



**TECHNICAL EVALUATION  
&  
PRELIMINARY DETERMINATION**

**APPLICANT**

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

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

**PROJECT**

Project No. 1050004-028-AC  
Exemption from Requirement to Obtain Air Construction Permit  
Low Load Turndown Project

**COUNTY**

Polk County, Florida

**PERMITTING AUTHORITY**

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

March 26, 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, Florida Administrative Code (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**

The C.D. McIntosh, Jr. (McIntosh) Power Plant is an existing electrical generating facility, which is categorized under Standard Industrial Classification Code No. 4911. The McIntosh Power Plant is located in Polk County at 3030 East Lake Parker Drive in Lakeland, Florida. The UTM coordinates of the existing facility are Zone 17, 409.0 km East, and 3106.2 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 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 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.

### **Project Description**

Lakeland Electric is seeking authorization from the Department to install a Low Load Turndown (LLT) system on McIntosh Unit 5 (Emission Unit No. 028). The LLT system is an upgraded combustion chamber design and control system developed by Siemens that allows operation at lower load down to 25 percent and reduces carbon monoxide (CO) and volatile organic compounds (VOC) emissions when compared to the emissions from the original combustor design. The operation of McIntosh Unit 5 for loads 100 percent to 75 percent will not be affected by the LLT system. However, at loads of 50 percent to 25 percent, the emissions of CO and VOC will decrease from the current levels.

### **Processing Schedule**

3/5/2010: Received the application for a minor source air pollution construction permit; application complete.

## **2. DEPARTMENT REVIEW**

McIntosh Unit 5 is a combined-cycle combustion turbine (CT) permitted to operate 8,760 hours per year. CO and VOC are controlled by good combustor design and an oxidation catalyst. When the CT is operating at base load

## TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

(100 percent load), the combustion system operates at high-firing temperatures and CO emissions are reduced through oxidation to carbon dioxide (CO<sub>2</sub>). At lower loads (less than 75 percent), when the firing temperature is lower, the CO oxidation is slower, which results in increased CO emissions. Based on Siemens-Westinghouse emissions performance data, the CO emissions increase from 37 parts per million volume dry (ppmvd) [corrected at 15-percent oxygen (O<sub>2</sub>)] at base load (100 percent load) to 336 ppmvd at 50-percent load. An oxidation catalyst, designed with a minimum control efficiency of 90 percent is used to control CO emissions. The oxidation catalyst allows McIntosh Unit 5 to operate at lower loads with lower CO emissions. The LLT system with improved combustion design will result in lower CO emissions at lower loads down to 25 percent. Therefore, the CO emissions with the LLT system and the oxidation catalyst are expected to decrease compared to current operation without the LLT system.

Similar to the CO emissions, the VOC emissions are also a result of incomplete thermal oxidation of hydrocarbons contained in the fuel and as a result, also increase during lower load operations. The VOC emissions will also be reduced during lower loads with the LLT system.

The LLT system works on the principal of improved combustion chamber design. Some of the design improvements include:

- Closed loop inlet guide vane control
- Bypassing compressed air around the combustor into the turbine to increase the fuel-to-air ratio inside the combustor
- Lowering of the rotor air cooler temperature

The design improvements result in higher firing temperature at lower loads, which results in improved CO oxidation. There will be no physical changes to the CT. The modifications are external and include the installation of six control valves and associated piping to allow the redirection of combustion air and rotor cooling air. The remainder of the installation is modifications to the controls to operate the new valves and allow for combustion tuning changes at the lower load points.

The following table shows a comparison of LLT system emissions with current combustion system emissions:

Load (%)	Carbon Monoxide (CO)				Volatile Organic Compounds (VOC)			
	Low Load Turndown <sup>a</sup>		Current Combustion System <sup>b</sup>		Low Load Turndown <sup>a</sup>		Current Combustion System <sup>b</sup>	
	(ppmvd @ 15% O <sub>2</sub> )	(lb/hr)	(ppmvd @15% O <sub>2</sub> )	(lb/hr)	(ppmvd @ 15% O <sub>2</sub> )	(lb/hr)	(ppmvd @ 15% O <sub>2</sub> )	(lb/hr)
100	1	4	37	211	0.0	0	3	10
75	9	31	71	336	0.2	0.8	3	8
50	14	55	338	1,177	0.5	2	58	115
25	490	1,157	3,390	10,903	28	66	564	1,090

<sup>a</sup> Estimated emissions with Low Load Turndown are based on Siemens data.

<sup>b</sup> 100, 75 and 50% load data based on Siemens performance data (Permit No. 1050004-004-AC/PSD-FL-245).  
25% load data was interpolated from 20 % load data provided by Siemens.

As shown in the table above, the CO emissions at 50 percent load will be reduced from 338 ppmvd for the original combustor to 14 ppmvd with the LLT system. At 25 percent load, the CO emissions will be reduced from an estimated 3,390 ppmvd for the original combustor to 490 ppmvd with the LLT system. The mass emissions data for both CO and VOC follow the same pattern.

The same procedure was used to evaluate the potential influence of the LTT system on annual emissions. The data shows that the CO and VOC emission with the LLT system is calculated to decrease by over 80 and 90 percent during periods of low loads, respectively.

## TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

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Unlike CO and VOC, emissions of nitrogen oxides (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), particulate matter less than 10 microns (PM<sub>10</sub>) and particulate matter less than 2.5 microns (PM<sub>2.5</sub>) decrease with lower loads. Therefore, emissions of these pollutants will not be affected as a result of the LLT system operating at lower loads.

### Rule Applicability

The McIntosh Power Plant facility is a major facility under the Department rules. Based on Rule 62-210.200, F.A.C., modification is defined as any physical change in, change in the method of operation of, or addition to a facility which would result in an increase in the actual emissions of any pollutant subject to new source review regulation under the Clean Air Act. The addition of the LLT system will be a physical change. However, CO and VOC emissions are estimated to decrease over the entire operating spectrum and the estimated annual emissions over the operating spectrum are substantially reduced using the LLT system. As a result, there will not be any increase in emissions. In fact, as shown above, there will be a decrease in the CO and VOC emissions.

### Exemption

The Department considers this project to be exempt from air construction permitting requirement for the following reasons:

- Rule 62-4.040(1)(a), F.A.C. states that structural changes which will not change the quality, nature or quantity of air and water contaminant emissions or discharges or which will not cause pollution are exempt from permit requirements. The addition of the LLT system will in fact decrease CO and VOC emissions from the current set-up, therefore the structural changes needed to accomplish this can be exempted from air construction permitting requirements.
- The structural changes required are all external to the combustion turbine and involves installation of valves and associated piping to redirect the combustion air allowing higher firing temperature at lower loads. This helps in improving the oxidation rate of the pollutants.
- The changes do not initiate unit specific requirements nor does it require amendments to the current specific conditions in Permit No. 1050004-004-AC/PSD-FL-245.

### 3. CONCLUSION

Pursuant to Rule 62.4.040(1)(b) of the Florida Administrative Code (F.A.C.) and for the reasons previously stated, the Bureau of Air Regulation determines that the activity will not emit air pollutants, "... in sufficient quantity, with respect to its character, quality or content, and the circumstances surrounding its location, use and operation, as to contribute significantly to the pollution problems within the State, so that the regulation thereof is not reasonably justified." Therefore, the project is exempt from the requirement to obtain an air construction permit. This determination may be revoked if the proposed activity is substantially modified or the basis for the exemption is determined to be materially incorrect. Syed Arif is the project engineer responsible for reviewing the application and making the exemption determination. 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.



# Florida Department of Environmental Protection

Bob Martinez Center  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

Charlie Crist  
Governor

Jeff Kottkamp  
Lt. Governor

Michael W. Sole  
Secretary

March 26, 2010

*Sent by Electronic Mail – Received Receipt Requested*

Mr. Thomas J. Trickey, P.E., Plant Manager  
Lakeland Electric  
501 E. Lemon Street  
Lakeland, FL 33801-5079

Re: Exemption from the Requirement to Obtain an Air Construction Permit  
Lakeland Electric, C.D. McIntosh, Jr. Power Plant  
Project No. 1050004-028-AC  
Low Load Turndown Project

Dear Mr. Trickey:

On March 5, 2010, Lakeland Electric submitted a request to install a Low Load Turndown (LLT) system on McIntosh Unit 5. The existing McIntosh Power Plant is located in Polk County at 3030 East Lake Parker Drive in Lakeland, Florida. The LLT system with improved combustion design will result in lower carbon monoxide (CO) and volatile organic compounds (VOC) emissions at lower loads down to 25 percent.

**Determination:** A complete review of this project is summarized in the attached Technical Evaluation. Pursuant to Rule 62.4.040(1)(b) of the Florida Administrative Code (F.A.C.) and for the reasons stated in the Technical Evaluation, the Bureau of Air Regulation determines that the activity will not emit air pollutants, "... in sufficient quantity, with respect to its character, quality or content, and the circumstances surrounding its location, use and operation, as to contribute significantly to the pollution problems within the State, so that the regulation thereof is not reasonably justified." Therefore, the project is exempt from the requirement to obtain an air construction permit. This determination may be revoked if the proposed activity is substantially modified or the basis for the exemption is determined to be materially incorrect. A copy of this letter shall be maintained at the site of the proposed activity. This permitting decision is made pursuant to Chapter 403, Florida Statutes.

**Permitting Authority:** Applications for air construction permits are subject to review in accordance with the provisions of Chapter 403, Florida Statutes (F.S.) and Chapters 62-4, 62-210 and 62-212, F.A.C. The Permitting Authority responsible for making a permit determination for this project is the Bureau of Air Regulation in the Department of Environmental Protection's Division of Air Resource Management. The Permitting Authority's physical address is: 111 South Magnolia Drive, Suite #4, Tallahassee, Florida 32301. The Permitting Authority's mailing address is: 2600 Blair Stone Road, MS #5505, Tallahassee, Florida 32399-2400. The Permitting Authority's telephone number is 850/488-0114.

**Petitions:** A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative hearing in accordance with Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed with (received by) the agency clerk in the Office of General Counsel of the Department of Environmental Protection, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000 (Telephone: 850/245-2241). Petitions must be filed within 21 days of receipt of this exemption from air permitting requirements. A petitioner shall mail a copy of the petition to the applicant at

## EXEMPTION FROM AIR CONSTRUCTION PERMITTING

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the address indicated above, at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding initiated by another party) will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C.

A petition that disputes the material facts on which the Permitting Authority's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner; the name, address and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of when and how each petitioner received notice of the agency action or proposed decision; (d) A statement of all disputed issues of material fact. If there are none, the petition must so state; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action including an explanation of how the alleged facts relate to the specific rules or statutes; and, (g) A statement of the relief sought by the petitioner, stating precisely the action the petitioner wishes the agency to take with respect to the agency's proposed action. A petition that does not dispute the material facts upon which the Permitting Authority's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Permitting Authority's final action may be different from the position taken by it in this permitting action. Persons whose substantial interests will be affected by any such final decision of the Permitting Authority on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

**Mediation:** Mediation is not available in this proceeding.

**Effective Date:** This permitting decision is final and effective on the date filed with the clerk of the Permitting Authority unless a petition is filed in accordance with the above paragraphs or unless a request for extension of time in which to file a petition is filed within the time specified for filing a petition pursuant to Rule 62-110.106, F.A.C., and the petition conforms to the content requirements of Rules 28-106.201 and 28-106.301, F.A.C. Upon timely filing of a petition or a request for extension of time, this action will not be effective until further order of the Permitting Authority.

**Judicial Review:** Any party to this permitting decision (order) has the right to seek judicial review of it under Section 120.68, F.S., by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel, Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000, and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within 30 days after this order is filed with the clerk of the Department.

EXEMPTION FROM AIR CONSTRUCTION PERMITTING

Executed in Tallahassee, Florida.



Trina Vielhauer, Chief  
Bureau of Air Regulation

TLV/sa

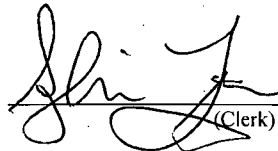
**CERTIFICATE OF SERVICE**

The undersigned duly designated deputy agency clerk hereby certifies that this Exemption from Air Construction Permitting was sent by electronic mail, or a link to these documents made available electronically on a publicly accessible server, with received receipt requested before the close of business on 3/26/10 to the persons listed below.

- Mr. Thomas J. Trickey, Lakeland Electric ([tom.trickey@lakelandelectric.com](mailto:tom.trickey@lakelandelectric.com))
- Ms. Farzie Shelton, Lakeland Electric ([farzie.shelton@lakelandelectric.com](mailto:farzie.shelton@lakelandelectric.com))
- Mr. Ken Kosky, Golder Associates, Inc. ([kkosky@golder.com](mailto:kkosky@golder.com))
- Ms. Cindy Zhang-Torres, DEP-SWD ([cindy.zhang-torres@dep.state.fl.us](mailto:cindy.zhang-torres@dep.state.fl.us))
- Ms. Vickie Gibson, DEP BAR Reading File ([victoria.gibson@dep.state.fl.us](mailto:victoria.gibson@dep.state.fl.us))

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to Section 120.52(7), Florida Statutes, with the designated agency clerk, receipt of which is hereby acknowledged.

  
(Clerk)

3/26/10  
(Date)

## Livingston, Sylvania

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**From:** Livingston, Sylvania  
**Sent:** Friday, March 26, 2010 9:13 AM  
**To:** 'tom.trickey@lakelandelectric.com'  
**Cc:** 'farzie.shelton@lakelandelectric.com'; 'kkosky@golder.com'; Zhang-Torres; Gibson, Victoria; Arif, Syed; Walker, Elizabeth (AIR)  
**Subject:** Lakeland Electric - C.D. McIntosh, Jr. Power Plant; 1050004-028-AC - Exemption  
**Attachments:** 1050004-028-AC - Permit Exemption.pdf; Exemption 1050004-028-AC - TEPD.pdf

Dear Sir/ Madam:

Attached is the official **Notice of Exemption from the Requirement to Obtain an Air Construction Permit** for the project referenced below. Click on the link displayed below to access the permit project documents and send a "reply" message verifying receipt of the document(s) provided in the link; this may be done by selecting "Reply" on the menu bar of your e-mail software, noting that you can view the documents, and then selecting "Send".

*Note: We must receive verification that you are able to access the documents. Your immediate reply will preclude subsequent e-mail transmissions to verify accessibility of the document(s).*

Permit project documents addressed in this email may require immediate action within a specified time frame. Please open and review the document(s) as soon as possible, and verify that they are accessible. Please advise this office of any changes to your e-mail address or that of the Engineer-of-Record. If you have any problems opening the documents or would like further information, please contact the Florida Department of Environmental Protection, Bureau of Air Regulation at (850)488-0114.

Thanks,

Sylvia Livingston  
Bureau of Air Regulation  
Division of Air Resource Management (DARM)  
Department of Environmental Protection  
850/921-9506  
[sylvia.livingston@dep.state.fl.us](mailto:sylvia.livingston@dep.state.fl.us)

Tracking:



## Livingston, Sylvia

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**From:** Trickey, Tom [Tom.Trickey@lakelandelectric.com]  
**Sent:** Sunday, March 28, 2010 7:47 PM  
**To:** Livingston, Sylvia  
**Subject:** RE: Lakeland Electric - C.D. McIntosh, Jr. Power Plant; 1050004-028-AC - Exemption

Received and read. Thank you.

Tom Trickey

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**From:** Livingston, Sylvia [mailto:Sylvia.Livingston@dep.state.fl.us]  
**Sent:** Friday, March 26, 2010 9:13 AM  
**To:** Trickey, Tom  
**Cc:** Shelton, Farzie; 'kkosky@golder.com'; Zhang-Torres; Gibson, Victoria; Arif, Syed; Walker, Elizabeth (AIR)  
**Subject:** Lakeland Electric - C.D. McIntosh, Jr. Power Plant; 1050004-028-AC - Exemption

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Thanks,

Sylvia Livingston  
Bureau of Air Regulation  
Division of Air Resource Management (DARM)  
Department of Environmental Protection  
850/921-9506  
[sylvia.livingston@dep.state.fl.us](mailto:sylvia.livingston@dep.state.fl.us)

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All e-mail sent to and received from the City of Lakeland, Florida, including e-mail addresses and content, are subject to the provisions of the Florida Public Records Law, Florida Statute Chapter 119, and may be subject to disclosure.

## Livingston, Sylvia

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**From:** Shelton, Farzie [Farzie.Shelton@lakelandelectric.com]  
**Sent:** Friday, March 26, 2010 10:39 AM  
**To:** Livingston, Sylvia  
**Subject:** Re: Lakeland Electric - C.D. McIntosh, Jr. Power Plant; 1050004-028-AC - Exemption

Thanks I have received your email.

Farzie Shelton

-- Sent from my Palm Pre

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On Mar 26, 2010 9:18 AM, Livingston, Sylvia <[Sylvia.Livingston@dep.state.fl.us](mailto:Sylvia.Livingston@dep.state.fl.us)> wrote:

Dear Sir/ Madam:

Attached is the official Notice of Exemption from the Requirement to Obtain an Air Construction Permit for the project referenced below. Click on the link displayed below to access the permit project documents and send a "reply" message verifying receipt of the document(s) provided in the link; this may be done by selecting "Reply" on the menu bar of your e-mail software, noting that you can view the documents, and then selecting "Send". Note: We must receive verification that you are able to access the documents. Your immediate reply will preclude subsequent e-mail transmissions to verify accessibility of the document(s).

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Thanks,

Sylvia Livingston  
Bureau of Air Regulation  
Division of Air Resource Management (DARM) Department of Environmental Protection  
850/921-9506  
[sylvia.livingston@dep.state.fl.us](mailto:sylvia.livingston@dep.state.fl.us)<<mailto:sylvia.livingston@dep.state.fl.us>>

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