sulfur content of 2.5% by weight at a maximum heat input rate of 950 MMBtu/hr can also be fired which equates to approximately 6,300 gallons per hour. This unit is also permitted to burn on-specification used oil generated by the City of Lakeland, at a maximum heat input rate of 950 MMBtu/hr. McIntosh Unit 1 began commercial service in February, 1971.

##### **4.4. Unit 1 Regulatory Categories**

Unit 1 is regulated under Acid Rain, SO<sub>2</sub> Phase II; Rule 62-296.405(1), F.A.C., Fossil Fuel Steam Generators with More than 250 million Btu per Hour Heat Input; and, Rule 62-296.470, F.A.C., Clean Air Interstate Rule (CAIR).

##### **Air Pollution Control Devices, Techniques &/or Measures for NO<sub>x</sub> Emissions**

The unit has no air pollution control devices installed. Best operating practices are followed during combustion to minimize emissions.

##### **4.5. Establishment of a NO<sub>x</sub> Emission Limit**

###### **4.5.1. NO<sub>x</sub> Emissions**

The unit has no unit-specific NO<sub>x</sub> emission standard/limit, however, Unit 1 was required to install and operate a NO<sub>x</sub> CEMS pursuant to 40 CFR 75.

A NO<sub>x</sub> emissions limit is necessary for enforceability for the Florida's Regional Haze SIP. The enforceable permit will be submitted as an amendment to the SIP.

The proposed NO<sub>x</sub> emissions limit of 0.46 lb/MMBtu of heat input, based on a 30-operating day rolling average, was proposed by the applicant. Actual NO<sub>x</sub> data per the applicant was used to propose this limit (see the email dated 02/14/2014 referenced in letter request). The actual NO<sub>x</sub> emissions data from September 2005 shows that the average for the month was 0.4508706 lb/MMBtu of heat input while firing oil only. The applicant therefore should be able to meet this limit on a continuous basis. Because the difference between the proposed NO<sub>x</sub> limit and actual NO<sub>x</sub> emissions is about 0.01 lb/MMBtu or about 2%, the applicant will need to rely upon best operational practices to minimize NO<sub>x</sub> emissions to stay below the limit.

###### **4.5.2. Permit Requirements**

The requested NO<sub>x</sub> emissions limit is established by an AC permit for federal enforceability. The acid rain required NO<sub>x</sub> CEMS can be used to demonstrate compliance with the proposed newly established limit.

Following best operational practices during combustion will provide the Department reasonable assurance of compliance with the newly established NO<sub>x</sub> emissions limit.

#### **5. PRELIMINARY DETERMINATION**

The Department makes a preliminary determination that the proposed project will comply with all applicable state rules 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

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specified in the draft permit. No air quality modeling analysis is required because the project does not result in a significant increase in emissions.

Mr. Scott M. Sheplak, P.E. is the permit processor responsible for reviewing the application and drafting the permit. Additional details of this analysis may be obtained by contacting him by telephone at 850/717-9074 or by email at [scott.sheplak@dep.state.fl.us](mailto:scott.sheplak@dep.state.fl.us) in the Department's Office of Permitting and Compliance at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.