**Friday, Barbara** 9/5/07

**To:** timothy.bachand@lakelandelectric.com; farzie.shelton@lakelandelectric.com; Nasca, Mara; 'KKosky@Golder.com'; little.james@epa.gov; Halpin, Mike

**Cc:** Cascio, Tom; Harvey, Mary; Adams, Patty

**Subject:** FINAL AC Permit No.: 1050004-019-AC - Lakeland Electric - C. D. McIntosh, Jr. Power Plant

**Attachments:** FinalPermitSignaturePage.pdf; Appendix GC Phase 2 2007.pdf; Final AC Section 1 Phase 2 2007.pdf; Final AC Section 2 Phase 2 2007.pdf; Final AC Section 3 Phase 2 2007 Revised.pdf; Final Appendix BACT Phase 2 2007.pdf; Final Determination 2007 Revised.pdf; FinalNotice2007.pdf

Dear Sir/Madam:

Please send a "reply" message verifying receipt of the attached document(s); this may be done by selecting "Reply" on the menu bar of your e-mail software and then selecting "Send". We must receive verification of receipt and your reply will preclude subsequent e-mail transmissions to verify receipt of the document(s).

The document(s) may require immediate action within a specified time frame. Please open and review the document(s) as soon as possible.

The document is in Adobe Portable Document Format (pdf). Adobe Acrobat Reader can be downloaded for free at the following internet site: http://www.adobe.com/products/acrobat/readstep.html.

The Bureau of Air Regulation is issuing electronic documents for permits, notices and other correspondence in lieu of hard copies through the United States Postal System, to provide greater service to the applicant and the engineering community. Please advise this office of any changes to your e-mail address or that of the Engineer-of-Record.

Thank you,

DEP, Bureau of Air Regulation

## Friday, Barbara

**From:** System Administrator
**To:** Nasca, Mara
**Sent:** Wednesday, September 05, 2007 2:21 PM
**Subject:** Delivered:FINAL AC Permit No.: 1050004-019-AC - Lakeland Electric - C. D. McIntosh, Jr. Power Plant

Your message

| | |
|---|---|
| To: | 'timothy.bachand@lakelandelectric.com'; 'farzie.shelton@lakelandelectric.com'; Nasca, Mara; 'KKosky@Golder.com'; 'little.james@epa.gov'; Halpin, Mike |
| Cc: | Cascio, Tom; Harvey, Mary; Adams, Patty |
| Subject: | FINAL AC Permit No.: 1050004-019-AC - Lakeland Electric - C. D. McIntosh, Jr. Power Plant |
| Sent: | 9/5/2007 2:20 PM |

was delivered to the following recipient(s):

Nasca, Mara on 9/5/2007 2:21 PM

## Friday, Barbara

**From:** System Administrator
**To:** Halpin, Mike
**Sent:** Wednesday, September 05, 2007 2:21 PM
**Subject:** Delivered:FINAL AC Permit No.: 1050004-019-AC - Lakeland Electric - C. D. McIntosh, Jr. Power Plant

Your message

| | |
|---|---|
| To: | 'timothy.bachand@lakelandelectric.com'; 'farzie.shelton@lakelandelectric.com'; Nasca, Mara; 'KKosky@Golder.com'; 'little.james@epa.gov'; Halpin, Mike |
| Cc: | Cascio, Tom; Harvey, Mary; Adams, Patty |
| Subject: | FINAL AC Permit No.: 1050004-019-AC - Lakeland Electric - C. D. McIntosh, Jr. Power Plant |
| Sent: | 9/5/2007 2:20 PM |

was delivered to the following recipient(s):

Halpin, Mike on 9/5/2007 2:21 PM

## Friday, Barbara

**From:** System Administrator
**To:** Cascio, Tom; Harvey, Mary; Adams, Patty
**Sent:** Wednesday, September 05, 2007 2:21 PM
**Subject:** Delivered:FINAL AC Permit No.: 1050004-019-AC - Lakeland Electric - C. D. McIntosh, Jr. Power Plant

Your message

| | |
|---|---|
| To: | 'timothy.bachand@lakelandelectric.com'; 'farzie.shelton@lakelandelectric.com'; Nasca, Mara; 'KKosky@Golder.com'; 'little.james@epa.gov'; Halpin, Mike |
| Cc: | Cascio, Tom; Harvey, Mary; Adams, Patty |
| Subject: | FINAL AC Permit No.: 1050004-019-AC - Lakeland Electric - C. D. McIntosh, Jr. Power Plant |
| Sent: | 9/5/2007 2:20 PM |

was delivered to the following recipient(s):

Cascio, Tom on 9/5/2007 2:21 PM
Harvey, Mary on 9/5/2007 2:21 PM
Adams, Patty on 9/5/2007 2:21 PM

## Friday, Barbara

**From:** Mail Delivery System [MAILER-DAEMON@sophos.golder.com]
**Sent:** Wednesday, September 05, 2007 2:19 PM
**To:** Friday, Barbara
**Subject:** Successful Mail Delivery Report

**Attachments:** Delivery report; Message Headers


Delivery report.txt (455 B)


Message Headers.txt (2 KB)

This is the mail system at host sophos.golder.com.

Your message was successfully delivered to the destination(s) listed below. If the message was delivered to mailbox you will receive no further notifications. Otherwise you may still receive notifications of mail delivery errors from other systems.

The mail system

<KKosky@Golder.com>: delivery via 127.0.0.1[127.0.0.1]:10025: 250 OK, sent 46DEF32C_4778_39_1

## Friday, Barbara

**From:** Mail Delivery System [MAILER-DAEMON@mseive01.rtp.epa.gov]
**Sent:** Wednesday, September 05, 2007 2:20 PM
**To:** Friday, Barbara
**Subject:** Successful Mail Delivery Report

**Attachments:** Delivery report; Message Headers


Delivery report.txt (468 B)


Message Headers.txt (2 KB)

This is the mail system at host mseive01.rtp.epa.gov.

Your message was successfully delivered to the destination(s) listed below. If the message was delivered to mailbox you will receive no further notifications. Otherwise you may still receive notifications of mail delivery errors from other systems.

The mail system

<little.james@epa.gov>: delivery via 127.0.0.1[127.0.0.1]:10025: 250 OK, sent 46DEF33F_3537_29453_34

## Friday, Barbara

**From:** Shelton, Farzie [Farzie.Shelton@lakelandelectric.com]
**Sent:** Wednesday, September 05, 2007 2:20 PM
**To:** Friday, Barbara
**Subject:** Out of Office AutoReply: FINAL AC Permit No.: 1050004-019-AC - Lakeland Electric - C. D. McIntosh, Jr. Power Plant

I will be on vacation from 8/30/07 untill 9/27/07. If this is urgent, please contact Mace Hunter at 863-834-6516

mace.hunter@lakelandelectric.com

Thanks

Farzie Shelton

## Friday, Barbara

**From:** System Administrator
**To:** Bachand, Timothy; Shelton, Farzie
**Sent:** Wednesday, September 05, 2007 2:23 PM
**Subject:** Delivered:FINAL AC Permit No.: 1050004-019-AC - Lakeland Electric - C. D. McIntosh, Jr. Power Plant

Your message

| | |
|---|---|
| To: | timothy.bachand@lakelandelectric.com; farzie.shelton@lakelandelectric.com; Nasca, Mara; KKosky@Golder.com; little.james@epa.gov; Halpin, Mike |
| Cc: | Cascio, Tom; Harvey, Mary; Adams, Patty |
| Subject: | FINAL AC Permit No.: 1050004-019-AC - Lakeland Electric - C. D. McIntosh, Jr. Power Plant |
| Sent: | 9/5/2007 2:20 PM |

was delivered to the following recipient(s):

Bachand, Timothy on 9/5/2007 2:20 PM
Shelton, Farzie on 9/5/2007 2:20 PM

## Friday, Barbara

**From:** Bachand, Timothy [Timothy.Bachand@lakelandelectric.com]
**To:** Friday, Barbara
**Sent:** Wednesday, September 05, 2007 2:21 PM
**Subject:** Read: FINAL AC Permit No.: 1050004-019-AC - Lakeland Electric - C. D. McIntosh, Jr. Power Plant

Your message

To: Timothy.Bachand@lakelandelectric.com
Subject:

was read on 9/5/2007 2:21 PM.

**Friday, Barbara**

**From:** Bachand, Timothy [Timothy.Bachand@lakelandelectric.com]
**Sent:** Wednesday, September 05, 2007 2:23 PM
**To:** Friday, Barbara
**Subject:** RE: FINAL AC Permit No.: 1050004-019-AC - Lakeland Electric - C. D. McIntosh, Jr. Power Plant

Documents received.

Timothy L. Bachand, P.E.
Manger of Engineering - Production

---

**From:** Friday, Barbara [mailto:Barbara.Friday@dep.state.fl.us]
**Sent:** Wednesday, September 05, 2007 2:20 PM
**To:** Bachand, Timothy; Shelton, Farzie; Nasca, Mara; KKosky@Golder.com; little.james@epa.gov; Halpin, Mike
**Cc:** Cascio, Tom; Harvey, Mary; Adams, Patty
**Subject:** FINAL AC Permit No.: 1050004-019-AC - Lakeland Electric - C. D. McIntosh, Jr. Power Plant

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Thank you,

DEP, Bureau of Air Regulation

## Friday, Barbara

**From:** Halpin, Mike
**To:** Friday, Barbara
**Sent:** Wednesday, September 05, 2007 2:26 PM
**Subject:** Read: FINAL AC Permit No.: 1050004-019-AC - Lakeland Electric - C. D. McIntosh, Jr. Power Plant

Your message

| | |
|---|---|
| To: | 'timothy.bachand@lakelandelectric.com'; 'farzie.shelton@lakelandelectric.com'; Nasca, Mara; 'KKosky@Golder.com'; 'little.james@epa.gov'; Halpin, Mike |
| Cc: | Cascio, Tom; Harvey, Mary; Adams, Patty |
| Subject: | FINAL AC Permit No.: 1050004-019-AC - Lakeland Electric - C. D. McIntosh, Jr. Power Plant |
| Sent: | 9/5/2007 2:20 PM |

was read on 9/5/2007 2:23 PM.

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

**From:** Nasca, Mara
**To:** Friday, Barbara
**Sent:** Wednesday, September 05, 2007 4:05 PM
**Subject:** Read: FINAL AC Permit No.: 1050004-019-AC - Lakeland Electric - C. D. McIntosh, Jr. Power Plant

Your message

| | |
|---|---|
| To: | 'timothy.bachand@lakelandelectric.com'; 'farzie.shelton@lakelandelectric.com'; Nasca, Mara; 'KKosky@Golder.com'; 'little.james@epa.gov'; Halpin, Mike |
| Cc: | Cascio, Tom; Harvey, Mary; Adams, Patty |
| Subject: | FINAL AC Permit No.: 1050004-019-AC - Lakeland Electric - C. D. McIntosh, Jr. Power Plant |
| Sent: | 9/5/2007 2:20 PM |

was read on 9/5/2007 4:05 PM.

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

**From:** Friday, Barbara
**Sent:** Wednesday, September 05, 2007 4:10 PM
**To:** Forney.Kathleen@epamail.epa.gov
**Subject:** Fw: FINAL AC Permit No.: 1050004-019-AC - Lakeland Electric - C. D. McIntosh, Jr. Power Plant

**Attachments:** FinalPermitSignaturePage.pdf; Appendix GC Phase 2 2007.pdf; Final AC Section 1 Phase 2 2007.pdf; Final AC Section 2 Phase 2 2007.pdf; Final AC Section 3 Phase 2 2007 Revised.pdf; Final Appendix BACT Phase 2 2007.pdf; Final Determination 2007 Revised.pdf; FinalNotice2007.pdf


FinalPermitSignaturePage.pdf (...


Appendix GC Phase 2 2007.pdf (...


Final AC Section 1 Phase 2 200...


Final AC Section 2 Phase 2 200...


Final AC Section 3 Phase 2 200...


Final Appendix BACT Phase 2 20...


Final Determination 2007 Revis...


FinalNotice2007.pdf (843 KB)

Thanks
We got it...
Katy

---

Katy R. Forney
Air Permits Section
EPA - Region 4
61 Forsyth St., SW
Atlanta, GA 30024

Phone: 404-562-9130
Fax: 404-562-9019

----- Forwarded by Kathleen Forney/R4/USEPA/US on 09/05/2007 04:09 PM -----

James Little/R4/USEPA/US
09/05/2007 03:40 PM

To: Kathleen Forney/R4/USEPA/US@EPA
cc:
Subject: Fw: FINAL AC Permit No.: 1050004-019-AC - Lakeland Electric - C. D. McIntosh, Jr. Power Plant

This looks like another one where you are not on the notification list.

Jim

----- Forwarded by James Little/R4/USEPA/US on 09/05/2007 03:40 PM -----

**STATE OF FLORIDA**
**DEPARTMENT OF ENVIRONMENTAL PROTECTION**

## NOTICE OF FINAL PERMIT

*Electronically sent – Received Receipt requested.*

In the Matter of an
Application for Permit by:

Lakeland Electric
501 East Lemon Street
Lakeland, Florida 33805

*Authorized Representative:*
Mr. Timothy Bachand, Director, Energy Supply

DEP File No. 1050004-019-AC
C.D. McIntosh, Jr. Power Plant
Fossil Fuel Steam Generator Unit 3
Selective Catalytic Reduction System
Polk County, Florida
Expires: December 31, 2009

Enclosed is Final Air Construction Permit No. 1050004-019-AC that authorizes the installation of an ammonia injection system using the principle of selective catalytic reduction on the Unit 3 fossil fuel fired steam generator (EU 006) at Lakeland Electric's C.D. McIntosh, Jr. Power Plant. The facility is located at 3030 East Lake Parker Drive, Lakeland, Polk County, Florida. As noted in the attached Final Determination, minor changes were made to the Draft Permit. This permit is issued pursuant to Chapter 403, Florida Statutes.

Any party to this order has the right to seek judicial review of it under Section 120.68 of the Florida Statutes 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 thirty (30) days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida.

Trina L Vielhauer

Trina L. Vielhauer, Chief
Bureau of Air Regulation

## CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Final Air Construction Permit, Final Determination, and all copies were sent electronically (with Received Receipt) before the close of business on 9/5/01 to the person(s) listed below.

Timothy Bachand, Lakeland Electric: timothy.bachand@lakelandelectric.com
Farzie Shelton, Lakeland Electric: farzie.shelton@lakelandelectric.com
Mara Nasca, Southwest District Office: mara.nasca@dep.state.fl.us
Kennard F. Kosky, P.E., Golder Associates, Inc.: kkosky@golder.com
Jim Little, EPA Region 4: little.james@epa.gov
Mike Halpin, Siting Coordination Office: mike.halpin@dep.state.fl.us

Clerk Stamp

**FILING AND ACKNOWLEDGMENT FILED**, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Barbara J. Friday 9/5/01
(Clerk) (Date)

# FINAL DETERMINATION

## PERMITTEE

Lakeland Electric
501 East Lemon Street
Lakeland, Florida 33805

## PERMITTING AUTHORITY

Florida Department of Environmental Protection
Division of Air Resource Management
Bureau of Air Regulation, Permitting South Section
2600 Blair Stone Road, MS 5505
Tallahassee, Florida 32399-2400

## PROJECT

Air Permit No. 1050004-019-AC

C.D. McIntosh, Jr. Power Plant – Unit 3

This permit authorizes the installation of an ammonia injection system using the principle of selective catalytic reduction on Unit 3 fossil fuel fired steam generator (EU 006) at Lakeland Electric's C.D. McIntosh, Jr. Power Plant. The facility is located at 3030 East Lake Parker Drive, Lakeland, Polk County, Florida.

## NOTICE AND PUBLICATION

The Department distributed an "Intent to Issue Permit" package on July 10, 2007. The applicant published the "Public Notice of Intent to Issue" in the Lakeland Ledger on July 20, 2007. A request for extension of time to petition for an administrative hearing was filed by the applicant. The request was withdrawn on August 20, 2007. The following minor changes/clarifications were made to specific conditions of the draft air construction permit at the request of the applicant in letters dated July 16, 2007, and August 15, 2007.

Double-underline denotes additions and strikethrough (~~strikethrough~~) indicates deletions compared with the draft permit.

**11.** Annual Particulate Matter ($PM/PM_{10}$) and SAM Emissions Projections. For this project, the permittee projected that actual annual emissions increases due to the project will be less than 25/10 tons per year (TPY) of $PM/PM_{10}$ and will be less than 7 TPY of SAM. The baseline actual emissions for determining the increases are ~~443~~ 438 TPY of $PM/PM_{10}$ and ~~139~~ 136 TPY of SAM. The permittee shall demonstrate this by compiling and submitting the reports required by this permit. For the purposes of this reporting, all PM emissions are considered to be $PM_{10}$ emissions. [Application; Rules 62-212.300 and 62-210.370, F.A.C.]

**13.** Emission Limit Subject to Revision. Emissions of carbon monoxide (CO) from Unit 3 shall not exceed 0.20 pounds per million Btu heat input (lb/mmBtu) on a 30-day rolling average as described in air construction permit 1050004-018-AC. Based on results of compliance tests and analysis of ~~6~~ 12 months worth of continuous monitoring data, the Department will reassess the previously issued best available control technology (BACT) determination. The emission limit may be adjusted downward to make this limit more stringent provided that overall control attained for all air pollutants including CO, $SO_2$, $NO_X$, $PM/PM_{10}$, sulfuric acid mist, and VOC is optimized. Such revision shall be based on data that represents a full range of operating conditions and a representative period of time. Such revision, if required by the Department, shall be in the form of an ~~federally enforceable permit and shall be publicly noticed by the permittee~~ air construction permit following the Department's procedures in Rules 62-210.300 and 62-4.055, F.A.C. [Rules 62-4.070(3), and 62-212.400(7)(a), F.A.C.]

**14.** Future Actual Emissions Reporting. The permittee shall maintain and submit to the Department on an annual basis for a period of 5 years from the date the SCR systems are initially operated, information demonstrating in accordance with Rule 62-212.300(1)(e), F.A.C., using the emissions computation and reporting procedures in Rule 62-210.370, F.A.C., that the installation of LNB, OFA and SCR did not result in an emissions increase of PM or SAM would equal or exceed the respective significant emission rates as defined in Rule 62-210.300, F.A.C. ~~significant emission increases of PM and SAM. The permittee shall use the same calculation methodology of emissions as outlined in the application (see Tables 2 and 3)~~. The future emissions shall be compared with the baseline actual emissions for the period 2002-2001 for SAM and 2003-2002 for PM as reported in the annual operating reports (AOR) using EPA Method 5B for PM and Method 8A (controlled condensate) for SAM. [Rule 62-212.300(1)(e), F.A.C.]

**15.** Initial Performance Tests – Sorbent Injection for SAM Emissions Control. Within 90 days of completing construction of the SCR system, the permittee shall conduct a series of initial performance tests to determine the SAM emissions rate under a variety of operating scenarios that documents the impact of sorbent injection on reducing SAM emissions and results in the development of correlation/curves between injection rates, operating conditions and emissions.

At permitted capacity and with no SCR bypass, the permittee shall conduct stack tests to determine the uncontrolled sulfuric acid mist emission rate, the controlled sulfuric acid mist emission rate, and actual control efficiency of the installed sorbent injection system. Tests shall consist of three, 1-hour test runs and be conducted while firing the fuel blend with the highest sulfur content. During each test run, the permittee shall continuously monitor and record the sorbent injection rate and total secondary power input to the electrostatic precipitator. The purpose of these tests is to determine actual control efficiency of the installed systems and to establish a minimum sorbent injection rate, which will be used to calculate the actual annual emissions.

a. For each set of operating conditions being evaluated, the permittee shall conduct at least a 1-hour test run to determine SAM emissions. At least nine such test runs shall be conducted to evaluate the effect on~~f~~ SAM emissions ~~on~~ from such parameters as the $SO_2$ emission rate prior to the SCR catalyst (and FGD system), the unit load, the flue gas flow rate, the sorbent injection rate and the current catalyst oxidation rate.

b. Tests shall be conducted under a variety of fuel blends and load rates that are representative of the actual operating conditions. Sufficient tests shall be conducted to establish the SAM emissions rates for the following scenarios: bypass of the SCR reactor, SCR reactor in service without sorbent injection, and SCR reactor in service under varying operating conditions and levels of sorbent injection.

c. At least 15 days prior to initiating the performance tests, the permittee shall submit a test notification, preliminary test schedule and test protocol to the Bureau of Air Regulation and the Compliance Authority.

d. Within 45 days following the last test run conducted, the permittee shall provide a report summarizing the emissions tests and results. All SAM emissions test data shall be provided with this report.

e. Within 45 days following the submittal of the emissions test report and no later than 90 days following the last test run conducted, the permittee shall submit a project report summarizing the following:

- Identify each set of operating conditions evaluated, identify each operating parameter evaluated;

- Identify the relative influence of each operating parameter, describe how the automated control system will adjust the sorbent injection rate based on the selected parameters;
- Identify the frequency with which operational parameters will be reevaluated and adjusted within the automated control system;
- Provide the algorithm used for the automated control system or a series of related performance curves; and
- Provide details for calculating and estimating the SAM emissions rate based on the level of sorbent injection and operating conditions. The test results shall be used to adjust the sorbent injection control system and estimate SAM emissions.

[Rules 62-4.070(3) and 62-212.300(1)(e), F.A.C.]

**17.** Initial Compliance Demonstration. Within 60 days ~~of commencing operation, following installation of the SCR system, tests shall be conducted to determine emissions of CO and $NO_x$. Tests shall be conducted between 90% and 100% of permitted capacity while firing a coal and petcoke blend or a blend of coal, petcoke and refuse derived fuel. Tests shall consist of three, 1-hour test runs~~ after the initial performance tests required by Specific Condition 18., the permittee shall submit information to the Department demonstrating compliance with the 30-day rolling average emission limits for CO and $NO_x$. [Rule 62-297.310(7)(a)1, F.A.C.]

**18.** Performance Tests. Within 60 days of commencing operation of the SCR/sorbent injection system and after completing the performance tests required by Specific Condition 15., the permittee shall have the following tests conducted for the unit.

At permitted capacity, the permittee shall conduct tests to determine the uncontrolled $NO_X$ emissions rate, the controlled $NO_X$ emission rate, and the actual control efficiency of the installed SCR system. Tests shall consist of three, 1-hour test runs. Alternatively, the permittee may provide representative CEMS data for this demonstration. During each test run, the permittee shall continuously monitor and record the ammonia injection rate.

~~At permitted capacity and with no SCR bypass, the permittee shall conduct stack tests to determine the uncontrolled sulfuric acid mist emission rate, the controlled sulfuric acid mist emission rate, and actual control efficiency of the installed ammonia injection system. Tests shall consist of three, 1-hour test runs and be conducted while firing the fuel blend with the highest sulfur content. During each test run, the permittee shall continuously monitor and record the ammonia injection rate and total secondary power input to the electrostatic precipitator. The purpose of these tests is to determine actual control efficiency of the installed systems and to establish a minimum sorbent injection rate, which will be used to calculate the actual annual emissions.~~

[Rule 62-297.310(7)(a)1, F.A.C.]

## CONCLUSION

The final action of the Department is to issue the permit with the minor changes indicated above.

**MEMORANDUM**

To: Joseph Kahn

Through Trina Vielhauer

From: Tom Cascio and A. Linero

Subject: C.D. McIntosh, Jr. Power Plant – Unit 3
Air Construction Permit No. 1050004-019-AC

Date: August 31, 2007

Attached is the final air construction permit for the subject facility. This permit authorizes the installation of an ammonia injection system using the principle of selective catalytic reduction on Unit 3 fossil fuel fired steam generator (EU 006) at Lakeland Electric's C.D. McIntosh, Jr. Power Plant.

The Department distributed an "Intent to Issue Permit" package on July 10, 2007. The applicant published the "Public Notice of Intent to Issue" in the Lakeland Ledger on July 20, 2007. A petition for extension of time to petition for an administrative hearing was filed by the applicant. The petition was withdrawn on August 20, 2007. Minor changes/clarifications were made to specific conditions of the draft air construction permit at the request of the applicant in letters dated July 16, 2007, and August 15, 2007.

We recommend your approval of the final permit.

# 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


**PERMITTEE**

Lakeland Electric
501 East Lemon Street
Lakeland, Florida 33805

*Authorized Representative:*
Mr. Timothy Bachand, Director, Energy Supply

Air Construction Permit No. 1050004-019-AC
C.D. McIntosh, Jr. Power Plant
Fossil Fuel Steam Generator Unit 3
Facility ID No. 1050004
SIC No. 4911
Selective Catalytic Reduction System
Permit Expires: December 31, 2009

**PROJECT AND LOCATION**

This permit authorizes the installation of an ammonia injection system using the principle of selective catalytic reduction on the Unit 3 fossil fuel fired steam generator (EU 006) at Lakeland Electric's C.D. McIntosh, Jr. Power Plant. The facility is located at 3030 East Lake Parker Drive, Lakeland, Polk County, Florida.

**STATEMENT OF BASIS**

This air pollution construction permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.) and Title 40, Parts 60 and 63 of the Code of Federal Regulations (CFR). The permittee is authorized to install the proposed equipment in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department of Environmental Protection (Department).

**CONTENTS**



Joseph Kahn, Director
Division of Air Resource Management

8/31/07
(Date)

JK/tlv/aal/tbc

## FACILITY AND PROJECT DESCRIPTION

Lakeland Electric operates the C.D. McIntosh, Jr. Power Plant, which is an electric services facility (SIC No. 4911). The plant currently consists of three fossil fuel fired steam generators, two diesel powered generators, and two gas turbines. There are storage and handling facilities for solid and liquid fuels, ash and limestone. A wastewater treatment facility is also located on site.

This permit authorizes the installation of an ammonia injection system using the principle of selective catalytic reduction (SCR) on Unit 3 as the second phase of a project to provide full flexibility in implementing the federal cap and trade program for nitrogen oxides ($NO_X$) under the Clean Air Interstate Rule (CAIR). Because CAIR affords a regulated facility the flexibility to evaluate market conditions to determine whether it will install controls, operate existing controls, or purchase allowances generated by other plants, the Department does not require the installation of this equipment nor its operation.

| ID | Emission Unit Description |
|---|---|
| 006 | McIntosh Unit 3 - Fossil Fuel Fired Steam Generator |

## REGULATORY CLASSIFICATION

The facility is a potential major source of hazardous air pollutants (HAP).

The facility operates existing units subject to the Acid Rain provisions of Title IV of the Clean Air Act (CAA).

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 (Prevention of Significant Deterioration (PSD)-major source) in accordance with Rule 62-212.400, F.A.C.

The facility operates units subject to the Standards of Performance for New Stationary Sources pursuant to 40 CFR Part 60.

The facility does not operate electrical generating units subject to National Emissions Standards for Hazardous Air Pollutants pursuant to 40 CFR Part 63.

The facility is subject to the Federal Clean Air Interstate Rule (CAIR) in accordance with the Final Department Rules issued pursuant to CAIR as implemented by FDEP in Rule 62-296.470, F.A.C.

The facility is subject to the Federal Clean Air Mercury Rule (CAMR) implemented by the Department in Rule 62-296.480, F.A.C.

The facility operates units that were certified under the Florida Power Plant Siting Act, 403.501-518, F.S.

## RELEVANT DOCUMENTS

The following relevant documents are not a part of this permit, but helped form the basis for this permitting action: the permit application and additional information received to make it complete; the draft permit package including the Department's Technical Evaluation and Preliminary Determination; publication and comments; and the Department's Final Determination.

1. Permitting Authority: The Permitting Authority for this project is the Bureau of Air Regulation in the Division of Air Resource Management of the Department. The mailing address for the Bureau of Air Regulation is 2600 Blair Stone Road, MS #5505, Tallahassee, Florida 32399-2400.
2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to the Southwest District Office. The mailing address of the Southwest District Office is: 13051 N. Telecom Parkway, Temple Terrace, Florida 33637-0926. The phone number is (813) 632-7600.
3. Appendices: The following Appendices are attached as part of this permit: Appendix BD (Final BACT Determinations and Emissions Standards); Appendix GC (General Conditions).
4. Applicable Regulations, Forms and Application Procedures: Unless otherwise specified in this permit, the construction and operation of the subject emissions units shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403, F.S.; and Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296, and 62-297, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations.
5. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]
6. Modifications: No emissions unit shall be constructed or modified without obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]
7. Title V Permit: This permit authorizes specific modifications and/or new construction on the affected emissions units as well as initial operation to determine compliance with conditions of this permit. A Title V operation permit is required for regular operation of the permitted emissions unit. The permittee shall apply for a Title V operation permit at least 90 days prior to expiration of this permit, but no later than 180 days after completing the required work and commencing operation. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. The application shall be submitted to the Bureau of Air Regulation with copies to the Compliance Authority. [Rules 62-4.030, 62-4.050, 62-4.220, and Chapter 62-213, F.A.C.]

This section of the permit addresses the following emissions unit.

| ID No. | Emissions Unit Description |
|---|---|
| 006 | McIntosh Unit 3 is a nominal 364 megawatt (electric) dry bottom wall-fired fossil fuel fired steam generator. The unit is fired on coal, residual oil, natural gas and co-fires refuse derived fuel (RDF) and petroleum coke. The maximum heat input rate is 3,640 million Btu per hour. Unit 3 is equipped with an electrostatic precipitator (ESP), a flue gas desulfurization (FGD) system, low nitrogen oxides ($NO_X$) burners (LNB) and an overfire air (OFA) system to control emissions. |

## APPLICABLE STANDARDS AND REGULATIONS

1. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting requirements or regulations. [Rule 62-210.300, F.A.C.]
2. The facility is subject to all of the requirements specified in Title V Air Operation Permit Renewal No. 1050004-016-AV.
3. The requirements of Air Construction Permit No. 1050004-018-AC, Low $NO_X$ Burners and Overfire Air and the associated determination of best available control technology (BACT) for carbon monoxide (CO) continue to apply to this unit.

## GENERAL OPERATION REQUIREMENTS

4. Unconfined Particulate Emissions. During the construction period, unconfined particulate matter emissions shall be minimized by dust suppressing techniques such as covering and/or application of water or chemicals to the affected areas, as necessary. [Rule 62-296.320(4), F.A.C.]
5. Plant Operation – Problems. If temporarily unable to comply with any of the conditions of the permit due to breakdown of equipment or destruction by fire, wind or other cause, the owner or operator shall notify the Department as soon as possible, but at least within (1) working day, excluding weekends and holidays. The notification shall include: pertinent information as to the cause of the problem; the steps being taken to correct the problem and prevent future recurrence; and where applicable, the owner's intent toward reconstruction of destroyed facilities. Such notification does not release the permittee from any liability for failure to comply with the conditions of this permit and the regulations. [Rule 62-4.130, F.A.C.]
6. Operating Procedures. Operating procedures shall include good operating practices and proper training of all operators and supervisors. The good operating practices shall meet the guidelines and procedures as established by the equipment manufacturers. All operators (including supervisors) of air pollution control devices shall be properly trained in plant specific equipment. [Rule 62-4.070(3), F.A.C.]
7. Circumvention. No person shall circumvent any air pollution control device, or allow the emission of air pollutants without the applicable air pollution control device operating properly. Operation of the SCR is not required by this permit. [Rule 62-210.650, F.A.C.]

## EQUIPMENT AND CONTROL TECHNOLOGY

8. Selective Catalytic Reduction (SCR) System. The permittee is authorized to construct, tune, operate and maintain a new SCR system for the facility's Unit No. 3 boiler to reduce emissions of nitrogen oxides as described in the application. In general, the SCR systems will include the following equipment: ammonia storage; ammonia flow control unit; ammonia injection grid; vanadium pentoxide catalyst; an SCR reactor chamber; an SCR bypass system; and other ancillary equipment. [Applicant Request; and Rule 62-296.470(CAIR), F.A.C.]

9. Sorbent Injection System. Sorbent injection shall begin as soon as the SCR achieves the operating parameters specified by the manufacturer. The permittee shall construct, tune, operate and maintain a new sorbent injection system to mitigate the formation of sulfuric acid mist (SAM) due to the increased oxidation of sulfur dioxide ($SO_2$) to sulfur trioxide ($SO_3$) across the new SCR reactor. Sorbents will be injected downstream of the SCR reactor and upstream of the existing ESP. The control system regulating the amount of sorbent injected to control SAM will be integrated into the plant digital control system. The sorbent will react with $SO_3$ to form particles, which will be collected in the ESP. With the sorbent injection systems, there will be no PSD-significant emissions increases due to the installation of SCR system. The proposed equipment includes storage tanks, piping, injectors, a control system and other ancillary equipment. The sorbent injection system shall be operable when the SCR system is initially available for service. [Application and Rule 62-212.400(12), F.A.C.]

10. $NO_X$ Continuous Emissions Monitoring System (CEMS). As necessary, the permittee is authorized to modify, calibrate, re-certify, and operate the existing $NO_X$ CEMS to accurately measure the lower $NO_X$ emission levels realized if the SCR system is in service. [Rule 62-4.070(3), F.A.C.]

**PERFORMANCE REQUIREMENTS**

11. Annual Particulate Matter ($PM/PM_{10}$) and SAM Emissions Projections. For this project, the permittee projected that actual annual emissions increases due to the project will be less than 25/10 tons per year (TPY) of $PM/PM_{10}$ and will be less than 7 TPY of SAM. The baseline actual emissions for determining the increases are 438 TPY of $PM/PM_{10}$ and 136 TPY of SAM. The permittee shall demonstrate this by compiling and submitting the reports required by this permit. For the purposes of this reporting, all PM emissions are considered to be $PM_{10}$ emissions. [Application; Rules 62-212.300 and 62-210.370, F.A.C.]

**EMISSION LIMITS AND STANDARDS**

12. Ammonia Emissions (slip). Ammonia slip measured at the stack downstream of all emissions control systems, shall not exceed 5 parts per million by volume (ppmv). Annual testing of ammonia slip shall be conducted and corrective measures taken if measured values exceed 2 ppmv. [Rule 62-4.070(3), F.A.C.]

13. Emission Limit Subject to Revision: Emissions of carbon monoxide (CO) from Unit 3 shall not exceed 0.20 pounds per million Btu heat input (lb/mmBtu) on a 30-day rolling average as described in air construction permit 1050004-018-AC. Based on results of compliance tests and analysis of 12 months worth of continuous monitoring data, the Department will reassess the previously issued best available control technology (BACT) determination. The emission limit may be adjusted downward to make this limit more stringent provided that overall control attained for all air pollutants including CO, $SO_2$, $NO_X$, $PM/PM_{10}$, sulfuric acid mist, and VOC is optimized. Such revision shall be based on data that represents a full range of operating conditions and a representative period of time. Such revision, if required by the Department, shall be in the form of an air construction permit following the Department's procedures in Rules 62-210.300 and 62-4.055, F.A.C. [Rules 62-4.070(3), and 62-212.400(7)(a), F.A.C.]

14. Future Actual Emissions Reporting. The permittee shall maintain and submit to the Department on an annual basis for a period of 5 years from the date the SCR systems are initially operated, information demonstrating in accordance with Rule 62-212.300(1)(e), F.A.C., using the emissions computation and reporting procedures in Rule 62-210.370, F.A.C., that the installation of LNB, OFA and SCR did not result in an emissions increase of PM or SAM would equal or exceed the respective significant emission rates as defined in Rule 62-210.300, F.A.C. The future emissions shall be compared with the baseline actual emissions for the period 2002-2001 for SAM and 2003-2002 for

PM as reported in the annual operating reports (AOR) using EPA Method 5B for PM and Method 8A (controlled condensate) for SAM. [Rule 62-212.300(1)(e), F.A.C.]

**EMISSIONS PERFORMANCE TESTING**

15. Initial Performance Tests – Sorbent Injection for SAM Emissions Control. Within 90 days of completing construction of the SCR system, the permittee shall conduct a series of initial performance tests to determine the SAM emissions rate under a variety of operating scenarios that documents the impact of sorbent injection on reducing SAM emissions and results in the development of correlation/curves between injection rates, operating conditions and emissions.

    At permitted capacity and with no SCR bypass, the permittee shall conduct stack tests to determine the uncontrolled sulfuric acid mist emission rate, the controlled sulfuric acid mist emission rate, and actual control efficiency of the installed sorbent injection system. Tests shall consist of three, 1-hour test runs and be conducted while firing the fuel blend with the highest sulfur content. During each test run, the permittee shall continuously monitor and record the sorbent injection rate and total secondary power input to the electrostatic precipitator. The purpose of these tests is to determine actual control efficiency of the installed systems and to establish a minimum sorbent injection rate, which will be used to calculate the actual annual emissions.

    a. For each set of operating conditions being evaluated, the permittee shall conduct at least a 1-hour test run to determine SAM emissions. At least nine such test runs shall be conducted to evaluate the effect on SAM emissions from such parameters as the $SO_2$ emission rate prior to the SCR catalyst (and FGD system), the unit load, the flue gas flow rate, the sorbent injection rate and the current catalyst oxidation rate.

    b. Tests shall be conducted under a variety of fuel blends and load rates that are representative of the actual operating conditions. Sufficient tests shall be conducted to establish the SAM emissions rates for the following scenarios: bypass of the SCR reactor, SCR reactor in service without sorbent injection, and SCR reactor in service under varying operating conditions and levels of sorbent injection.

    c. At least 15 days prior to initiating the performance tests, the permittee shall submit a test notification, preliminary test schedule and test protocol to the Bureau of Air Regulation and the Compliance Authority.

    d. Within 45 days following the last test run conducted, the permittee shall provide a report summarizing the emissions tests and results. All SAM emissions test data shall be provided with this report.

    e. Within 45 days following the submittal of the emissions test report and no later than 90 days following the last test run conducted, the permittee shall submit a project report summarizing the following:

        - Identify each set of operating conditions evaluated, identify each operating parameter evaluated;
        - Identify the relative influence of each operating parameter, describe how the automated control system will adjust the sorbent injection rate based on the selected parameters;
        - Identify the frequency with which operational parameters will be reevaluated and adjusted within the automated control system;
        - Provide the algorithm used for the automated control system or a series of related performance curves; and

- Provide details for calculating and estimating the SAM emissions rate based on the level of sorbent injection and operating conditions. The test results shall be used to adjust the sorbent injection control system and estimate SAM emissions.

[Rules 62-4.070(3) and 62-212.300(1)(e), F.A.C.]

16. Sorbent Injection for SAM Emissions Control. On an annual basis, the permittee must demonstrate that SAM emissions increases as a result of this project are less than 7 TPY. The permittee shall install and operate the sorbent injection system at a frequency and injection rate for SAM control to satisfy this requirement. An automated control system will be used to adjust the sorbent flow rate for the given set of operating conditions based on the most recent performance test results. [Rules 62-4.070(3) and 62-212.300(1)e, F.A.C.]

**COMPLIANCE DETERMINATION**

17. Initial Compliance Demonstration. Within 60 days after the initial performance tests required by Specific Condition 18., the permittee shall submit information to the Department demonstrating compliance with the 30-day rolling average emission limits for CO and $NO_X$. [Rule 62-297.310(7)(a)1, F.A.C.]

18. Performance Tests. Within 60 days of commencing operation of the SCR/sorbent injection system, and after completing the performance tests required by Specific Condition 15., the permittee shall have the following tests conducted for the unit.

    At permitted capacity, the permittee shall conduct tests to determine the uncontrolled $NO_X$ emissions rate, the controlled $NO_X$ emission rate, and the actual control efficiency of the installed SCR system. Tests shall consist of three, 1-hour test runs. Alternatively, the permittee may provide representative CEMS data for this demonstration. During each test run, the permittee shall continuously monitor and record the ammonia injection rate.

    [Rule 62-297.310(7)(a)1, F.A.C.]

19. Compliance with the ammonia ($NH_3$) slip limit shall be determined using EPA conditional test method (CTM-027), EPA method 320, or other methods approved by the Department. [Rule 62-4.070(3), F.A.C.]

20. Compliance with the emission limiting standards specified in this air construction permit shall be determined annually using the appropriate specific conditions of the facility's existing Title V air operations permit No. 1050004-016-AV, by using the appropriate EPA reference test methods, or Department test methods. [1050004-016-AV; Rules 62-204.220 and 62-4.070(3), F.A.C.]

21. Test Results. Compliance test results shall be submitted to the Department's Southwest District Office no later than 45 days after completion of the last test run. [Rule 62-297.310(8), F.A.C.]

**CONTINUOUS MONITORING REQUIREMENTS**

22. Ammonia Monitoring Requirements. In accordance with the manufacturer's specifications, the permittee shall install, calibrate, operate, and maintain an ammonia flow meter to measure and record the ammonia injection rate to the SCR system. [Rule 62-4.070(3), F.A.C.]

**NOTIFICATION, REPORTING, AND RECORDKEEPING**

23. Emission Compliance Stack Test Reports. A test report indicating the results of the required compliance tests shall be filed as per Specific Condition 21. The test report shall provide sufficient detail on the tested emission unit and the procedures used to allow the compliance authority to determine if the test was properly conducted and if the test results were properly computed. [Rule 62-297.310(8), F.A.C.]

The Department establishes the following standards as the Best Available Control Technology for the Unit 3 fossil fuel fired steam generator:

Emissions of CO shall not exceed 0.20 lb/mmBtu heat input on a 30-operating day rolling average as demonstrated by the required CEMS.

Based on results of compliance tests and continuous monitoring data, the Department will reassess the BACT determination in conjunction with the evaluative phase of the project which includes operation of the selective catalytic reduction system. The emission limit may be adjusted downward to make this limit more stringent provided that overall control attained for all air pollutants including CO, $SO_2$, $NO_X$, $PM/PM_{10}$, sulfuric acid mist, and VOC is optimized. Such revision shall be based on data that represents a full range of operating conditions and a representative period of time. Such revision, if required by the Department, shall be in the form of an air construction permit and shall be publicly noticed by the permittee.

The permittee shall comply with the following general conditions from Rule 62-4.160, F.A.C.

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, F.S. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.
2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.
3. As provided in Subsections 403.087(6) and 403.722(5), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.
4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.
6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.
7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:
   a. Have access to and copy and records that must be kept under the conditions of the permit;
   b. Inspect the facility, equipment, practices, or operations regulated or required under this permit, and,
   c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

   Reasonable time may depend on the nature of the concern being investigated.
8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

a. A description of and cause of non-compliance; and

b. The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

LAKELAND ELECTRIC

**Farzie Shelton, chE; REM**

Associate GM Technical Support



July 24, 2007

Ms. Trina Vielhauer, Chief
Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

**Attention: Mr. A. A. Linero, P.E. Administrator**

RE: DEP File No. 1050004-019-AC
C.D. McIntosh, Jr. Power Plant-Unit 3

Dear Ms Vielhauer:

We are in receipt of the Department's Draft Air Construction Permit for installation of SCR for the above referenced Unit. As per requirement of Chapter 50, Florida Statutes, we published the Public Notice of Intent in the Lakeland Ledger on Friday July 20, 2007. Therefore, enclosed please find proof of publication. Additionally, on July 16, 2007 we submitted our comments re this draft permit and requested the Department for extension of time up to and including August 30, 2007.

As always, we appreciate all the help you and your staff extend to us.

Sincerely,

Farzie Shelton

Enclosure

cc: Ken Kosky P.E.

**City of Lakeland • Department of Electric Utilities**

**501 East Lemon Street • Lakeland, Fl 33801-5050 • 863. 834.6603 • Fax 863. 834.8187 •Cell 863.430.8297**

**farzie.shelton@lakelandelectric.com**

Best Available Copy

# AFFIDAVIT OF PUBLICATION

## THE LEDGER

## Lakeland, Polk County, Florida

No's:

OF FLORIDA)
TY OF POLK)

Before the undersigned authority personally appeared Paula Freeman, who on oath says that she is Inside Classified Sales Manager The Ledger, a daily newspaper published at Lakeland in Polk County, Florida; that the attached copy of advertisement, being

Notice of Intent

ter of Air Construction Permit

g Lakeland Electric

shed in said newspaper in the issues of 7-20; 2007

Affiant further says that said The Ledger is a newspaper published at Lakeland, in said Polk County, Florida, and that the said newspaper has heretofore been continuously published in said Polk County, Florida, daily, and has been entered as second class matter at the post office in Lakeland, in said Polk County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that he has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Signed.....
Paula Freeman
Inside Classified Sales Manager
Who is personally known to me.

Sworn to and subscribed before me this 20TH

day of July A.D. 2007

Patricia Ann Rouse
Notary Public

(Seal)

PATRICIA ANN ROUSE
MY COMMISSION # DD 330015
EXPIRES: October 17, 2008

My Commission Expires.....

3806

In the Matter of an
Application for Permit by:

Lakeland Electric
501 East Lemon Street
Lakeland, Florida 33805

Authorized Representative:
Mr. Timothy Bachand, Director Energy Supply

DEP File No. 1050004-019-AC
C.D. McIntosh Jr. Power Plant Unit 3
Selective Catalytic Reduction System
Polk County, Florida

INTENT TO ISSUE AIR CONSTRUCTION PERMIT

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit (copy of draft permit enclosed) for the proposed project as detailed in the application specified above and the enclosed Technical Evaluation and Preliminary Determination for the reasons stated below.

Lakeland Electric (the Company) operates the C.D. McIntosh Jr. Power Plant located at 3030 East Lake Parker Drive, Lakeland, Polk County, Florida. The Company applied for a permit on December 29, 2006 (Complete on April 3, 2007) to install a selective catalytic reduction system for the existing Unit 3 of the plant.

The Department has permitting jurisdiction under the provisions of Chapter 403.087, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, 62-212 and 62-213. This action is not exempt from permitting procedures. The Department has determined that an air construction permit is required.

The Department intends to issue this permit based on the belief that reasonable assurances have been provided to indicate that operation of these emission units will not adversely impact air quality, and the emission units will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C.

Pursuant to Section 403.815 F.S. and Rule 62-110.106(7)(a), F.A.C., you (the applicant) are required to publish at your own expense the enclosed Public Notice of Intent to Issue Air Construction Permit. The notice shall be published one time only in the legal advertisement section of a newspaper of general circulation in the area affected. Rule 62-110.106(7)(b), F.A.C., requires that the applicant cause the notice to be published as soon as possible after notification by the Department of its intended action. For the purpose of these rules, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. If you are uncertain that a newspaper meets these requirements, please contact the Department at the address or telephone number listed below. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400 (Telephone: 850/488-0114; Fax: 850/922-6979). You must provide proof of publication within seven days of publication, pursuant to Rule 62-110.106(5), F.A.C. No permitting action for which published notice is required shall be granted until proof of publication of notice is made by furnishing a uniform affidavit in substantially the form prescribed in section 50.051, F.S. to the office of the Department issuing the permit. Failure to publish the notice and provide proof of publication may result in the denial of the permit pursuant to Rules 62-110.106(9) & (11), F.A.C.

The Department will issue the final construction permit unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed permit issuance action for a period of 14 days from the date of publication of Public Notice. Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the construction permit with attached conditions unless a timely petition for an administrative hearing is filed pursuant to sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within 14 days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within 14 days of publication of the public notice or within 14 days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at 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 discretion of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department'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 how and when petitioner received notice of the agency decision; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (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 specified rules or statutes; and (g) A statement of the relief sought by the petitioner, stating precisely the action 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 Department'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.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in the notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above. Mediation is not available in this proceeding.

Executed in Tallahassee, Florida.

Trina L. Vielhauer, Chief
Bureau of Air Regulation

3806 7-20-2007

# AFFIDAVIT OF PUBLICATION
## THE LEDGER
## Lakeland, Polk County, Florida

This shot in two sections -

**Case No's:**

**STATE OF FLORIDA)**
**COUNTY OF POLK)**

Before the undersigned authority personally appeared Paula Freeman, who on oath says that she is Inside Classified Sales Manager The Ledger, a daily newspaper published at Lakeland in Polk County, Florida; that the attached copy of advertisement, being A

**Notice of Intent**

in the matter of **Air Construction Permit**

Concerning **Lakeland Electric**

was published in said newspaper in the issues of **7-20; 2007**

Affiant further says that said The Ledger is a newspaper published at Lakeland, in said Polk County, Florida, and that the said newspaper has heretofore been continuously published in said Polk County, Florida, daily, and has been entered as second class matter at the post office in Lakeland, in said Polk County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that he has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

In the Matter of an
Application for Permit by:
Lakeland Electric
501 East Lemon Street
Lakeland, Florida 33805

DEP File No. 1050004-019-AC
C.D. McIntosh, Jr. Power Plant Unit 3
Selective Catalytic Reduction System
Polk County, Florida

*Authorized Representative:*
Mr. Timothy Bachand, Director Energy Supply

**INTENT TO ISSUE AIR CONSTRUCTION PERMIT**

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The Department has permitting jurisdiction under the provisions of Chapter 403.087, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, 62-212 and 62-213. This action is not exempt from permitting procedures. The Department has determined that an air construction permit is required.

The Department intends to issue this permit based on the belief that reasonable assurances have been provided to indicate that operation of these emission units will not adversely impact air quality, and the emission units will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297 F.A.C.

Pursuant to Section 403.815, F.S., and Rule 62-110.106(7)(a)1., F.A.C., you (the applicant) are required to publish at your own expense the enclosed Public Notice of Intent to Issue Air Construction Permit. The notice shall be published one time only in the legal advertisement section of a newspaper of general circulation in the area affected. Rule 62-110.106(7)(b), F.A.C., requires that the applicant cause the notice to be published as soon as possible after notification by the Department of its intended action. For the purpose of these rules, publication in a newspaper of general circulation in the area affected means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S. in the county where the activity is to take place. If you are uncertain that a newspaper meets these requirements, please contact the Department at the address or telephone number listed below. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400 (Telephone: 850/488-0114; Fax: 850/922-6979). You must provide proof of publication within seven days of publication, pursuant to Rule 62-110.106(5), F.A.C. No permitting action for which published notice is required shall be granted until proof of publication of notice is made by furnishing a uniform affidavit in substantially the form prescribed in section 50.051 F.S. to the office of the Department issuing the permit. Failure to publish the notice and provide proof of publication may result in the denial of the permit pursuant to Rules 62-110.106(9) & (11), F.A.C.

The Department will issue the final construction permit unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed permit issuance action for a period of 14 days from the date of publication of Public Notice. Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the construction permit with attached conditions unless a timely petition for an administrative hearing is filed pursuant to sections 120.569 and 120.57 F.S. before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within 14 days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within 14 days of publication of the public notice or within 14 days of receipt of that notice,

Concerning **Lakeland Electric**

**Best Available Copy**

was published in said newspaper in the issues of **7-20; 2007**

Affiant further says that said The Ledger is a newspaper published at Lakeland, in said Polk County, Florida, and that the said newspaper has heretofore been continuously published in said Polk County, Florida, daily, and has been entered as second class matter at the post office in Lakeland, in said Polk County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that he has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Signed.....

Paula Freeman
Inside Classified Sales Manager
Who is personally known to me.

Sworn to and subscribed before me this..20TH.....

day of.....July..... A.D. 20.07.....

.....Patricia Ann Rouse.....

Notary Public

(Seal)

PATRICIA ANN ROUSE
MY COMMISSION # DD 530015
EXPIRES: October 17, 2008

My Commission Expires.....

X806

tion Permit. The notice shall be published one time only in the legal advertisement section of a newspaper of general circulation in the area affected. Rule 62-110.106(7)(b), F.A.C., requires that the applicant cause the notice to be published as soon as possible after notification by the Department of its intended action. For the purpose of these rules, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. If you are uncertain that a newspaper meets these requirements, please contact the Department at the address or telephone number listed below. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400 (Telephone: 850/488-0114; Fax: 850/922-6979). You must provide proof of publication within seven days of publication, pursuant to Rule 62-110.106(5), F.A.C. No permitting action for which published notice is required shall be granted until proof of publication of notice is made by furnishing a uniform affidavit in substantially the form prescribed in section 50.051, F.S. to the office of the Department issuing the permit. Failure to publish the notice and provide proof of publication may result in the denial of the permit pursuant to Rules 62-110.106(9) & (11), F.A.C.

The Department will issue the final construction permit unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed permit issuance action for a period of 14 days from the date of publication of Public Notice. Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the construction permit with attached conditions unless a timely petition for an administrative hearing is filed pursuant to sections 120.569 and 120.57, F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within 14 days of receipt of this notice of intent. Petitions filed by any persons toher than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within 14 days of publication of the public notice or within 14 days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at 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 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department'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 how and when petitioner received notice of the agency decision; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (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 specified rules or statutes; and (g) A statement of the relief sought by the petitioner, stating precisely the action 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 Department'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.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above. Mediation is not available in this proceeding.

Executed in Tallahassee, Florida.

Trina L. Vielhauer, Chief
Bureau of Air Regulation

X806 7-20-2007

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

**LAKELAND ELECTRIC –**
**C.D. MCINTOSH, JR. POWER PLANT,**

**Petitioner,**

**v.**

**OGC No. 7-1277**
**DEP Permit No. 1050004-019-AC**

**DEPARTMENT OF ENVIRONMENTAL PROTECTION,**

**Respondent.**
_____/

**ORDER GRANTING REQUEST FOR**
**EXTENSION OF TIME TO FILE PETITION FOR HEARING**

This cause has come before the Florida Department of Environmental Protection (FDEP) upon receipt of a request made by Petitioner, Lakeland Electric – C.D. McIntosh, Jr. Power Plant, to grant an extension of time to file a petition for administrative hearing to allow time to discuss with FDEP several specific permit conditions for its facility in Polk County, Florida. Because the request shows good cause for the extension of time,

IT IS ORDERED:

The request for an extension of time to file a petition for administrative proceeding is granted. Petitioner shall have until **August30, 2007**, to file a petition in this matter. Filing shall be complete upon receipt by the Office of General Counsel, Department of Environmental Protection, 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000.

DONE AND ORDERED on this 20th day of July, 2007, in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

JACK CHISOLM, Deputy General Counsel
3900 Commonwealth Boulevard - MS 35
Tallahassee, Florida 32399-3000
850/245-2242 facsimile 850/245-2302

## CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing has been furnished via √ U. S. Mail _ facsimile √ **only**, this 20th day of July, 2007, to:

Tim Bachand, Director, Energy Supply
Lakeland Electric
501 East Lemon Street
Lakeland, FL 33805

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Patricia E. Comer, Assistant General Counsel
FL Bar 0224146
3900 Commonwealth Boulevard - MS 35
Tallahassee, Florida 32399-3000
850/245-2288 facsimile 850/245-2302

with courtesy copies via electronic mail to:

Al Linero – FDEP

**Friday, Barbara** 7/10/07

**From:** Harvey, Mary
**Sent:** Friday, July 13, 2007 8:37 AM
**To:** Adams, Patty
**Subject:** FW: Draft Air Construction Permit No. 1050004-019-AC-DRAFT

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**From:** Bachand, Timothy [mailto:Timothy.Bachand@lakelandelectric.com]
**Sent:** Wednesday, July 11, 2007 6:10 PM
**To:** Harvey, Mary
**Subject:** Read: Draft Air Construction Permit No. 1050004-019-AC-DRAFT

Your message

To: Timothy.Bachand@lakelandelectric.com
Subject:

was read on 7/11/2007 6:10 PM.

## Friday, Barbara

**From:** Harvey, Mary
**Sent:** Wednesday, July 11, 2007 9:21 AM
**To:** Adams, Patty
**Subject:** FW: Draft Air Construction Permit No. 1050004-019-AC-DRAFT

---

**From:** Nasca, Mara
**Sent:** Tuesday, July 10, 2007 5:50 PM
**To:** Harvey, Mary
**Subject:** Read: Draft Air Construction Permit No. 1050004-019-AC-DRAFT

Your message

| | |
|---|---|
| To: | 'Timothy Bachand, Authorized Representative:'; 'Farzie Shelton, Lakeland Electric:'; Nasca, Mara; 'Kennard F. Kosky, P.E., Golder Associates, Inc.:'; 'Jim Little, EPA Region 4:'; 'Katy Forney, EPA Region 4:' |
| Cc: | Cascio, Tom; Linero, Alvaro; Adams, Patty; Gibson, Victoria |
| Subject: | Draft Air Construction Permit No. 1050004-019-AC-DRAFT |
| Sent: | 7/10/2007 4:30 PM |

was read on 7/10/2007 5:50 PM.

**Friday, Barbara**

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**From:** Harvey, Mary

**Sent:** Tuesday, July 10, 2007 4:30 PM

**To:** 'Timothy Bachand, Authorized Representative:'; 'Farzie Shelton, Lakeland Electric:'; Nasca, Mara; 'Kennard F. Kosky, P.E., Golder Associates, Inc.:'; 'Jim Little, EPA Region 4:'; 'Katy Forney, EPA Region 4:'

**Cc:** Cascio, Tom; Linero, Alvaro; Adams, Patty; Gibson, Victoria

**Subject:** Draft Air Construction Permit No. 1050004-019-AC-DRAFT

**Attachments:** 1050004.019.AC.D_pdf.zip

Dear Sir/Madam:

Please send a "reply" message verifying receipt of the attached document(s); this may be done by selecting "Reply" on the menu bar of your e-mail software and then selecting "Send". We must receive verification of receipt and your reply will preclude subsequent e-mail transmissions to verify receipt of the document(s).

The document(s) may require immediate action within a specified time frame. Please open and review the document(s) as soon as possible.

The document is in Adobe Portable Document Format (pdf). Adobe Acrobat Reader can be downloaded for free at the following internet site:
http://www.adobe.com/products/acrobat/readstep.html.

The Bureau of Air Regulation is issuing electronic documents for permits, notices and other correspondence in lieu of hard copies through the United States Postal System, to provide greater service to the applicant and the engineering community. Please advise this office of any changes to your e-mail address or that of the Engineer-of-Record.

Thank you,

DEP, Bureau of Air Regulation

**Friday, Barbara**

---

**From:** Harvey, Mary
**Sent:** Tuesday, July 10, 2007 4:34 PM
**To:** 'Katy Forney, EPA Region 4:'; 'Jim Little, EPA Region 4:'
**Cc:** Cascio, Tom; Linero, Alvaro; Adams, Patty
**Subject:** FW: Draft Air Construction Permit No. 1050004-019-AC-DRAFT
**Attachments:** Cover Letter Phase 2 2007-1050004-019-AC-DRAFT.PDF; Draft AC Cover Page Phase 2 2007-1050004-019-AC-FINAL.PDF; Draft AC Section 1 Phase 2 2007-1050004-019-AC-DRAFT.PDF; Draft AC Section 2 Phase 2 2007-1050004-019-AC-DRAFT.PDF; Draft AC Section 3 Phase 2 2007-1050004-019-AC-DRAFT.PDF; Draft Appendix GC Phase 2 2007-1050004-019-AC-DRAFT.PDF; Draft Technical Evaluation Phase 2 2007-1050004-019-AC-DRAFT.PDF; Intent to Issue Phase 2 2007-1050004-019-AC-DRAFT.PDF; Signed Documents - Permit #1050004-019-AC-DRAFT.pdf

**From:** Harvey, Mary
**Sent:** Tuesday, July 10, 2007 4:30 PM
**To:** 'Timothy Bachand, Authorized Representative:'; 'Farzie Shelton, Lakeland Electric:'; Nasca, Mara; 'Kennard F. Kosky, P.E., Golder Associates, Inc.:'; 'Jim Little, EPA Region 4:'; 'Katy Forney, EPA Region 4:'
**Cc:** Cascio, Tom; Linero, Alvaro; Adams, Patty; Gibson, Victoria
**Subject:** Draft Air Construction Permit No. 1050004-019-AC-DRAFT

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The document(s) may require immediate action within a specified time frame. Please open and review the document(s) as soon as possible.

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http://www.adobe.com/products/acrobat/readstep.html.

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Thank you,

DEP, Bureau of Air Regulation

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

July 10, 2007

*Electronically Sent – Received Receipt Requested*

Mr. Timothy Bachand, Director, Energy Supply
Lakeland Electric
501 East Lemon Street
Lakeland, Florida 33805

Re: DEP File No. 1050004-019-AC
C.D. McIntosh, Jr. Power Plant – Unit 3

Dear Mr. Bachand:

Enclosed is one copy of the Draft Air Construction Permit authorizing the installation of a selective catalytic reduction system on Unit 3 at the existing C.D. McIntosh, Jr. Power Plant, Lakeland, Polk County. The Department's Intent to Issue Air Construction Permit, the Technical Evaluation and Preliminary Determination, and the Public Notice of Intent to Issue Air Construction Permit are also included.

The Public Notice must be published one time only as soon as possible in a newspaper of general circulation in the area affected, pursuant to the requirements of Chapter 50, Florida Statutes. Proof of publication, such as a newspaper affidavit, must be provided to the Department's Bureau of Air Regulation office within seven days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in denial of the permit modification.

Please submit any written comments you wish to have considered concerning the Department's proposed action to Mr. A.A. Linero, Program Administrator, at the letterhead address. If you have any questions regarding this matter, please contact Mr. Tom Cascio at (850) 921-9526 or Mr. Linero at (850) 921-9523.

Sincerely,

Trina L. Vielhauer, Chief
Bureau of Air Regulation

TLV/aal/sms/tbc

Enclosures

**MEMORANDUM**

To: Trina Vielhauer

Through: Scott Sheplak and A. A. Linero

From: Tom Cascio

Date: July 8, 2007

Subject: Draft Air Construction Permit No. 1050004-019-AC
Lakeland Electric C.D. McIntosh, Jr. Power Plant

Attached is the public notice package for the SCR project on Lakeland Electric McIntosh Unit 3. It is the second part of the company's program in response to CAIR. We previously issued a PSD permit and CO BACT determination (initially 0.20 lb/mmBtu) for the first part consisting of installation of low $NO_X$ burners and an overfire air system on the same unit.

The SCR installation includes measures (injection of hydrated lime, soda ash or trona) to avoid significant increases of sulfuric acid mist and particulate matter ($PM/PM_{10}$) that can result from partial oxidation of $SO_2$ over the catalyst. The SCR project is not expected to further affect CO emissions. The CO optimization program and future CO BACT reassessment required under the previous permit will be conducted as planned after installation of a CO CEMS on Unit 3.

We recommend your approval of the public notice package.

In the Matter of an
Application for Permit by:

Lakeland Electric
501 East Lemon Street
Lakeland, Florida 33805

*Authorized Representative:*
Mr. Timothy Bachand, Director Energy Supply

DEP File No. 1050004-019-AC
C.D. McIntosh Jr. Power Plant Unit 3
Selective Catalytic Reduction System
Polk County, Florida

**INTENT TO ISSUE AIR CONSTRUCTION PERMIT**

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit (copy of draft permit enclosed) for the proposed project as detailed in the application specified above and the enclosed Technical Evaluation and Preliminary Determination for the reasons stated below.

Lakeland Electric (the Company) operates the C.D. McIntosh, Jr. Power Plant located at 3030 East Lake Parker Drive, Lakeland, Polk County, Florida. The Company applied for a permit on December 29, 2006 (complete on April 3, 2007) to install a selective catalytic reduction system for the existing Unit 3 at the plant.

The Department has permitting jurisdiction under the provisions of Chapter 403.087, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, 62-212 and 62-213. This action is not exempt from permitting procedures. The Department has determined that an air construction permit is required.

The Department intends to issue this permit based on the belief that reasonable assurances have been provided to indicate that operation of these emission units will not adversely impact air quality, and the emission units will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C.

Pursuant to Section 403.815, F.S., and Rule 62-110.106(7)(a)1., F.A.C., you (the applicant) are required to publish at your own expense the enclosed Public Notice of Intent to Issue Air Construction Permit. The notice shall be published one time only in the legal advertisement section of a newspaper of general circulation in the area affected. Rule 62-110.106(7)(b), F.A.C., requires that the applicant cause the notice to be published as soon as possible after notification by the Department of its intended action. For the purpose of these rules, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. If you are uncertain that a newspaper meets these requirements, please contact the Department at the address or telephone number listed below. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400 (Telephone: 850/488-0114; Fax 850/ 922-6979). You must provide proof of publication within seven days of publication, pursuant to Rule 62-110.106(5), F.A.C. No permitting action for which published notice is required shall be granted until proof of publication of notice is made by furnishing a uniform affidavit in substantially the form prescribed in section 50.051, F.S. to the office of the Department issuing the permit. Failure to publish the notice and provide proof of publication may result in the denial of the permit pursuant to Rules 62-110.106(9) & (11), F.A.C.

The Department will issue the final construction permit unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed permit issuance action for a period of 14 days from the date of publication of Public Notice. Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the construction permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within 14 days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within 14 days of publication of the public notice or within 14 days of receipt of this notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at 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 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department'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 how and when petitioner received notice of the agency decision; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (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 specified rules or statutes; and (g) A statement of the relief sought by the petitioner, stating precisely the action 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 Department'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.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above. Mediation is not available in this proceeding.

Executed in Tallahassee, Florida.

Trina L. Vielhauer, Chief
Bureau of Air Regulation

**CERTIFICATE OF SERVICE**

The undersigned duly designated deputy agency clerk hereby certifies that this Draft PSD Permit, Technical Evaluation and Preliminary Determination, Intent to Issue Air Construction Permit, and Public Notice of Intent to Issue Air Construction Permit, and all copies were sent electronically (with Received Receipt) before the close of business on 7/10/07 to the person(s) listed below.

Timothy Bachand, Authorized Representative: timothy.bachand@lakelandelectric.com
Farzie Shelton, Lakeland Electric: farzie.shelton@lakelandelectric.com
Mara Nasca, Southwest District Office: mara.nasca@dep.state.fl.us
Kennard F. Kosky, P.E., Golder Associates, Inc.: kkosky@golder.com
Jim Little, EPA Region 4: little.james@epa.gov
Katy Forney, EPA Region 4: forney.kathleen@epa.gov

Clerk Stamp

**FILING AND ACKNOWLEDGMENT FILED,** on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Mary L. Harvey 7/10/07
(Clerk) (Date)

**PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT**

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEP File No. 1050004-019-AC

Lakeland Electric
C.D. McIntosh, Jr. Power Plant

Polk County

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit to Lakeland Electric (the Company) for the C.D. McIntosh, Jr. Power Plant (the facility) located at 3030 East Lake Parker Drive, Lakeland, Polk County, Florida. The permit authorizes installation of a selective catalytic reduction (SCR) system for the control of nitrogen oxides ($NO_X$) emissions on the Unit 3 fossil fuel-fired steam generator. A best available control technology (BACT) determination was not required. The company's name and address are: Lakeland Electric, 501 East Lemon Street, Lakeland, Florida 33805.

The facility includes three fossil fuel fired steam generators, two diesel powered generators, and two gas turbines. Fossil fuel fired steam generator Unit 3 is primarily fired with coal and a lesser amount of petroleum coke and refuse derived fuel. $NO_X$ emissions are by low $NO_X$ burners (LNB) and an overfire air (OFA) system. Particulate matter ($PM/PM_{10}$) is controlled by an electrostatic precipitator (ESP). Sulfur dioxide ($SO_2$) emissions are controlled by a wet limestone scrubber.

The SCR equipment will include: two reactors with several layers of catalyst located between the economizer and the air preheater; two nominal 75 ton ammonia storage tanks; vaporization equipment; ammonia injection grids; and a sorbent injection system.

The SCR system on is the second part of a two stage project to control $NO_X$ emissions. The first stage consisted of the installation of LNB and the OFA system. It was authorized by an air construction permit issued under the rules for the Prevention of Significant Deterioration (PSD). A determination of best available control technology (BACT) for carbon monoxide (CO) was conducted under that phase.

The SCR system will be available for $NO_X$ emissions reductions beyond the first stage based on the future cost of $NO_X$ allowances under the Clean Air Interstate Rule (CAIR). Without additional measures, the SCR system can cause conversion of $SO_2$ to sulfur trioxide that can form sulfuric acid mist (SAM) or particulate matter ($PM/PM_{10}$). Injection of a suitable sorbent such as hydrated lime, soda ash or trona will be practiced to minimize formation of SAM and $PM/PM_{10}$ such that there will not be significant emissions of the latter pollutants and no additional BACT determinations are required.

The Department will issue the final air construction permit unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed permit issuance action for a period of 14 days from the date of publication of this Public Notice of Intent to Issue Air Construction Permit. Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below. Mediation is not available in this proceeding.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition

must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within 14 days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within 14 days of publication of the public notice or within 14 days of receipt of this notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at 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 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department'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 how and when petitioner received notice of the agency decision; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (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 specified rules or statutes; and (g) A statement of the relief sought by the petitioner, stating precisely the action 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 Department'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. Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

A complete project file is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Protection
Bureau of Air Regulation
Suite 4, 111 S. Magnolia Drive
Tallahassee, Florida 32301
Telephone: 850/488-0114
Fax: 850/922-6979

Department of Environmental Protection
Southwest District Office
13051 North Telecom Parkway
Temple Terrace, Florida 33673-0926
Phone: (813) 632-7600
Fax: (813) 632-7665

The complete project file includes the permit application, draft air construction permit, technical evaluation, and the information submitted by the responsible official, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Department's reviewing engineer for this project, Tom Cascio at MS 5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, or by electronic mail at Tom.Cascio@dep.state.fl.us , or may call 850/921-9526 for additional information. Key documents may also be viewed at: www.dep.state.fl.us/Air/permitting/construction.htm and clicking on Lakeland Electric C.D. McIntosh, Jr. Unit 3 in the power plant category.

## Public Notice to be Published in the Newspaper

# TECHNICAL EVALUATION
# AND
# PRELIMINARY DETERMINATION

Lakeland Electric
C.D. McIntosh, Jr. Power Plant
Fossil Fuel Steam Generator Unit 3

Installation of Selective Catalytic Reduction System

Polk County

DEP File No. 1050004-019-AC


Florida Department of Environmental Protection
Division of Air Resource Management
Bureau of Air Regulation
Permitting South

July 10, 2007

## 1. GENERAL PROJECT INFORMATION

### Facility Description and Location

This facility consists of three fossil fuel fired steam generators, two diesel powered generators, and two gas turbines. This existing facility is located at 3030 East Lake Parker Drive, Lakeland, Polk County; UTM Coordinates: Zone 17, 409.0 km East and 3106.2 km North; Latitude: 28° 04' 50" North and Longitude: 81° 55' 32" West. The location of the plant is shown in the map in the following figure. The photograph in the figure is Unit 3, which is the subject of this review.

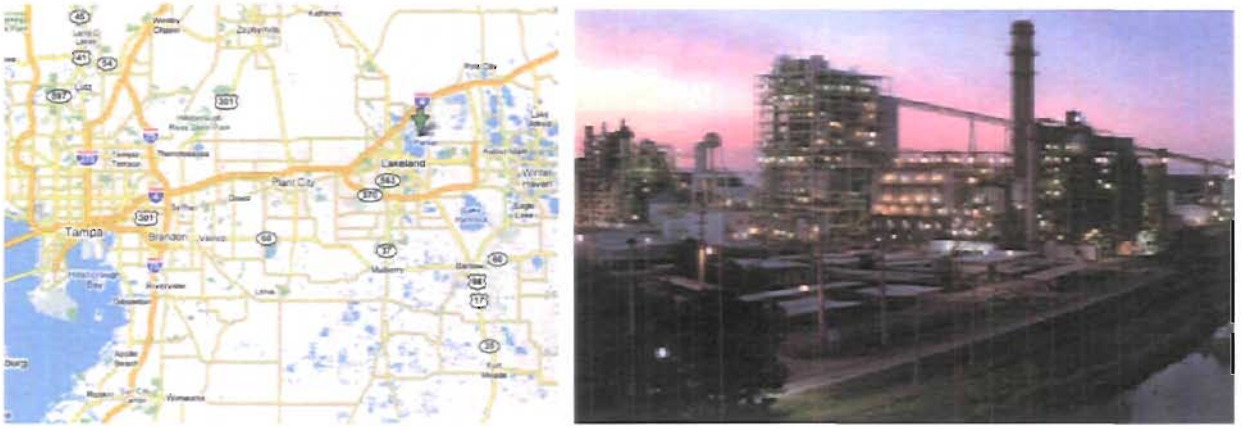


**Figure 1. Location of Lakeland Electric and Photograph of C.D. McIntosh Jr. Unit 3.**

This site is in an area that is in attainment with (or designated as unclassifiable for) all air pollutants subject to a National Ambient Air Quality Standard (NAAQS).

### Major Regulatory Categories

The key regulatory provisions applicable to Unit 3 are:

*Title I, Part C, Clean Air Act (CAA)*: The facility is located in an area that is designated as "attainment", "maintenance", or "unclassifiable" for each pollutant subject to a National Ambient Air Quality Standard. It is classified as a "fossil fuel-fired steam electric plant of more than 250 million BTU per hour of heat input", which is one of the 28 Prevention of Significant Deterioration (PSD) Major Facility Categories with the lower PSD applicability threshold of 100 tons per year. Potential emissions of at least one regulated pollutant exceed 100 tons per year, therefore the facility is classified as a "major stationary source" of air pollution with respect to Rule 62-212.400 F.A.C., Prevention of Significant Deterioration of Air Quality.

*Title I, Section 111, CAA:* Units 3 is subject to Subpart D (Standards of Performance for Fossil Fuel-Fired Steam Generators for Which Construction is Commenced After August 17, 1971) of the New Source Performance Standards in 40 CFR 60.

*Title I, Section 112, CAA*: The facility is a "Major Source" of hazardous air pollutants (HAPs).

*Title IV, CAA*: The facility operates units subject to the Acid Rain provisions of the Clean Air Act.

*Title V, CAA*: The facility is a Title V or "Major Source of Air Pollution" in accordance with Chapter 62-213, F.A.C. because the potential emissions of at least one regulated pollutant exceed 100 tons per year (TPY). Regulated pollutants include pollutants such as carbon monoxide (CO), nitrogen oxides ($NO_X$), particulate matter ($PM/PM_{10}$), sulfur dioxide ($SO_2$), and volatile organic compounds (VOC).

*CAIR:* The facility is subject to the Federal Clean Air Interstate Rule (CAIR) in accordance with the Final Department Rules issued pursuant to CAIR as implemented by FDEP in Rule 62-296.470, Florida Administrative Code (FAC).

*CAMR*: The facility is subject to the Federal Clean Air Mercury Rule (CAMR) implemented by the Department in Rule 62-296.480, F.A.C.

**Application Processing Schedule**

12/29/06: Received application to construct/install low $NO_X$ burners (LNBs), overfire air (OFA) and a selective catalytic reduction (SCR) system.

01/23/07: Application determined incomplete. Requested additional information.

01/29/07: Received additional information sufficient to process separate PSD permit for LNB and OFA.

02/17/07: Distributed public notice package including the draft PSD permit for LNB and OFA and a determination of best available control technology (BACT) for CO.

02/19/07: Requested additional information for SCR project.

03/22/07: Issued final PSD permit for LNB and OFA project.

04/03/07: Received additional information sufficient to process non-PSD air construction permit for the SCR project.

07/02/07: Applicant waived 90-day processing clock.

07/10/07: Distributed the public notice package including the draft air construction permit and technical evaluation for the SCR project.

**Description of Unit 3**

Unit 3 is a nominal 360 megawatt fossil fuel-fired steam generator that burns primarily coal or blends of coal and petroleum coke (petcoke) and small amounts of refuse derived fuel (RDF). The steam generator is supplied by Babcock and Wilcox. It is a "late 70's design" with a balanced draft design with 16 burners located on the front wall, and 16 located on the back wall. The burners are fed by two pulverizers located on the front wall and two on the back wall.

The air pollution control system presently on Unit 3 consists of: new LNBs and OFA to control nitrogen oxides; an electrostatic precipitator (ESP) to remove $PM/PM_{10}$ including fly ash; and a wet limestone scrubber to reduce $SO_2$ emissions.

The most stringent of the key emission limitations applicable when combustion solid fuels are: 0.50 lb $NO_X$/mmBtu (early Acid Rain compliance); 0.718 lb $SO_2$/mmBtu (when burning petcoke); 0.044 lb PM/mmBtu (when burning petcoke) and 0.20 lb CO/mmBtu (pursuant to PSD permit for LNBs/OFA).

**Proposed Project**

To provide full flexibility in implementing the federal cap and trade program for nitrogen oxides ($NO_X$) under the Clean Air Interstate Rule (CAIR), the applicant installed a newer generation set of LNBs and an OFA system on Unit 3 during their Spring 2007 outage.

The next step in their program is to install an SCR system on Unit 3. The SCR project is a substantial construction project that will cost between $50 and $80 million. The SCR can be made smaller due to the $NO_X$ reduction gained by the LNB and OFA projects.

The photograph on the left side of Figure 2 shows the furnace and economizer sections towards the left and the ESP towards the right. The diagram on the right shows the placement of the two planned SCR reactors (one behind the other) that will be erected to the right of the economizer and suspended above the air preheater and ESP.

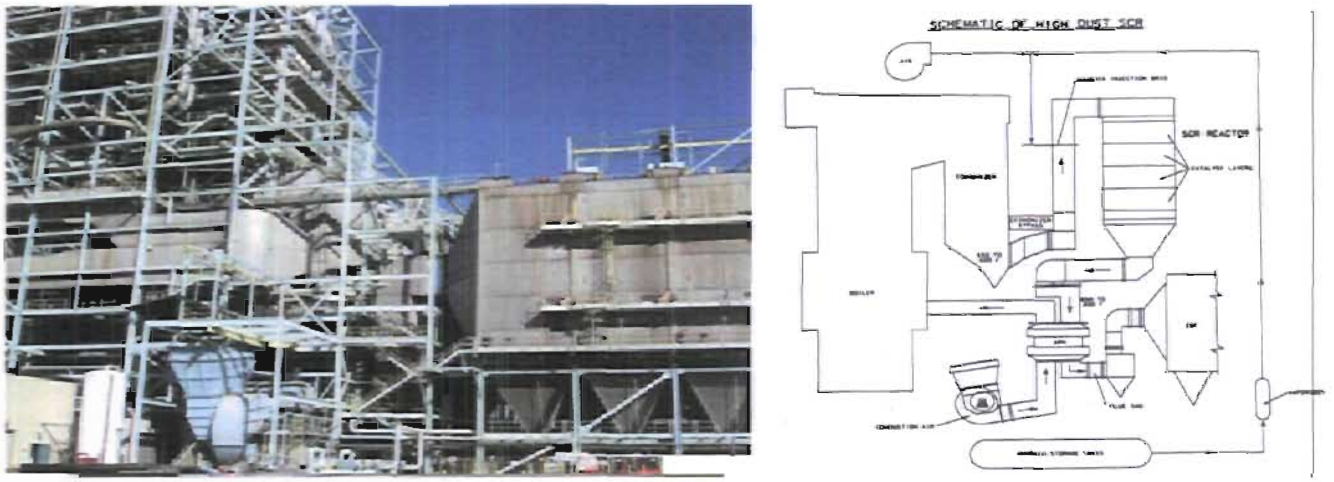


**Figure 2. Photograph of C.D. McIntosh Unit 3. Key Components of the Planned SCR System**

Additional equipment will include:

- Several layers of vanadium pentoxide catalyst within each reactor;
- Two anhydrous ammonia ($NH_3$) storage tanks, each with a nominal capacity of 75 tons;
- Vaporization and mixing equipment;
- Ammonia injection grids and nozzles;
- Sonic horns to clean/clear air passages through the catalyst section; and
- A sorbent injection system following the SCR reactors.

The SCR system operates by reacting $NH_3$ reagent with $NO_X$ in the exhaust gas leaving the furnace over a vanadium/titanium based catalyst to convert these species to molecular nitrogen ($N_2$) and water ($H_2O$). The primary $NO_X$ destruction reaction proceeds in accordance with the following global reaction:

$$4NO + 4NH_3 + O_2 \rightarrow 4N_2 + 6H_2O$$

Some conversion of $SO_2$ in the exhaust gas to sulfur trioxide ($SO_3$) occurs with the subsequent formation and possibly increased emissions of sulfuric acid mist (SAM). The sorbent injection system converts the $SO_3$ to particulate matter that can be captured in the ESP. The sorbent can be hydrated lime, soda ash or trona. Hydrated lime for example reacts with $SO_3$ as follows to produce collectible gypsum particles in the ESP as follows:

$$Ca(OH)_2 + SO_3 \rightarrow CaSO_4 + H_2O$$

The SCR project is currently scheduled by the applicant for operation in December 2008. Initial foundation construction is scheduled for the third quarter of 2007. Some small existing equipment at grade was relocated during the Spring 2007 outage to allow future construction space for constructing the SCR foundation.

Following are the specifications of the proposed SCR system:

- Baseline $NO_X$ Loading: 0.30 to 0.36 lb/mmBtu (after installation of LNBs)
- Target $NO_X$ Emissions: 0.10 lb/mmBtu (annual average)
- $NH_3$ Slip: 2 parts per million by volume dry (ppmvd) at 4 percent $O_2$.
- $SO_2$ to $SO_3$ conversion: 0.8 percent
- Catalyst Type: High Dust
- Catalyst Configuration: Vertical
- Number of Reactors: 2
- Number of Initial Catalyst Layers (Per Reactor): 3
- Number of Spare Layers (Per Reactor): 1
- Modules Per Layer (Per Reactor): 9 x 5
- Reactor Dimensions (Inside x Inside): 34'- 3" x 30'- 3"
- Full Load Gas Flow: 1,730,060 actual cubic feet per meter (acfm) at SCR inlet
- Normal Operating Temperature: 640° F
- Superficial Velocity Through Catalyst: 15 to 16 feet per second (ft/sec)
- Pressure Drop Through Box and Ductwork: 10.0 inches water
- $NH_3$ Consumption at Design Conditions: 415 pounds per hour (lb/hr)
- $NH_3$ Storage Required: 2 x 30,000 gallons = ~ 2 x 75 tons at 60°F

## 3. HISTORICAL OPERATIONAL AND EMISSIONS INFORMATION

Table 1 is a summary of the heat input to Unit 3 reported in the Annual Operating Report (AOR) for the period 2001 through 2005. Year-to-year heat input and the fuel mix vary. In 2005 petcoke constituted about 9 percent (%) of the fuel mix while coal accounted for almost all of the remainder. No municipal solid waste (MSW) was reported in 2005.

**Table 1**
**McIntosh Unit 3 Annual Heat Input, 2001-2005**

| | Heat Input (mmBtu/yr) | | | | |
|---|---|---|---|---|---|
| Year | Coal | Oil/Gas | Petcoke | MSW | Total |
| 2005 | 24,739,432 | 88,531 | 2,202,682 | 0 | 27,030,645 |
| 2004 | 18,727,073 | 149,795 | 398,533 | 0 | 19,275,401 |
| 2003 | 23,556,583 | 170,380 | 541,898 | 62,413 | 24,331,274 |
| 2002 | 19,914,927 | 284,194 | 3,012,015 | 135,529 | 23,346,665 |
| 2001 | 22,521,423 | 480 | 3,868,418 | 261,180 | 26,651,501 |

Table 2 is a summary of the annual emissions from the AORs for the years 2001 through 2005 for PM and SAM. CO emissions were addressed in the PSD permit for the LNBs and OFA projects. $NO_X$ is not listed because emissions are not expected to increase because of the project and will most likely decrease based on the extent to which the LNB/OFA/SCR strategy is actually implemented. $SO_2$ and VOC are not likely to be affected by the project.

**Table 2**
**McIntosh Unit 3 Annual CO Emissions Reported in AORs, 2001-2005**

| Year | Pollutant | Tons | 2-year Average Tons | Time Period |
|---|---|---|---|---|
| 2005 | PM | 265 | 283 | 2004-2005 |
| | SAM | 147 | 126 | |
| 2004 | PM | 302 | 394 | 2003-2004 |
| | SAM | 104 | 118 | |
| 2003 | PM | 486 | 438* | 2002-2003 |
| | SAM | 131 | 128 | |
| 2002 | PM | 390 | 328 | 2001-2002 |
| | SAM | 126 | 136* | |
| 2001 | PM | 267 | | |
| | SAM | 146 | | |

*Indicates maximum 2-year average values.

## 4. REGULATIONS THAT APPLY TO THE PROJECT

### State Regulations

This project is subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.). The Florida Statutes authorize the Department of Environmental Protection to establish rules and regulations regarding air quality as part of the Florida Administrative Code (F.A.C.). This project is subject to the applicable rules and regulations defined in the following Chapters of the Florida Administrative Code. These include: 62-4 (Permitting Requirements); 62-204 (Ambient Air Quality Requirements, 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); 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 Non-Applicability Determination

The Department regulates major air pollution sources in accordance with Florida's Prevention of Significant Deterioration (PSD) program in accordance with Rule 62-212.400, F.A.C. A PSD review is required in areas currently in attainment with the state and federal Ambient Air Quality Standards (AAQS) or areas designated as "unclassifiable" for a given pollutant.

A new facility is considered "major" 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 28 PSD Major Facility Categories defined in Rule 62-210.200, F.A.C.; or 5 tons per year of lead.

For new projects at existing PSD-major sources, each regulated pollutant is reviewed for PSD applicability based on emissions thresholds known as the "Significant Emission Rates" defined in Rule 62-210.200, F.A.C. Pollutant emissions from the project exceeding these rates are considered "significant" and applicants must employ the Best Available Control Technology (BACT) to minimize emissions of each such pollutant, and evaluate the air quality impacts.

PSD review would be required for the project if there were a significant net increase in emissions. The comparison is made based on the projected future actual emissions and the baseline actual emissions. The baseline actual emissions for a fossil fuel fired steam electric generating unit are the emissions over a consecutive 24-month period, for the 5 years immediately preceding the date that a complete application is submitted. The use of different consecutive 24-month periods for each pollutant is allowed. For an existing facility for which a modification is proposed, the modification is subject to PSD review if the net increase in emissions due to the modification is greater than the PSD significant emission rates. The net emissions increase is determined using the baseline-to-projected actual test. In this comparison, if the projected actual emissions minus the baseline actual emissions equal or exceed the PSD significant emission rates, then PSD review would apply.

The applicant estimated that emissions will increase by 5 TPY of PM and 3 TPY of SAM compared with the baseline actual emissions given in Table 2. These values are less than the corresponding significant emission rates (SERs) of 25 TPY of PM and 7 TPY of SAM that would (if exceeded) trigger PSD review and BACT determinations. Given the estimate of PM emission increases to less than 5 TPY, it is reasonable to conclude that emissions of $PM_{10}$ will increase by less than 5 TPY.

The applicant submitted calculations and references to support the conclusions that VOC, SAM and $PM/PM_{10}$ emissions will not significantly increase as a result of the SCR project. The Department has reasonable assurance that future emission increases will be minimized as described by the applicant. The Department also has reasonable assurance that the SCR project will not trigger a PSD review and a BACT analysis.

To provide further assurances that SAM emissions will not increase significantly, the permittee will be required to conduct a series of initial performance tests to determine the SAM emissions rate under a variety of operating scenarios. These tests will document the impact of sorbent injection on reducing SAM emissions and yield correlations/curves between injection rates, operating conditions and emissions. Further details regarding optimization of the sorbent injection system are given in the attached draft permit.

The applicant shall maintain and submit to the Department on an annual basis for a period of 5 years from the date the SCR systems are initially operated, information demonstrating in accordance with Rule 62-212.300(1)(e), F.A.C., that the installation of the SCR (in conjunction with the LNB/OFA projects) did not result in emission increases of PM and SAM. The future emissions shall be compared with the baseline actual emissions for the period 2002-2001 for SAM and 2003-2002 for PM as reported in the AORs using EPA Method 5B for PM and Method 8A (controlled condensate) for SAM.

The Department had previously intended to adjust the CO BACT determination from the LNB/OFA projects when conducting the review for the SCR project. Sufficient information will not be available until the required CO continuous emissions monitoring system (CEMS) is installed and the applicant concludes the optimization of the new system. The Department will include a condition in the SCR permit that allows the Department to revise the previous CO BACT based on acquisition of data from the CEMS.

## 5. 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. Tom Cascio 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.

**PERMITTEE**

Lakeland Electric
501 East Lemon Street
Lakeland, Florida 33805

*Authorized Representative:*
Mr. Timothy Bachand, Director, Energy Supply

Air Construction Permit No. 1050004-019-AC
C.D. McIntosh, Jr. Power Plant
Fossil Fuel Steam Generator Unit 3
Facility ID No. 1050004
SIC No. 4911
Selective Catalytic Reduction System
Permit Expires: December 31, 2009

**PROJECT AND LOCATION**

This permit authorizes the installation of an ammonia injection system using the principle of selective catalytic reduction on the Unit 3 fossil fuel fired steam generator (EU 006) at Lakeland Electric's C.D. McIntosh, Jr. Power Plant. The facility is located at 3030 East Lake Parker Drive, Lakeland, Polk County, Florida.

**STATEMENT OF BASIS**

This air pollution construction permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.) and Title 40, Parts 60 and 63 of the Code of Federal Regulations (CFR). The permittee is authorized to install the proposed equipment in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department of Environmental Protection (Department).

**CONTENTS**



Joseph Kahn, Director
Division of Air Resource Management

(Date)

JK/tlv/sms/tbc

## FACILITY AND PROJECT DESCRIPTION

Lakeland Electric operates the C.D. McIntosh, Jr. Power Plant, which is an electric services facility (SIC No. 4911). The plant currently consists of three fossil fuel fired steam generators, two diesel powered generators, and two gas turbines. There are storage and handling facilities for solid and liquid fuels, ash and limestone. A wastewater treatment facility is also located on site.

This permit authorizes the installation of an ammonia injection system using the principle of selective catalytic reduction (SCR) on Unit 3 as the second phase of a project to provide full flexibility in implementing the federal cap and trade program for nitrogen oxides ($NO_X$) under the Clean Air Interstate Rule (CAIR). Because CAIR affords a regulated facility the flexibility to evaluate market conditions to determine whether it will install controls, operate existing controls, or purchase allowances generated by other plants, the Department does not require the installation of this equipment nor its operation.

| ID | Emission Unit Description |
|---|---|
| 006 | McIntosh Unit 3 - Fossil Fuel Fired Steam Generator |

## REGULATORY CLASSIFICATION

The facility is a potential major source of hazardous air pollutants (HAPs).

The facility operates existing units subject to the Acid Rain provisions of Title IV of the Clean Air Act (CAA).

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 (PSD-major source) in accordance with Rule 62-212.400, F.A.C.

The facility operates units subject to the Standards of Performance for New Stationary Sources pursuant to 40 CFR Part 60.

The facility does not operate electrical generating units subject to National Emissions Standards for Hazardous Air Pollutants pursuant to 40 CFR Part 63.

The facility is subject to the Federal Clean Air Interstate Rule (CAIR) in accordance with the Final Department Rules issued pursuant to CAIR as implemented by FDEP in Rule 62-296.470, F.A.C.

The facility is subject to the Federal Clean Air Mercury Rule (CAMR) implemented by the Department in Rule 62-296.480, F.A.C.

The facility operates units that were certified under the Florida Power Plant Siting Act, 403.501-518, F.S.

## RELEVANT DOCUMENTS

The following relevant documents are not a part of this permit, but helped form the basis for this permitting action: the permit application and additional information received to make it complete; and the Department's Technical Evaluation and Preliminary Determination.

1. Permitting Authority: The Permitting Authority for this project is the Bureau of Air Regulation in the Division of Air Resource Management of the Department. The mailing address for the Bureau of Air Regulation is 2600 Blair Stone Road, MS #5505, Tallahassee, Florida 32399-2400.
2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to the Southwest District Office. The mailing address and phone number of the Southwest District Office is: 13051 N. Telecom Parkway, Temple Terrace, FL 33637-0926; 813-632-7600.
3. Appendices: The following Appendices are attached as part of this permit: Appendix BD (Final BACT Determinations and Emissions Standards); Appendix GC (General Conditions).
4. Applicable Regulations, Forms and Application Procedures: Unless otherwise specified in this permit, the construction and operation of the subject emissions units shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403, F.S.; and Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296, and 62-297, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations.
5. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]
6. Modifications: No emissions unit shall be constructed or modified without obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]
7. Title V Permit: This permit authorizes specific modifications and/or new construction on the affected emissions units as well as initial operation to determine compliance with conditions of this permit. A Title V operation permit is required for regular operation of the permitted emissions unit. The permittee shall apply for a Title V operation permit at least 90 days prior to expiration of this permit, but no later than 180 days after completing the required work and commencing operation. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. The application shall be submitted to the Bureau of Air Regulation with copies to the Compliance Authority. [Rules 62-4.030, 62-4.050, 62-4.220, and Chapter 62-213, F.A.C.]

This section of the permit addresses the following emissions unit.

| ID No. | Emissions Unit Description |
|---|---|
| 006 | McIntosh Unit 3 is a nominal 364 megawatt (electric) dry bottom wall-fired fossil fuel fired steam generator. The unit is fired on coal, residual oil, natural gas and co-fires refuse derived fuel (RDF) and petroleum coke. The maximum heat input rate is 3,640 million Btu per hour. Unit 3 is equipped with an electrostatic precipitator (ESP), a flue gas desulfurization (FGD) system, low nitrogen oxides ($NO_X$) burners (LNB) and an overfire air (OFA) system to control emissions. |

## APPLICABLE STANDARDS AND REGULATIONS

1. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting requirements or regulations. [Rule 62-210.300, F.A.C.]
2. The facility is subject to all of the requirements specified in Title V Air Operation Permit Renewal No. 1050004-016-AV.
3. The requirements of Air Construction Permit No. 1050004-018-AC, Low $NO_X$ Burners and Overfire Air and the associated determination of best available control technology (BACT) for carbon monoxide CO continue to apply to this unit.

## GENERAL OPERATION REQUIREMENTS

4. Unconfined Particulate Emissions. During the construction period, unconfined particulate matter emissions shall be minimized by dust suppressing techniques such as covering and/or application of water or chemicals to the affected areas, as necessary. [Rule 62-296.320(4), F.A.C.]
5. Plant Operation – Problems. If temporarily unable to comply with any of the conditions of the permit due to breakdown of equipment or destruction by fire, wind or other cause, the owner or operator shall notify the Department as soon as possible, but at least within (1) working day, excluding weekends and holidays. The notification shall include: pertinent information as to the cause of the problem; the steps being taken to correct the problem and prevent future recurrence; and where applicable, the owner's intent toward reconstruction of destroyed facilities. Such notification does not release the permittee from any liability for failure to comply with the conditions of this permit and the regulations. [Rule 62-4.130, F.A.C.]
6. Operating Procedures. Operating procedures shall include good operating practices and proper training of all operators and supervisors. The good operating practices shall meet the guidelines and procedures as established by the equipment manufacturers. All operators (including supervisors) of air pollution control devices shall be properly trained in plant specific equipment. [Rule 62-4.070(3), F.A.C.]
7. Circumvention. No person shall circumvent any air pollution control device, or allow the emission of air pollutants without the applicable air pollution control device operating properly. Operation of the SCR is not required by this permit. [Rule 62-210.650, F.A.C.]

## EQUIPMENT AND CONTROL TECHNOLOGY

8. Selective Catalytic Reduction (SCR) System. The permittee is authorized to construct, tune, operate and maintain a new SCR system for the facility's Unit No. 3 boiler to reduce emissions of nitrogen oxides as described in the application. In general, the SCR systems will include the following equipment: ammonia storage; ammonia flow control unit; ammonia injection grid; vanadium pentoxide catalyst; an SCR reactor chamber; an SCR bypass system; and other ancillary equipment. [Applicant Request; and Rule 62-296.470(CAIR), F.A.C.]

9. Sorbent Injection System. Sorbent injection shall begin as soon as the SCR achieves the operating parameters specified by the manufacturer. The permittee shall construct, tune, operate and maintain a new sorbent injection system to mitigate the formation of sulfuric acid mist (SAM) due to the increased oxidation of $SO_2$ to $SO_3$ across the new SCR reactor. Sorbents will be injected downstream of the SCR reactor and upstream of the existing ESP. The control system regulating the amount of sorbent injected to control SAM will be integrated into the plant digital control system. The sorbent will react with $SO_3$ to form particles, which will be collected in the ESP. With the sorbent injection systems, there will be no PSD-significant emissions increases due to the installation of SCR system. The proposed equipment includes storage tanks, piping, injectors, a control system and other ancillary equipment. The sorbent injection system shall be operable when the SCR system is initially available for service. [Application and Rule 62-212.400(12), F.A.C.]

10. $NO_X$ CEMS. As necessary, the permittee is authorized to modify, calibrate, re-certify, and operate the existing $NO_X$ CEMS to accurately measure the lower $NO_X$ emission levels realized if the SCR system is in service. [Rule 62-4.070(3), F.A.C.]

**PERFORMANCE REQUIREMENTS**

11. Annual Particulate Matter ($PM/PM_{10}$) and SAM Emissions Projections. For this project, the permittee projected that actual annual emissions increases due to the project will be less than 25/10 tons per year (TPY) of $PM/PM_{10}$ and will be less than 7 TPY of SAM. The baseline actual emissions for determining the increases are 443 TPY of $PM/PM_{10}$ and 139 TPY of SAM. The permittee shall demonstrate this by compiling and submitting the reports required by this permit. For the purposes of this reporting, all PM emissions are considered to be $PM_{10}$ emissions.
[Application; Rules 62-212.300 and 62-210.370, F.A.C.]

**EMISSION LIMITS AND STANDARDS**

12. Ammonia Emissions (slip). Ammonia slip measured at the stack downstream of all emissions control systems, shall not exceed 5 parts per million by volume (ppmv). Annual testing of ammonia slip shall be conducted and corrective measures taken if measured values exceed 2 ppmv.
[Rule 62-4.070(3), F.A.C.]

13. Emission Limit Subject to Revision. Emissions of carbon monoxide (CO) from Unit 3 shall not exceed 0.20 pounds per million Btu heat input (lb/mmBtu) on a 30-day rolling average as described in air construction permit 1050004-018-AC. Based on results of compliance tests and analysis of 6 months worth of continuous monitoring data, the Department will reassess the previously issued best available control technology (BACT) determination. The emission limit may be adjusted downward to make this limit more stringent provided that overall control attained for all air pollutants including CO, $SO_2$, $NO_X$, $PM/PM_{10}$, sulfuric acid mist, and VOC is optimized. Such revision shall be based on data that represents a full range of operating conditions and a representative period of time. Such revision, if required by the Department, shall be in the form of a federally enforceable permit and shall be publicly noticed by the permittee. [Rules 62-4.070(3), and 62-212.400(7)(a), F.A.C.]

14. Future Actual Emissions Reporting. The permittee shall maintain and submit to the Department on an annual basis for a period of 5 years from the date the SCR systems are initially operated, information demonstrating in accordance with Rule 62-212.300(1)(e), F.A.C., that the installation of LNB, OFA and SCR did not result in significant emission increases of PM and SAM. The permittee shall use the same calculation methodology of emissions as outlined in the application (see Tables 2 and 3). The future emissions shall be compared with the baseline actual emissions for the period 2002-2001 for SAM and 2003-2002 for PM as reported in the annual operating reports (AORs) using EPA Method 5B for PM and Method 8A (controlled condensate) for SAM.
[Rule 62-212.300(1)(e), F.A.C.]

## EMISSIONS PERFORMANCE TESTING

15. Initial Performance Tests – Sorbent Injection for SAM Emissions Control. Within 90 days of completing construction of the SCR system, the permittee shall conduct a series of initial performance tests to determine the SAM emissions rate under a variety of operating scenarios that documents the impact of sorbent injection on reducing SAM emissions and results in the development of correlation/curves between injection rates, operating conditions and emissions.

    a. For each set of operating conditions being evaluated, the permittee shall conduct at least a 1-hour test run to determine SAM emissions. At least nine such test runs shall be conducted to evaluate the effect of SAM emissions on such parameters as the $SO_2$ emission rate prior to the SCR catalyst (and FGD system), the unit load, the flue gas flow rate, the sorbent injection rate and the current catalyst oxidation rate.

    b. Tests shall be conducted under a variety of fuel blends and load rates that are representative of the actual operating conditions. Sufficient tests shall be conducted to establish the SAM emissions rates for the following scenarios: bypass of the SCR reactor, SCR reactor in service without sorbent injection, and SCR reactor in service under varying operating conditions and levels of sorbent injection.

    c. At least 15 days prior to initiating the performance tests, the permittee shall submit a test notification, preliminary test schedule and test protocol to the Bureau of Air Regulation and the Compliance Authority.

    d. Within 45 days following the last test run conducted, the permittee shall provide a report summarizing the emissions tests and results. All SAM emissions test data shall be provided with this report.

    e. Within 45 days following the submittal of the emissions test report and no later than 90 days following the last test run conducted, the permittee shall submit a project report summarizing the following:

    - Identify each set of operating conditions evaluated, identify each operating parameter evaluated;
    - Identify the relative influence of each operating parameter, describe how the automated control system will adjust the sorbent injection rate based on the selected parameters;
    - Identify the frequency with which operational parameters will be reevaluated and adjusted within the automated control system;
    - Provide the algorithm used for the automated control system or a series of related performance curves; and
    - Provide details for calculating and estimating the SAM emissions rate based on the level of sorbent injection and operating conditions. The test results shall be used to adjust the sorbent injection control system and estimate SAM emissions.

    [Rules 62-4.070(3) and 62-212.300(1)(e), F.A.C.]

16. Sorbent Injection for SAM Emissions Control. On an annual basis, the permittee must demonstrate that SAM emissions increases as a result of this project are less than 7 TPY. The permittee shall install and operate the sorbent injection system at a frequency and injection rate for SAM control to satisfy this requirement. An automated control system will be used to adjust the sorbent flow rate for the given set of operating conditions based on the most recent performance test results.
    [Rules 62-4.070(3) and 62-212.300(1)e, F.A.C.]

## COMPLIANCE DETERMINATION

17. Initial Compliance Demonstration. Within 60 days of commencing operation, following installation of the SCR system, tests shall be conducted to determine emissions of CO and $NO_X$. Tests shall be conducted between 90% and 100% of permitted capacity while firing a coal and petcoke blend or a blend of coal, petcoke and refuse derived fuel. Tests shall consist of three, 1-hour test runs. [Rule 62-297.310(7)(a)1, F.A.C.]

18. Performance Tests. Within 60 days of commencing operation of the SCR/sorbent injection system, the permittee shall have the following tests conducted for the unit.

    At permitted capacity, the permittee shall conduct tests to determine the uncontrolled $NO_X$ emissions rate, the controlled $NO_X$ emission rate, and the actual control efficiency of the installed SCR system. Tests shall consist of three, 1-hour test runs. Alternatively, the permittee may provide representative CEMS data for this demonstration. During each test run, the permittee shall continuously monitor and record the ammonia injection rate.

    At permitted capacity and with no SCR bypass, the permittee shall conduct stack tests to determine the uncontrolled sulfuric acid mist emission rate, the controlled sulfuric acid mist emission rate, and actual control efficiency of the installed ammonia injection system. Tests shall consist of three, 1-hour test runs and be conducted while firing the fuel blend with the highest sulfur content. During each test run, the permittee shall continuously monitor and record the ammonia injection rate and total secondary power input to the electrostatic precipitator. The purpose of these tests is to determine actual control efficiency of the installed systems and to establish a minimum sorbent injection rate, which will be used to calculate the actual annual emissions.

    [Rule 62-297.310(7)(a)1, F.A.C.]

19. Compliance with the ammonia ($NH_3$) slip limit shall be determined using EPA conditional test method (CTM-027), EPA method 320, or other methods approved by the Department. [Rule 62-4.070(3), F.A.C.]

20. Compliance with the emission limiting standards specified in this air construction permit shall be determined annually using the appropriate specific conditions of the facility's existing Title V air operations permit No. 1050004-016-AV, by using the appropriate EPA reference test methods, or Department test methods. [1050004-016-AV; Rules 62-204.220 and 62-4.070(3), F.A.C.]

21. Test Results. Compliance test results shall be submitted to the Department's Southwest District Office no later than 45 days after completion of the last test run. [Rule 62-297.310(8), F.A.C.]

## CONTINUOUS MONITORING REQUIREMENTS

22. Ammonia Monitoring Requirements. In accordance with the manufacturer's specifications, the permittee shall install, calibrate, operate, and maintain an ammonia flow meter to measure and record the ammonia injection rate to the SCR system. [Rule 62-4.070(3), F.A.C.]

## NOTIFICATION, REPORTING, AND RECORDKEEPING

23. Emission Compliance Stack Test Reports. A test report indicating the results of the required compliance tests shall be filed as per Specific Condition 21. The test report shall provide sufficient detail on the tested emission unit and the procedures used to allow the compliance authority to determine if the test was properly conducted and if the test results were properly computed. [Rule 62-297.310(8), F.A.C.]`

LAKELAND ELECTRIC

Farzie Shelton, chE; REM

Associate GM Technical Support



Mr. Al Linero, P.E.
Program Administrator
Permitting South Section
Florida Department of Environmental Protection
Bureau of Air Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Fl 32399-2400

March 29, 2007

RE: C.D. McIntosh, Jr. Power Plant
Title V Permit # 1050004-019-AC and PSD-FL-387(A)
Addition of Selective Catalytic Reduction to Unit No. 3
Request for Additional Information

Dear Al:

We are in receipt of your letter dated February 19, 2007 requesting further information in regards to control of sulfur trioxide production associated with the installation of SCR using ammonia injection subsystem. At this time, Lakeland is intending to utilize sorbent injection system of hydrated lime, Sorbacal H $^{TM}$, soda ash and Trona for SAM control and therefore, engineering evaluation is still underway for this system (please see attached Mr. Ken Kosky's of Golder Associate letter addressing the Department's questions).

Additionally, you will note that Ken is referencing conditions from previous permits issued by the Department associated with sorbent injection system.

In conclusion, as always, Lakeland greatly values all the help and cooperation you and the Department have extended to us in our permitting efforts. Please feel free to contact me, if you should have any further questions.

Sincerely

Shelton

Farzie Shelton

Enc.

**City of Lakeland • Department of Electric Utilities**

**501 East Lemon Street • Lakeland, Fl 33801-5050 • 863. 834.6603 • Fax 863. 834.8187 •Cell 863.430.8297**

**farzie.shelton@lakelandelectric.com**

**Golder Associates Inc.**

6241 NW 23rd Street, Suite 500
Gainesville, FL 32653-1500
Telephone (352) 336-5600
Fax (352) 336-6603



Golder Associates

March 28, 2007

0637571

Lakeland Electric
501 E. Lemon Street
Lakeland, Florida 33801-5079

Attention: Ms. Farzie Shelton, Associate General Manger Technical Support

**RE: C.D. McIntosh, Jr. Power Plant**
**DEP File No. 1050004-019-AC and PSD-FL0387(A)**
**Addition of Selective Catalytic Reduction to Unit No. 3**
**Request for Additional Information**

Dear Farzie:

Presented below is the additional information requested by the Florida Department of Environmental Protection (FDEP) in the letter dated February 19, 2007. The information is provided in the same order as requested.

**FDEP Questions Regarding SCR Addition to McIntosh Unit 3:**

We note that you have updated the Process Flow Diagram to include the ammonia injection subsystem to control sulfur trioxide production. Please provide more details regarding the operating parameters of this subsystem. Specifically, please provide comments concerning the development of an ammonia injection rate curve, and associated algorithm, such that the sulfuric acid mist (SAM) emissions do not exceed the baseline annual emissions by the PSD significant emission rate (7 tons/year or more) annually.

Using an appropriate experimental design, we recommend that the ammonia injection rate be developed for different operating loads. At each operating load, stack testing should be done for differing values of sulfur content of the fuel used. The stack tests will measure the controlled SAM emissions rate, and the data points can be used to develop an ammonia injection rate curve for each load and varying sulfur content of the fuel. The testing should be done annually. The initial ammonia injection rate curve should be submitted to the Department within six months after initial operation of the SCR system.

**Additional Information:**

As discussed with the additional information supplied to address the Department's January 23, 2006 Request for Additional Information (RAI), the sorbent injection system had not been selected since engineering studies are underway. At this time, the engineering evaluation is still underway but the sorbents being considered for McIntosh Unit 3 are hydrated lime, Sorbacal H$^{TM}$, soda ash and Trona. Ammonia is currently not being considered further as mitigation for SAM emissions. Sorbacal H$^{TM}$ is a hydrated lime product produced by Chemical Lime Company that has a high surface area for $SO_3$ sorption. Each of these products can be used in either a wet or dry system and depending upon cost can be used interchangeably in reducing $SO_3$ and subsequent SAM emissions. All sorbents are capable of removing $SO_3$ at removal necessary to achieve the necessary SAM control indicated in Table RAI-2A that was previously submitted to address the January 23$^{rd}$ letter. Injection of the

sorbents will be either prior to the air heater or prior to the ESP. Engineering is continuing on the design of this system.

The final engineering and testing will determine the algorithms for injection. Since this information will not be completed, the following conditions as part of the permit issued by FDEP would address the questions raised in the RAI. Similar conditions have been placed on coal-fired units in Florida that have installed SCR to meet the FDEP CAIR rules.

1. Sorbent Injection Systems: The permittee shall construct, tune, operate and maintain new sorbent injection systems to mitigate the formation of SAM due to the increased oxidation of $SO_2$ to $SO_3$ across the new SCR reactors. Sorbents will be injected downstream of the SCR reactor and upstream of the existing ESP. The control system regulating the amount of sorbent injected to control SAM will be integrated into the plant digital control system. The sorbents will react with $SO_3$ to form particles, which will be collected in the ESP. With the sorbent injection systems, there will be no PSD-significant emissions increases due to the installation of SCR system. The proposed equipment includes storage tanks, piping, injectors, a control system and other ancillary equipment. The sorbent injection systems shall be operable when the SCR system is initially available for service.

2. Sorbent Injection for SAM Emissions Control: On an annual basis, the permittee must demonstrate that SAM emissions as a result of this project do not exceed 153 tons per year. The permittee shall install and operate the sorbent injection system at a frequency and injection rate for SAM control to satisfy this requirement. An automated control system will be used to adjust the sorbent flow rate for the given set of operating conditions based on the most recent performance test results.

3. Initial Performance Tests – Sorbent Injection for SAM Emissions Control: Within 90 days of completing construction of the SCR system, the permittee shall conduct a series of initial performance tests to determine the SAM emissions rate under a variety of operating scenarios that documents the impact of sorbent injection on reducing SAM emissions and results in the development of correlation/curves between injection rates, operating conditions and emissions.

    a. For each set of operating conditions being evaluated, the permittee shall conduct at least a 1-hour test run to determine SAM emissions. At least nine such test runs shall be conducted to evaluate the effect of SAM emissions on such parameters as the $SO_2$ emission rate prior to the SCR catalyst (and FGD system), the unit load, the flue gas flow rate, the sorbent injection rate and the current catalyst oxidation rate.
    b. Tests shall be conducted under a variety of fuel blends and load rates that are representative of the actual operating conditions. Sufficient tests shall be conducted to establish the SAM emissions rates for the following scenarios: bypass of the SCR reactor, SCR reactor in service without sorbent injection, and SCR reactor in service under varying operating conditions and levels of sorbent injection.

c. At least 15 days prior to initiating the performance tests, the permittee shall submit a test notification, preliminary test schedule and test protocol to the Bureau of Air Regulation and the Compliance Authority.
d. Within 45 days following the last test run conducted, the permittee shall provide a report summarizing the emissions tests and results. All SAM emissions test data shall be provided with this report.
e. Within 45 days following the submittal of the emissions test report and no later than 90 days following the last test run conducted, the permittee shall submit a project report summarizing the following:
   - Identify each set of operating conditions evaluated, identify each operating parameter evaluated,
   - Identify the relative influence of each operating parameter, describe how the automated control system will adjust the sorbent injection rate based on the selected parameters,
   - Identify the frequency with which operational parameters will be reevaluated and adjusted within the automated control system,
   - Provide the algorithm used for the automated control system or a series of related performance curves, and
   - Provide details for calculating and estimating the SAM emissions rate based on the level of sorbent injection and operating conditions. The test results shall be used to adjust the sorbent injection control system and estimate SAM emissions.

Please contact me if there are any questions related to the information contained in this evaluation. A certification has been provided.

Sincerely,

GOLDER ASSOCIATES INC.

Kennard F. Kosky, P.E.
Principal

KFK/nav

RAI Response to FDEP 2-19-06 LTR.doc

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

February 19, 2007

Electronic Mail – Received Receipt Requested

Mr. Timothy Bachand, Authorized Representative (timothy.bachand@lakelandelectric.com)
Lakeland Electric
501 East Lemon Street, MS-M01
Lakeland, Florida 33801

Re: C.D. McIntosh, Jr. Power Plant
DEP File No. 1050004-019-AC and PSD-FL-387(A)
Addition of Selective Catalytic Reduction to Unit No. 3
Request for Additional Information

Dear Mr. Bachand:

As you are aware, the addition of selective catalytic reduction (SCR) to the C.D. McIntosh, Jr. Power Plant Unit No. 3 has been set up as a separate project under Department File No. 1050004-019-AC and PSD-FL-387(A). Review of your letter received on January 29, 2007, reveals that further information is needed on the following item, and thus we have deemed your application still incomplete for this phase of the overall project.

We note that you have updated the Process Flow Diagram to include the ammonia injection subsystem to control sulfur trioxide production. Please provide more details regarding the operating parameters of this subsystem. Specifically, please provide comments concerning the development of an ammonia injection rate curve, and associated algorithm, such that the sulfuric acid mist (SAM) emissions do not exceed the baseline annual emissions by the PSD significant emission rate (7 tons/year or more) annually.

Using an appropriate experimental design, we recommend that the ammonia injection rate be developed for different operating loads. At each operating load, stack testing should be done for differing values of sulfur content of the fuel used. The stack tests will measure the controlled SAM emissions rate, and the data points can be used to develop an ammonia injection rate curve for each load and varying sulfur content of the fuel. The testing should be done annually. The initial ammonia injection rate curve should be submitted to the Department within six months after initial operation of the SCR system.

When we receive this information, we will continue processing your application. We are available to discuss the details of our request for additional information. Rule 62-4.050(3), F.A.C., requires that all applications for a Department permit must be certified by a professional engineer registered in the State of Florida. This requirement also applies to responses to Department requests for additional information of an engineering nature. Permit applicants are advised that Rule 62-213.420(1)(b), F.A.C., requires applicants to respond to requests for information within 90 days, unless the applicant has requested in writing, and has been granted, additional time within 90 days. If you have any questions, please contact Tom Cascio at 850-921-9526.

Sincerely,

A. A. Linero, P.E.
Program Administrator
Permitting South Section

AAL/tbc

Cc: Farzie Shelton, Lakeland Electric (farzie.shelton@lakelandelectric.com)
Mara Nasca, Southwest District Office (mara.nasca@dep.state.fl.us)
Kennard F. Kosky, P.E., Golder Associates, Inc. (kkosky@golder.com)
Debbie Nelson, Bureau of Air Regulation (deborah.nelson@dep.state.fl.us)

## Adams, Patty

**From:** Harvey, Mary
**Sent:** Tuesday, February 20, 2007 10:03 AM
**To:** Adams, Patty
**Subject:** FW: ltr. Mr. Timothy Bachand - Facility #1050004-019-AC

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**From:** Shelton, Farzie [mailto:Farzie.Shelton@lakelandelectric.com]
**Sent:** Monday, February 19, 2007 4:20 PM
**To:** Harvey, Mary
**Subject:** Read: ltr. Mr. Timothy Bachand - Facility #1050004-019-AC

Your message

To: Farzie.Shelton@lakelandelectric.com
Subject:

was read on 2/19/2007 4:20 PM.

## Adams, Patty

**From:** Harvey, Mary

**Sent:** Monday, February 19, 2007 3:19 PM

**To:** 'timothy.bachand@lakelandelectric.com'; 'farzie.shelton@lakelandelectric.com'; 'kkosky@golder.com'; Nelson, Deborah; Zhang-Torres

**Cc:** Cascio, Tom; Adams, Patty; Gibson, Victoria

**Subject:** ltr. Mr. Timothy Bachand - Facility #1050004-019-AC

**Attachments:** TIMOTHY BACHAND LTR. ID #1050004-019-AC.pdf

Dear Sir/Madam:

Please send a "reply" message verifying receipt of the attached document(s); this may be done by selecting "Reply" on the menu bar of your e-mail software and then selecting "Send". We must receive verification of receipt and your reply will preclude subsequent e-mail transmissions to verify receipt of the document(s).

The document(s) may require immediate action within a specified time frame. Please open and review the document(s) as soon as possible.

The document is in Adobe Portable Document Format (pdf). Adobe Acrobat Reader can be downloaded for free at the following internet site: http://www.adobe.com/products/acrobat/readstep.html.

The Bureau of Air Regulation is issuing electronic documents for permits, notices and other correspondence in lieu of hard copies through the United States Postal System, to provide greater service to the applicant and the engineering community. Please advise this office of any changes to your e-mail address or that of the Engineer-of-Record.

Thank you,

DEP, Bureau of Air Regulation

RECEIVED
DEC 11 2006
BUREAU OF AIR REGULATION

# PREVENTION OF SIGNIFICANT DETERIORATION CONSTRUCTION PERMIT APPLICATION FOR THE ADDITION OF LOW $NO_x$ BURNERS, OVERFIRE AIR, AND SELECTIVE CATALYTIC REDUCTION IN UNIT NO. 3

*C.D. MCINTOSH, JR. POWER PLANT*
*LAKELAND, FLORIDA*

**Prepared For:**
**City of Lakeland, Department of Electric Utilities**
**C.D. McIntosh, Jr. Power Plant**
**3030 East Lake Parker Drive**
**Lakeland, Florida 33805**

**Prepared By:**
**Golder Associates Inc.**
**6241 NW 23rd Street, Suite 500**
**Gainesville, Florida 32653-1500**

**December 2006**

**063-7630**

**DISTRIBUTION:**
**4 Copies - FDEP**
**2 Copies – City of Lakeland**
**1 Copies - Golder Associates Inc.**

# APPLICATION FOR AIR PERMIT – LONG FORM

# Department of Environmental Protection

## Division of Air Resource Management

## APPLICATION FOR AIR PERMIT - LONG FORM

### I. APPLICATION INFORMATION

**Air Construction Permit** – Use this form to apply for an air construction permit for a proposed project:

- subject to prevention of significant deterioration (PSD) review, nonattainment area (NAA) new source review, or maximum achievable control technology (MACT) review; or
- where the applicant proposes to assume a restriction on the potential emissions of one or more pollutants to escape a federal program requirement such as PSD review, NAA new source review, Title V, or MACT; or
- Where the applicant proposes to establish, revise, or renew a plantwide applicability limit (PAL)

**Air Operation Permit** – Use this form to apply for:

- an initial federally enforceable state air operation permit (FESOP); or
- an initial/revised/renewal Title V air operation permit.

**Air Construction Permit & Revised/Renewal Title V Air Operation Permit (Concurrent Processing Option)** – Use this form to apply for both an air construction permit and a revised or renewal Title V air operation permit incorporating the proposed project.

**To ensure accuracy, please see form instructions.**

**Identification of Facility**

1. Facility Owner/Company Name: **City of Lakeland, Department of Electric Utilities**
2. Site Name: **C.D. McIntosh, Jr. Power Plant**
3. Facility Identification Number: **1050004**
4. Facility Location...:
   Street Address or Other Locator: **3030 East Lake Parker Drive**
   City: **Lakeland** County: **Polk** Zip Code: **33805**
5. Relocatable Facility? ☐ Yes ☒ No
6. Existing Title V Permitted Facility? ☒ Yes ☐ No

**Application Contact**

1. Application Contact Name: **Ms. Farzie Shelton, Associate General Manager - Technical Support**
2. Application Contact Mailing Address...
   Organization/Firm: **Lakeland Electric**
   Street Address: **501 East Lemon Street**
   City: **Lakeland** State: **FL** Zip Code: **33801-5079**
3. Application Contact Telephone Numbers...
   Telephone: **(863) 834-6603** ext. Fax: **(863) 834-8187**
4. Application Contact Email Address: **farzie.shelton@lakelandelectric.com**

**Application Processing Information (DEP Use)**

1. Date of Receipt of Application: 12/11/06
2. Project Number(s): 1050004-014-AC
3. PSD Number (if applicable):
4. Siting Number (if applicable):

## APPLICATION INFORMATION

### Purpose of Application

**This application for air permit is submitted to obtain: (Check one)**

**Air Construction Permit**

☒ Air construction permit.

☐ Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL).

☐ Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL), and separate air construction permit to authorize construction or modification of one or more emissions units covered by the PAL.

**Air Operation Permit**

☐ Initial Title V air operation permit.

☐ Title V air operation permit revision.

☐ Title V air operation permit renewal.

☐ Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is required.

☐ Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is not required.

**Air Construction Permit and Revised/Renewal Title V Air Operation Permit (Concurrent Processing)**

☐ Air construction permit and Title V permit revision, incorporating the proposed project.

☐ Air construction permit and Title V permit renewal, incorporating the proposed project.

**Note: By checking one of the above two boxes, you, the applicant, are requesting concurrent processing pursuant to Rule 62-213.405, F.A.C. In such case, you must also check the following box:**

☐ I hereby request that the department waive the processing time requirements of the air construction permit to accommodate the processing time frames of the Title V air operation permit.

### Application Comment

**Lakeland Electric is seeking authorization to install Low-NOx burners and selective catalytic reduction (SCR) in McIntosh Unit 3 to meet the requirements of EPA's Clean Air Interstate Rule (CAIR) as implemented by FDEP in Rule 62-296.470 Florida Administrative Code (F.A.C.)**

## APPLICATION INFORMATION

**Scope of Application**

| Emissions Unit ID Number | Description of Emissions Unit | Air Permit Type | Air Permit Proc. Fee |
|---|---|---|---|
| 006 | McIntosh Unit 3 | ACIA | NA |
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**Application Processing Fee**

**Check one:** ☐ Attached - Amount: $_____ ☒ Not Applicable

## APPLICATION INFORMATION

**Owner/Authorized Representative Statement**

**Complete if applying for an air construction permit or an initial FESOP.**

1. Owner/Authorized Representative Name :
   **City of Lakeland / Lakeland Electric - Mr. Timothy Bachand**
2. Owner/Authorized Representative Mailing Address...
   Organization/Firm: **Lakeland Electric**
   Street Address: **501 East Lemon Street, MS-MO1**
   City: **Lakeland** State: **FL** Zip Code: **33801**
3. Owner/Authorized Representative Telephone Numbers...
   Telephone: **(863) 834-6633** ext.**Direct line** Fax: **(863) 834-5760**
4. Owner/Authorized Representative Email Address: **timothy.bachand@lakelandelectric.com**
5. Owner/Authorized Representative Statement:

   *I, the undersigned, am the owner or authorized representative of the facility addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other requirements identified in this application to which the facility is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit.*

   Signature

   12/8/06
   Date

## APPLICATION INFORMATION

**Application Responsible Official Certification**

**Complete if applying for an initial/revised/renewal Title V permit or concurrent processing of an air construction permit and a revised/renewal Title V permit. If there are multiple responsible officials, the "application responsible official" need not be the "primary responsible official."**

1. Application Responsible Official Name:

2. Application Responsible Official Qualification (Check one or more of the following options, as applicable):
   - ☐ For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C.
   - ☐ For a partnership or sole proprietorship, a general partner or the proprietor, respectively.
   - ☐ For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.
   - ☐ The designated representative at an Acid Rain source.

3. Application Responsible Official Mailing Address...
   Organization/Firm:
   Street Address:
   City: State: Zip Code:

4. Application Responsible Official Telephone Numbers...
   Telephone: ( ) - ext. Fax: ( ) -

5. Application Responsible Official Email Address:

6. Application Responsible Official Certification:

   I, the undersigned, am a responsible official of the Title V source addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject, except as identified in compliance plan(s) submitted with this application.

   Signature Date

## APPLICATION INFORMATION

**Professional Engineer Certification**

1. Professional Engineer Name: **Kennard F. Kosky**
   Registration Number: **14996**
2. Professional Engineer Mailing Address...
   Organization/Firm: **Golder Associates Inc.****
   Street Address: **6241 NW 23rd Street, Suite 500**
   City: **Gainesville** State: **FL** Zip Code: **32653**
3. Professional Engineer Telephone Numbers...
   Telephone: **(352) 336-5600** ext. **516** Fax: **(352) 336-6603**
4. Professional Engineer Email Address: **kkosky@golder.com**
5. Professional Engineer Statement:

   *I, the undersigned, hereby certify, except as particularly noted herein*, that:*

   *(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and*

   *(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.*

   *(3) If the purpose of this application is to obtain a Title V air operation permit (check here ☐, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.*

   *(4) If the purpose of this application is to obtain an air construction permit (check here ☒, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here ☐, if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.*

   *(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here ☐, if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.*

   Kennard F. Kosky — Signature
   12/8/06 — Date

   (seal) 765

* Attach any exception to certification statement.
** **Board of Professional Engineers Certificate of Authorization #00001670**

## II. FACILITY INFORMATION

### A. GENERAL FACILITY INFORMATION

**Facility Location and Type**

| | | | |
|---|---|---|---|
| 1. Facility UTM Coordinates...<br>Zone **17** East (km) **409.0**<br>North (km) **3106.2** | | 2. Facility Latitude/Longitude...<br>Latitude (DD/MM/SS) **26/4/50**<br>Longitude (DD/MM/SS) **81/55/32** | |
| 3. Governmental Facility Code: **4** | 4. Facility Status Code: **A** | 5. Facility Major Group SIC Code: **49** | 6. Facility SIC(s): **4911** |
| 7. Facility Comment :<br>**The McIntosh Power Plant consists of 3 fossil fuel fired-steam generators (FFFSG), 2 diesel powered generators, 1 gas turbine peaking unit, and 1 combustion turbine operating in combined cycle (Unit 5). FFFSG Units 1 and 2 are fired with No. 6 fuel oil and natural gas (distillate oil is used as an ignitor). FFFSG Unit 3 is primarily fired with coal, refuse derived fule and petroleum coke. Unit 5 is a Westinghoue 501G combustion turbine and is primarily fired with natural gas with distillate oil as backup.** | | | |

**Facility Contact**

| |
|---|
| 1. Facility Contact Name:<br>**Andrew Nguyen, Environmental Permitting** |
| 2. Facility Contact Mailing Address...<br>Organization/Firm: **Lakeland Electric**<br>Street Address: **501 East Lemon Street**<br>City: **Lakeland** State: **FL** Zip Code: **33801-5079** |
| 3. Facility Contact Telephone Numbers:<br>Telephone: **(863) 834-8180** ext. Fax: **(863) 603-8187** |
| 4. Facility Contact Email Address: **andrew.nguyen@lakelandelectric.com** |

**Facility Primary Responsible Official**

**Complete if an "application responsible official" is identified in Section I. that is not the facility "primary responsible official."**

| |
|---|
| 1. Facility Primary Responsible Official Name: |
| 2. Facility Primary Responsible Official Mailing Address...<br>Organization/Firm:<br>Street Address:<br>City: State: Zip Code: |
| 3. Facility Primary Responsible Official Telephone Numbers...<br>Telephone: ( ) - ext. Fax: ( ) - |
| 4. Facility Primary Responsible Official Email Address: |

## FACILITY INFORMATION

### Facility Regulatory Classifications

**Check all that would apply *following* completion of all projects and implementation of all other changes proposed in this application for air permit. Refer to instructions to distinguish between a "major source" and a "synthetic minor source."**

| | |
|---|---|
| 1. ☐ Small Business Stationary Source | ☐ Unknown |
| 2. ☐ Synthetic Non-Title V Source | |
| 3. ☒ Title V Source | |
| 4. ☒ Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs) | |
| 5. ☐ Synthetic Minor Source of Air Pollutants, Other than HAPs | |
| 6. ☒ Major Source of Hazardous Air Pollutants (HAPs) | |
| 7. ☐ Synthetic Minor Source of HAPs | |
| 8. ☒ One or More Emissions Units Subject to NSPS (40 CFR Part 60) | |
| 9. ☐ One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60) | |
| 10. ☒ One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63) | |
| 11. ☐ Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5)) | |
| 12. Facility Regulatory Classifications Comment:<br>**Unit 1, Unit 2, Unit 3, and Unit 5 are regulated under Acid Rain, Phase II**<br>**Unit 2 is subject to NSPS Subpart D,**<br>**Unit 3 is subject to Subpart Da,**<br>**Unit 5 is subject to Subpart KKKK.**<br>**State:**<br>**Unit 1 is subject to 62-296.405**<br>**Unit 2, 3, and 5 are subject to 62-204.800**<br>**Unit 3 is subject to 62-212.400(6)** | |

## FACILITY INFORMATION

**List of Pollutants Emitted by Facility**

| 1. Pollutant Emitted | 2. Pollutant Classification | 3. Emissions Cap [Y or N]? |
|---|---|---|
| PM | A | N |
| PM10 | A | N |
| VOC | A | N |
| SO2 | A | N |
| H106 | A | N |
| NOX | A | N |
| HAPS | A | N |
| HCl | A | N |
| SAM | A | N |
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## B. EMISSIONS CAPS

**Facility-Wide or Multi-Unit Emissions Caps**

| 1. Pollutant Subject to Emissions Cap | 2. Facility Wide Cap [Y or N]? (all units) | 3. Emissions Unit ID No.s Under Cap (if not all units) | 4. Hourly Cap (lb/hr) | 5. Annual Cap (ton/yr) | 6. Basis for Emissions Cap |
|---|---|---|---|---|---|
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7. Facility-Wide or Multi-Unit Emissions Cap Comment:

## C. FACILITY ADDITIONAL INFORMATION

**Additional Requirements for All Applications, Except as Otherwise Stated**

| |
|---|
| 1. Facility Plot Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)<br>☒ Attached, Document ID: **Part II** ☐ Previously Submitted, Date:____ |
| 2. Process Flow Diagram(s): (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)<br>☒ Attached, Document ID: **Part II** ☐ Previously Submitted, Date:____ |
| 3. Precautions to Prevent Emissions of Unconfined Particulate Matter: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)<br>☐ Attached, Document ID:____ ☒ Previously Submitted, Date: **June 14, 1996** |

**Additional Requirements for Air Construction Permit Applications**

| |
|---|
| 1. Area Map Showing Facility Location:<br>☐ Attached, Document ID:____ ☒ Not Applicable (existing permitted facility) |
| 2. Description of Proposed Construction or Modification, or Plantwide Applicability Limit (PAL):<br>☒ Attached, Document ID:**See Part II** |
| 3. Rule Applicability Analysis:<br>☒ Attached, Document ID:**See Part II** |
| 4. List of Exempt Emissions Units (Rule 62-210.300(3)(a) or (b)1., F.A.C.):<br>☐ Attached, Document ID:____ ☒ Not Applicable (no exempt units at facility) |
| 5. Fugitive Emissions Identification (Rule 62-212.400(2), F.A.C.):<br>☐ Attached, Document ID:____ ☒ Not Applicable |
| 6. Air Quality Analysis (Rule 62-212.400(7), F.A.C.):<br>☐ Attached, Document ID:____ ☒ Not Applicable |
| 7. Source Impact Analysis (Rule 62-212.400(5), F.A.C.):<br>☒ Attached, Document ID:**See Part II** ☐ Not Applicable |
| 8. Air Quality Impact since 1977 (Rule 62-212.400(5)(h)5., F.A.C.):<br>☐ Attached, Document ID:____ ☒ Not Applicable |
| 9. Additional Impact Analyses (Rules 62-212.400(5)(e)1. and 62-212.500(4)(e), F.A.C.):<br>☐ Attached, Document ID:____ ☒ Not Applicable |
| 10. Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.):<br>☐ Attached, Document ID:____ ☒ Not Applicable |

## FACILITY INFORMATION

**Additional Requirements for FESOP Applications**

1. List of Exempt Emissions Units (Rule 62-210.300(3)(a) or (b)1., F.A.C.):
   ☐ Attached, Document ID:____ ☐ Not Applicable (no exempt units at facility)

**Additional Requirements for Title V Air Operation Permit Applications**

1. List of Insignificant Activities (Required for initial/renewal applications only):
   ☐ Attached, Document ID:____ ☐ Not Applicable (revision application)
2. Identification of Applicable Requirements (Required for initial/renewal applications, and for revision applications if this information would be changed as a result of the revision being sought):
   ☐ Attached, Document ID:____
   ☐ Not Applicable (revision application with no change in applicable requirements)
3. Compliance Report and Plan (Required for all initial/revision/renewal applications):
   ☐ Attached, Document ID:____
   Note: A compliance plan must be submitted for each emissions unit that is not in compliance with all applicable requirements at the time of application and/or at any time during application processing. The department must be notified of any changes in compliance status during application processing.
4. List of Equipment/Activities Regulated under Title VI (If applicable, required for initial/renewal applications only):
   ☐ Attached, Document ID:____
   ☐ Equipment/Activities On site but Not Required to be Individually Listed
   ☐ Not Applicable
5. Verification of Risk Management Plan Submission to EPA (If applicable, required for initial/renewal applications only) :
   ☐ Attached, Document ID:____ ☐ Not Applicable
6. Requested Changes to Current Title V Air Operation Permit:
   ☐ Attached, Document ID:____ ☐ Not Applicable

**Additional Requirements Comment**

**See Part II.**

## III. EMISSIONS UNIT INFORMATION

**Title V Air Operation Permit Application** - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application for air permit. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

**Air Construction Permit or FESOP Application** - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

**Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application** – Where this application is used to apply for both an air construction permit and a revised/renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. **The air construction permitting classification must be used to complete the Emissions Unit Information Section of this application for air permit.** A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air construction permitting and insignificant emissions units are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

**EMISSIONS UNIT INFORMATION**
**Section [1]**
**UNIT No. 3**

## A. GENERAL EMISSIONS UNIT INFORMATION

### Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

☒ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

### Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

☒ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section: **McIntosh Unit 3 – Fossil-Fuel-Fired Steam Generator (FFFSG)**

3. Emissions Unit Identification Number: **006**

| 4. Emissions Unit Status Code: | 5. Commence Construction Date: | 6. Initial Startup Date: | 7. Emissions Unit Major Group SIC Code: | 8. Acid Rain Unit? |
|---|---|---|---|---|
| **A** | | **1982** | **49** | ☒ Yes ☐ No |

9. Package Unit:
Manufacturer: Model Number:

10. Generator Nameplate Rating: **364** MW

11. Emissions Unit Comment: **This emission unit is a coal-fired steam-generating unit which also co-fires refuse-derived fuel and petroleum coke.**

## Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description:
   **PM – Electrostatic Precipitator (ESP), followed by**
   **SO2 – Flue Gas Desulfurization (FGD) system.**
   **NOX – Low NOX burners (LNB), Selective Catalytic Reduction (SCR) with ammonia injection.**

2. Control Device or Method Code(s): **10, 67, 24, 139, and 032**

## B. EMISSIONS UNIT CAPACITY INFORMATION

**(Optional for unregulated emissions units.)**

**Emissions Unit Operating Capacity and Schedule**

| | |
|---|---|
| 1. Maximum Process or Throughput Rate: | |
| 2. Maximum Production Rate: | |
| 3. Maximum Heat Input Rate: **3,640** million Btu/hr | |
| 4. Maximum Incineration Rate: pounds/hr<br>tons/day | |
| 5. Requested Maximum Operating Schedule: | |
| **24** hours/day | **7** days/week |
| **52** weeks/year | **8,760** hours/year |

6. Operating Capacity/Schedule Comment:

**Emission unit co-fires coal and coal/petroleum coke and/or RDF. Unit is also authorized to burn residual oil and gas. Heat input based on fuel flow sampling. The heat input limitations have been placed in each permit to identify the capacity of each unit for the purposes of confirming that emissions testing is conducted within 90 to 100 percent of the unit's rated capacity (or to limit future operation to 110 percent of the test load), to establish appropriate emission limits and to aid in determining future rule applicability. Regular record keeping is not required for heat input. Instead the owner or operator is expected to determine heat input whenever emission testing is required, to demonstrate at what percentage of the rated capacity that the unit was tested. Rule 62-297.310(5) F.A.C., included in the permit, requires measurement of the process variables for emission tests. Such heat input determination may be based on measurements of fuel consumption by various methods including but not limited to fuel flow metering or tank drop measurements, using the heat value of the fuel determined by the fuel vendor or the owner or operator, to calculate average hourly heat input during the test.**

## C. EMISSION POINT (STACK/VENT) INFORMATION
**(Optional for unregulated emissions units.)**

**Emission Point Description and Type**

| | | |
|---|---|---|
| 1. Identification of Point on Plot Plan or Flow Diagram: **Site Plan** | 2. Emission Point Type Code: **1** | |
| 3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: **Exhausts through a single stack.** | | |
| 4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: | | |
| 5. Discharge Type Code: **V** | 6. Stack Height: **250**feet | 7. Exit Diameter: **18**feet |
| 8. Exit Temperature: **125**°F | 9. Actual Volumetric Flow Rate: **1,260,536** acfm | 10. Water Vapor: % |
| 11. Maximum Dry Standard Flow Rate: dscfm | 12. Nonstack Emission Point Height: feet | |
| 13. Emission Point UTM Coordinates... Zone: **17** East (km): **409.3** North (km): **3106.3** | 14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS) | |
| 15. Emission Point Comment: | | |

## D. SEGMENT (PROCESS/FUEL) INFORMATION

**Segment Description and Rate:** Segment 1 of 4

| | | |
|---|---|---|
| 1. Segment Description (Process/Fuel Type): **Coal** | | |
| 2. Source Classification Code (SCC): **1-01-001-01** | 3. SCC Units: **Tons** | |
| 4. Maximum Hourly Rate: **159.6** | 5. Maximum Annual Rate: **1,398,096** | 6. Estimated Annual Activity Factor: |
| 7. Maximum % Sulfur: **3.3** | 8. Maximum % Ash: **16** | 9. Million Btu per SCC Unit: **23** |
| 10. Segment Comment: **Up to 20 percent petroleum coke is authorized to be co-fired with coal.** | | |

**Segment Description and Rate:** Segment 2 of 4

| | | |
|---|---|---|
| 1. Segment Description (Process/Fuel Type): **Oil** | | |
| 2. Source Classification Code (SCC): **1-01-004-01** | 3. SCC Units: **1,000 Gallons Burned** | |
| 4. Maximum Hourly Rate: **24,268** | 5. Maximum Annual Rate: **212,584** | 6. Estimated Annual Activity Factor: |
| 7. Maximum % Sulfur: **0.73** | 8. Maximum % Ash: | 9. Million Btu per SCC Unit: **150** |
| 10. Segment Comment: | | |

## D. SEGMENT (PROCESS/FUEL) INFORMATION

**Segment Description and Rate:** Segment **3** of **4**

| | | |
|---|---|---|
| 1. Segment Description (Process/Fuel Type): **Coal/Petroleum Coke (80/20 weight basis)** | | |
| 2. Source Classification Code (SCC): **1-01-001-01** | 3. SCC Units: **Tons** | |
| 4. Maximum Hourly Rate: **152.6** | 5. Maximum Annual Rate: **1,336,776** | 6. Estimated Annual Activity Factor: |
| 7. Maximum % Sulfur: **3.3** | 8. Maximum % Ash: | 9. Million Btu per SCC Unit: **24** |
| 10. Segment Comment: | | |

**Segment Description and Rate:** Segment **4** of **4**

| | | |
|---|---|---|
| 1. Segment Description (Process/Fuel Type): **Natural Gas** | | |
| 2. Source Classification Code (SCC): **1-01-006-01** | 3. SCC Units: **Million Cubic Feet** | |
| 4. Maximum Hourly Rate: **3.56** | 5. Maximum Annual Rate: **31,139** | 6. Estimated Annual Activity Factor: |
| 7. Maximum % Sulfur: **3.3** | 8. Maximum % Ash: | 9. Million Btu per SCC Unit: **1,024** |
| 10. Segment Comment: **Natural gas or propane only or in combination with any other fuels or fuel combinations.** | | |

## E. EMISSIONS UNIT POLLUTANTS

**List of Pollutants Emitted by Emissions Unit**

| 1. Pollutant Emitted | 2. Primary Control Device Code | 3. Secondary Control Device Code | 4. Pollutant Regulatory Code |
|---|---|---|---|
| PM | 010 | | EL |
| SAM | 032 | 010 | NS |
| CO | | | EL |
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## F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

**(Optional for unregulated emissions units.)**

**Potential/Estimated Fugitive Emissions**

**Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.**

| | |
|---|---|
| 1. Pollutant Emitted: **PM** | 2. Total Percent Efficiency of Control: **99.1** |
| 3. Potential Emissions: **273** lb/hour **483.1** tons/year | 4. Synthetically Limited? ☐ Yes ☒ No |
| 5. Range of Estimated Fugitive Emissions (as applicable): to tons/year | |
| 6. Emission Factor: **0.075 lb/MMBtu** Reference: **Title V Permit No. 1050004-016-AV** | 7. Emissions Method Code: **0** |
| 8.a. Baseline Actual Emissions (if Required): Tons/year | 8.b. Baseline 24-month Period: From: To: |
| 9.a. Potential Actual Emissions (if Required): Tons/year | 9.b. Projected Monitoring Period: ☒ 5 years ☐ 10 years |
| 10. Calculation of Emissions: **0.075 lb/mmBtu x 3,640 mmBtu/hr = 273 lb/hr** | |
| 11. Pollutant Potential/Estimated Fugitive Emissions Comment: **Annual emissions based on actual emissions for 2003-2002. See Part II** | |

## F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

**Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.**

**Allowable Emissions** Allowable Emissions 1 of 4

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: **0.070 lb/mmBtu** | 4. Equivalent Allowable Emissions: **254**lb/hour **483.1**tons/year |
| 5. Method of Compliance: **Annual stack test; EPA Method 5 and 5B, if greater than 400 hours.** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **Allowable emission limit based on Title V Permit No. 1050004-016-AV for oil firing. No increase in representative actual annual emissions plus the PSD significant emission rate will occur as a result of the project.** | |

**Allowable Emissions** Allowable Emissions 2 of 4

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: **0.075 lb/MMBtu** | 4. Equivalent Allowable Emissions: **273** lb/hour **483.1**tons/year |
| 5. Method of Compliance: **Annual stack test; EPA Method 5 or 5B, if greater than 400 hours.** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **Allowable emission limit based on Title V Permit No. 1050004-016-AV for oil/RDF firing. No increase in representative actual annual emissions plus the PSD significant emission rate will occur as a result of the project.** | |

**Allowable Emissions** Allowable Emissions 3 of 4

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: **0.05 lb/MMBtu** | 4. Equivalent Allowable Emissions: **182** lb/hour **483.1** tons/year |
| 5. Method of Compliance: **Annual stack test; EPA Method 5 and 5B.** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **Allowable emission limit based on Title V Permit No. 1050004-016-AV for coal/petroleum coke/RDF firing and coal/RDF firing. No increase in representative actual annual emissions plus the PSD significant emission rate will occur as a result of the project.** | |

## F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

**Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.**

**Allowable Emissions** Allowable Emissions **4** of **4**

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: **0.044 lb/mmBtu** | 4. Equivalent Allowable Emissions: **160**lb/hour **483.1**tons/year |
| 5. Method of Compliance: **Annual stack test; EPA Method 5 and 5B.** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **Allowable emission limit based on Title V Permit No. 1050004-016-AV for coal firing and coal/petroleum coke firing. No increase in representative actual annual emissions plus the PSD significant emission rate will occur as a result of the project.** | |

**Allowable Emissions** Allowable Emissions _____ of _____

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: | 4. Equivalent Allowable Emissions: lb/hour tons/year |
| 5. Method of Compliance: | |
| 6. Allowable Emissions Comment (Description of Operating Method): | |

**Allowable Emissions** Allowable Emissions _____ of _____

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: | 4. Equivalent Allowable Emissions: lb/hour tons/year |
| 5. Method of Compliance: | |
| 6. Allowable Emissions Comment (Description of Operating Method): | |

## F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

**(Optional for unregulated emissions units.)**

**Potential/Estimated Fugitive Emissions**

**Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.**

| | |
|---|---|
| 1. Pollutant Emitted: **SAM** | 2. Total Percent Efficiency of Control: **30+%** |
| 3. Potential Emissions: lb/hour **135.6** tons/year | 4. Synthetically Limited? ☐ Yes ☒ No |
| 5. Range of Estimated Fugitive Emissions (as applicable): to tons/year | |
| 6. Emission Factor: Reference: | 7. Emissions Method Code: **0** |
| 8.a. Baseline Actual Emissions (if Required): Tons/year | 8.b. Baseline 24-month Period: From: To: |
| 9.a. Potential Actual Emissions (if Required): Tons/year | 9.b. Projected Monitoring Period: ☒ 5 years ☐ 10 years |
| 8. Calculation of Emissions: | |
| 9. Pollutant Potential/Estimated Fugitive Emissions Comment: **Annual emissions based on actual emissions for 2002-2001. See Part II** | |

## F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

**Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.**

**Allowable Emissions** Allowable Emissions 1 of 1

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **RULE** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: **135.6 tons/yr** | 4. Equivalent Allowable Emissions: lb/hour **135.6** tons/year |
| 5. Method of Compliance: **Annual Operating Reports; See Part II** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **No increase in representative actual annual emissions plus th PSD significant emission rate will occur as a result of the addition of the project.** | |

**Allowable Emissions** Allowable Emissions _____ of _____

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: | 4. Equivalent Allowable Emissions: lb/hour tons/year |
| 5. Method of Compliance: | |
| 6. Allowable Emissions Comment (Description of Operating Method): | |

**Allowable Emissions** Allowable Emissions _____ of _____

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: | 4. Equivalent Allowable Emissions: lb/hour tons/year |
| 5. Method of Compliance: | |
| 6. Allowable Emissions Comment (Description of Operating Method): | |

## F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

**(Optional for unregulated emissions units.)**

**Potential/Estimated Fugitive Emissions**

**Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.**

| | |
|---|---|
| 1. Pollutant Emitted: **CO** | 2. Total Percent Efficiency of Control: |
| 3. Potential Emissions: **728** lb/hour **3,188.6** tons/year | 4. Synthetically Limited? ☐ Yes ☒ No |
| 5. Range of Estimated Fugitive Emissions (as applicable): to tons/year | |
| 6. Emission Factor: **0.20 lb/MMBtu** Reference: **BACT See Part II** | 7. Emissions Method Code: **0** |
| 8.a. Baseline Actual Emissions (if Required): Tons/year | 8.b. Baseline 24-month Period: From: To: |
| 9.a. Potential Actual Emissions (if Required): Tons/year | 9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years |
| 10. Calculation of Emissions: **0.20 lb/mmBtu x 3,640 mmBtu/hr = 728.0 lb/hr** **728.0 lb/hr x 8,760 hr/yr ÷ 2,000 lb/ton = 3,188.6 ton/yr** | |
| 11. Pollutant Potential/Estimated Fugitive Emissions Comment: | |

## F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

**Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.**

**Allowable Emissions** Allowable Emissions 1 of 1

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: **0.20 lb/MMBtu** | 4. Equivalent Allowable Emissions: **728** lb/hour **3,188.6** tons/year |
| 5. Method of Compliance: | |
| 6. Allowable Emissions Comment (Description of Operating Method): | |

**Allowable Emissions** Allowable Emissions _____ of _____

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: | 4. Equivalent Allowable Emissions: lb/hour tons/year |
| 5. Method of Compliance: | |
| 6. Allowable Emissions Comment (Description of Operating Method): | |

**Allowable Emissions** Allowable Emissions _____ of _____

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: | 4. Equivalent Allowable Emissions: lb/hour tons/year |
| 5. Method of Compliance: | |
| 6. Allowable Emissions Comment (Description of Operating Method): | |

## G. VISIBLE EMISSIONS INFORMATION

**Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.**

**Visible Emissions Limitation:** Visible Emissions Limitation 1 of 2

| | |
|---|---|
| 1. Visible Emissions Subtype: **VE20** | 2. Basis for Allowable Opacity: ☒ Rule ☐ Other |
| 3. Allowable Opacity: Normal Conditions: **20** % Exceptional Conditions: **27** % Maximum Period of Excess Opacity Allowed: **6** min/hour | |
| 4. Method of Compliance: **Annual VE testing; EPA Method 9** | |
| 5. Visible Emissions Comment: **Title V Permit 1050004-016-AV** | |

**Visible Emissions Limitation:** Visible Emissions Limitation 2 of 2

| | |
|---|---|
| 1. Visible Emissions Subtype: **VE99** | 2. Basis for Allowable Opacity: ☒ Rule ☐ Other |
| 3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: **100** % Maximum Period of Excess Opacity Allowed: **60** min/hour | |
| 4. Method of Compliance: **None** | |
| 5. Visible Emissions Comment: **Excess VE emissions allowed under FDEP Rule 62-210.700(1) and 40 CFR 60.8(c), and 60.11(c) for 2 hours (120 minutes) per 24-hour period for startup, shutdown, and malfunction.** | |

## H. CONTINUOUS MONITOR INFORMATION

**Complete if this emissions unit is or would be subject to continuous monitoring.**

**Continuous Monitoring System:** Continuous Monitor _____ of _____

| | |
|---|---|
| 1. Parameter Code: **EM** | 2. Pollutant(s): **SO2** |
| 3. CMS Requirement: | ☒ Rule ☐ Other |
| 4. Monitor Information... Manufacturer: **Advanced Pollution Inst.** Model Number: **152** | Serial Number: **139/176 and 172/156** |
| 5. Installation Date: **09 Nov 1994** | 6. Performance Specification Test Date: |
| 7. Continuous Monitor Comment: **CEM required pursuant to 40 CFR Part 75, Title V Permit No. 1050004-016-AV.** | |

**Continuous Monitoring System:** Continuous Monitor **2** of **8**

| | |
|---|---|
| 1. Parameter Code: **EM** | 2. Pollutant(s): **NOx** |
| 3. CMS Requirement: | ☒ Rule ☐ Other |
| 4. Monitor Information... Manufacturer: **Advanced Pollution Inst.** Model Number: **252** | Serial Number: **165 and 136** |
| 5. Installation Date: **09 Nov 1994** | 6. Performance Specification Test Date: |
| 7. Continuous Monitor Comment: **CEM required pursuant to 40 CFR Part 75, Title V Permit No. 1050004-016-AV.** | |

## H. CONTINUOUS MONITOR INFORMATION

**Complete if this emissions unit is or would be subject to continuous monitoring.**

**Continuous Monitoring System:** Continuous Monitor **3** of **8**

| | |
|---|---|
| 1. Parameter Code: **VE** | 2. Pollutant(s): |
| 3. CMS Requirement: | ☒ Rule ☐ Other |
| 4. Monitor Information... Manufacturer: **United Science Inc.** Model Number: **500C** | Serial Number: **0993688** |
| 5. Installation Date: **09 Nov 1994** | 6. Performance Specification Test Date: |
| 7. Continuous Monitor Comment: **CEM required pursuant to 40 CFR Part 75 and Title V Permit No. 1050004-016-AV.** | |

**Continuous Monitoring System:** Continuous Monitor **4** of **8**

| | |
|---|---|
| 1. Parameter Code: **CO2** | 2. Pollutant(s): |
| 3. CMS Requirement: | ☒ Rule ☐ Other |
| 4. Monitor Information... Manufacturer: **California Instruments** Model Number: **3300** | Serial Number: **N3L2487T and N3L2490T** |
| 5. Installation Date: **09 Nov 1994** | 6. Performance Specification Test Date: |
| 7. Continuous Monitor Comment: **CEM required pursuant to 40 CFR Part 75.** | |

## H. CONTINUOUS MONITOR INFORMATION

**Complete if this emissions unit is or would be subject to continuous monitoring.**

**Continuous Monitoring System:** Continuous Monitor **5** of **8**

| | |
|---|---|
| 1. Parameter Code: **FLOW** | 2. Pollutant(s): |
| 3. CMS Requirement: | ☒ Rule ☐ Other |
| 4. Monitor Information... Manufacturer: **United Science Ultraflow** Model Number: **100** | Serial Number: **1001060** |
| 5. Installation Date: **10 Nov 1995** | 6. Performance Specification Test Date: |
| 7. Continuous Monitor Comment: **Flow monitor required pursuant to 40 CFR Part 75.** | |

**Continuous Monitoring System:** Continuous Monitor **6** of **8**

| | |
|---|---|
| 1. Parameter Code: **EM** | 2. Pollutant(s): **SO2** |
| 3. CMS Requirement: | ☒ Rule ☐ Other |
| 4. Monitor Information... Manufacturer: **Lear Siegler** Model Number: **SM 810** | Serial Number: **29259M** |
| 5. Installation Date: **17 Sep 1982** | 6. Performance Specification Test Date: |
| 7. Continuous Monitor Comment: **CEM required pursuant to 40 CFR 60.45.** | |

## H. CONTINUOUS MONITOR INFORMATION

**Complete if this emissions unit is or would be subject to continuous monitoring.**

**Continuous Monitoring System:** Continuous Monitor **7** of **8**

| | |
|---|---|
| 1. Parameter Code: **VE** | 2. Pollutant(s): |
| 3. CMS Requirement: | ☒ Rule ☐ Other |
| 4. Monitor Information... Manufacturer: **Lear Seigler** Model Number: **CM50** | Serial Number: **291230** |
| 5. Installation Date: **17 Sep 1982** | 6. Performance Specification Test Date: |
| 7. Continuous Monitor Comment: **COM required pursuant to 40 CFR 60.45.** | |

**Continuous Monitoring System:** Continuous Monitor **8** of **8**

| | |
|---|---|
| 1. Parameter Code: **O2** | 2. Pollutant(s): |
| 3. CMS Requirement: | ☒ Rule ☐ Other |
| 4. Monitor Information... Manufacturer: **Lear Siegler** Model Number: **RM41** | Serial Number: |
| 5. Installation Date: **17 Sep 1982** | 6. Performance Specification Test Date: |
| 7. Continuous Monitor Comment: **O2 required pursuant to 40 CFR 60.45.** | |

## I. EMISSIONS UNIT ADDITIONAL INFORMATION

**Additional Requirements for All Applications, Except as Otherwise Stated**

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **See Part II** ☐ Previously Submitted, Date _____

2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☒ Previously Submitted, Date _____

3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **See Part II** ☐ Previously Submitted, Date _____

4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____
   ☒ Not Applicable (construction application)

5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____
   ☒ Not Applicable

6. Compliance Demonstration Reports/Records
   ☐ Attached, Document ID: _____
   Test Date(s)/Pollutant(s) Tested: _____
   ☐ Previously Submitted, Date: _____
   Test Date(s)/Pollutant(s) Tested: _____
   ☐ To be Submitted, Date (if known): _____
   Test Date(s)/Pollutant(s) Tested: _____
   ☒ Not Applicable
   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute
   ☐ Attached, Document ID: _____ ☒ Not Applicable

## EMISSIONS UNIT INFORMATION
**Section [1]**
**UNIT No. 3**

**Additional Requirements for Air Construction Permit Applications**

| |
|---|
| 1. Control Technology Review and Analysis (Rules 62-212.400(6) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e))<br>☒ Attached, Document ID: **Part II** ☐ Not Applicable |
| 2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(5)(h)6., F.A.C., and Rule 62-212.500(4)(f), F.A.C.)<br>☒ Attached, Document ID: **Part II** ☐ Not Applicable |
| 3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only)<br>☐ Attached, Document ID: _____ ☒ Not Applicable |

**Additional Requirements for Title V Air Operation Permit Applications**

| |
|---|
| 1. Identification of Applicable Requirements<br>☐ Attached, Document ID: _____ ☐ Not Applicable |
| 2. Compliance Assurance Monitoring<br>☐ Attached, Document ID: _____ ☐ Not Applicable |
| 3. Alternative Methods of Operation<br>☐ Attached, Document ID: _____ ☐ Not Applicable |
| 4. Alternative Modes of Operation (Emissions Trading)<br>☐ Attached, Document ID: _____ ☐ Not Applicable |
| 5. Acid Rain Part Application<br>☐ Certificate of Representation (EPA Form No. 7610-1)<br>☐ Copy Attached, Document ID: _____<br>☐ Acid Rain Part (Form No. 62-210.900(1)(a))<br>☐ Attached, Document ID: _____<br>☐ Previously Submitted, Date: _____<br>☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)<br>☐ Attached, Document ID: _____<br>☐ Previously Submitted, Date: _____<br>☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.)<br>☐ Attached, Document ID: _____<br>☐ Previously Submitted, Date: _____<br>☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)<br>☐ Attached, Document ID: _____<br>☐ Previously Submitted, Date: _____<br>☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)<br>☐ Attached, Document ID: _____<br>☐ Previously Submitted, Date: _____<br>☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)<br>☐ Attached, Document ID: _____<br>☐ Previously Submitted, Date: _____<br>☒ Not Applicable |

**EMISSIONS UNIT INFORMATION**
**Section [1]**
**UNIT No. 3**

**Additional Requirements Comment**

# PART II

**TABLE OF CONTENTS**

# 1.0 INTRODUCTION

Lakeland Electric is seeking authorization from the Florida Department of Environmental Protection (FDEP) to install low-nitrogen oxides ($NO_x$) burners (LNB), overfire air (OFA), and selective catalytic reduction (SCR) in Unit 3 at the C.C. McIntosh, Jr. Power Plant (McIntosh Power Plant) to meet the requirements of the Environmental Protection Agency (EPA) Clean Air Interstate Rule (CAIR) as implemented by FDEP in Rule 62-296.470 Florida Administrative Code (FAC). In addition, the addition of SCR will have the co-benefits of reducing emissions of mercury to meet EPA's Clean Air Mercury Rule (CAMR) implemented by FDEP in Rule 62-296.480 FAC The primary purpose of the project will be to decrease ($NO_x$) emissions from Unit 3 to meet the annual and ozone season $NO_x$ CAIR allocations. While the addition of SCR will substantially decrease emissions of $NO_x$, there is the potential for collateral increases in emissions of carbon monoxide, sulfuric acid mist (SAM) and particulate matter (PM). The potential increase in carbon monoxide (CO) is a result of the installation of LNBs that would decrease $NO_x$ from current levels. The potential increase of SAM emissions is a result of the oxidation of sulfur dioxide ($SO_2$) to sulfur trioxide ($SO_3$) that is emitted as SAM after the flue gas desulfurization (FGD) system. Potential increases in SAM emissions will be minimized through the injection of ammonia ($NH_3$) to react with $SO_3$ prior to the electrostatic precipitator (ESP). The reactants, primarily ammonium sulfate, will be collected in the ESP. The potential increase in PM from the reaction of $NH_3$ and $SO_3$ will be collected in the ESP and FGD system. With the exception of CO, there will be no emissions over the prevention of significant deterioration (PSD) emission rates from the installation of LNBs and SCR.

The C. D. McIntosh Power Plant is located at 3030 East Lake Parker Drive, Lakeland, Polk County, Florida. The facility is authorized to operate under Title V Permit [Final Title V Permit No. 1050004-016-AV].

Golder Associates Inc. (Golder) was contracted to prepare the necessary air permit application seeking authorization to install LNBs, OFA, and SCR on Unit No. 3. The air permit application consists of the appropriate applications form [Part I; DEP Form 62-210.900(1)], a technical description of the project (Part II Section 2.0), rule applicability for the project (Part II, Section 3.0) and a PSD evaluation for CO (Part II Section 4.0).

# 2.0 PROJECT DESCRIPTION

LNBs and SCR have been selected as the control systems to meet the $NO_x$ CAIR for Unit 3. The LNB will be supplied by Siemens Power Group, Inc. (SPG). The system will include new LNBs and OFA equipment. Advanced Burner Technologies, Inc. (ABT) is a wholly owned subsidiary of SPG, and will be providing the design, fabrication, delivery, and field testing services for the new LNB system. The following major components are part of the LNB system and will be installed at Unit 3 in April 2007:

- 32 complete new Opti-Flow™ low $NO_x$ burner assemblies, with features to accommodate the existing igniter and flame scanner assemblies. These will be installed in the existing burner locations on both the front and rear furnace walls.
- Complete new OFA system including new OFA windboxes mounted on the boiler front and rear walls. Interconnecting ductwork to the existing secondary air ducts will be required.
- 8 complete new OFA register assemblies, 4 each to be located within the new front and rear OFA windboxes.
- Computational Fluid Dynamic (CFD) modeling of the existing secondary air and newly supplied OFA system.
- Testing and Field Advisory Services.

Average $NO_x$ emissions levels are expected to be in the 0.30 lb/MMBtu range following the installation of the LNB and OFA system. Average CO emission levels are not expected to exceed 200 parts per million (ppm). VOC emission levels and particulate levels are not expected to change from current emission levels following the installation of the new LNB and OFA system.

The SCR system is designed to work in conjunction with the new LNB and OFA system that will be added to the boiler to maintain stack NOx emissions levels at or below 0.10 pounds per million British thermal units (lb/MMBtu) on an annual average.

## 2.1 SCR Process

The SCR system uses an $NH_3$ reagent over a vanadium/titanium based catalyst to convert $NO_x$ (NO and $NO_2$) to elemental nitrogen ($N_2$) and water ($H_2O$). The chemical reactions that take place are as follows:

Primary Reaction: $4NO + 4NH_3 + O_2 \rightarrow 4N2 + 6H_2O$

Secondary Reactions: $2NO_2 + 4NH_3 + O_2 \rightarrow 3N2 + 6H_2O$

$6NO + 4NH_3 \rightarrow 5N2 + 6H2O$

$6NO_2 + 8NH_3 \rightarrow 7N_2 + 12H_2O$

$NO + NO_2 + 2NH_3 \rightarrow 2N_2 + 2H_2O$

$NO_x$ from coal combustion is about 95 percent NO and 5 percent $NO_2$, so the primary reaction is the most significant for the SCR process. This reaction indicates that one mole of $NH_3$ is required to remove one mole of NO. The function of the catalyst is to lower the required activation energy for the reaction and to increase the reaction rate. As flue gas passes over the catalyst surface, activated sites rapidly adsorb $NH_3$ and NO to form an activated complex. The reaction proceeds to produce nitrogen ($N_2$) and water ($H_2O$), which are then desorbed back to the flue gas. The site at which the reaction occurs is then reactivated via oxidation.

SCR is a process that uses catalyst to promote the conversion of nitrogen oxides ($NO_x$) to $N_2$ and $H_2O$ in the flue gas. This conversion occurs between the boiler economizer and the air heaters in a specially designed ductwork section, called the SCR reactor that contains the catalyst. $NH_3$ vapor, mixed with dilution air, is injected into the flue gas upstream of the catalyst and is thoroughly mixed with the flue gas prior to its admittance to the catalyst. As the flue gas passes over the catalyst, the NO and $NO_2$ combine with the $NH_3$ to form $N_2$ and $H_2O$.

Unit 3 will have two SCR reactors. Each SCR reactor will consist of a steel reactor box designed to support the SCR catalyst modules and to properly distribute flue gas through the catalyst layers. Flue gas flow will be vertically downward through the catalyst to minimize ash pluggage. Flue gas ductwork will be provided from the economizer outlet to the air heater inlet (including an SCR bypass duct and associated dampers). The SCR inlet duct will include a static flue gas mixer, and $NH_3$ injection grid.

Figure 2-1 presents a schematic flow diagram of the SCR system showing the inlet duct from the economizer, the $NH_3$ injection grid and SCR catalyst. A photograph of the existing Unit 3 boiler showing the air heaters and ESP is shown in Figure 2-2. The general arrangement of the SCR system is illustrated in Figure 2-3.

## 2.2 $NH_3$ System

$NH_3$ is introduced in the SCR as a mixture of anhydrous $NH_3$ and air. The air/$NH_3$ vapor mixture (typically 5 percent $NH_3$ by volume) is produced in $NH_3$ vaporization equipment and supplied to the $NH_3$ injection grid header. The air/$NH_3$ vapor mixture is distributed across the entire duct cross section using the $NH_3$ injection grid (AIG). The AIG consists of a series of pipes, each with nozzles that inject the mixture into a particular section of the SCR reactor inlet duct. The pipes will extend the entire width of the ductwork and contain a sufficient number of nozzles with orifices sized for the particular $NH_3$ distribution requirement. If necessary, as determined by the physical flow model test of the SCR reactor and associated ductwork, a static mixer may be required upstream of the $NH_3$ injection grid to help reduce the stratification of temperature and chemical composition of the flue gas flow out of the economizers.

Anhydrous $NH_3$ will be delivered to the site by tank truck and unloaded into one of two bulk storage tanks (each with the storage capacity of ~75 tons). Liquid anhydrous $NH_3$ will be transferred from the storage tanks to $NH_3$ vaporizers. After vaporization, the $NH_3$ gas will be mixed with ambient air and distributed into the flue gas through ammonia injection grids located upstream of the reactor.

## 2.3 SCR Catalyst Details

The catalyst used for $NO_x$ reduction primarily consists of a vanadium and titanium (Ti) mixture. However, the final catalyst composition can consist of many active metals and support materials. Titanium dioxide ($TiO_2$) is used as the base material that disperses and supports vanadium pentoxide ($V_2O_5$), which is the active catalyst material. $V_2O_5$ is widely used in the SCR industry due to its resistance to sulfur poisoning. The vanadium content controls the reactivity of the catalyst, but also catalyzes the oxidation of $SO_2$ to $SO_3$. For moderate to high sulfur coal applications, it is necessary to minimize the vanadium content to reduce $SO_2$ oxidation. Additionally, the vanadium already present in the petcoke fuel will deposit on the catalyst, potentially increasing the oxidation of $SO_2$ to $SO_3$. Tungsten oxide also provides thermal and mechanical stability to the catalyst. The concentrations of vanadium pentoxide, titanium dioxide, and tungsten oxide will be customized by the catalyst vendor to meet the specific requirements for Unit 3 SCR system installation. The catalyst will be made up of several identical catalyst modules that will be loaded into the SCR reactor.

## 2.4 SCR Cleaning and Replacement Schedule

Each SCR reactor will include sonic horns to keep the catalyst free of fly ash buildup. Provisions for catalyst loading into the reactors will be included. The SCR reactors will be designed for three initial

layers of catalyst and a spare level for a future additional layer of catalyst. The catalyst replacement schedule will be determined as data are collected and reviewed once the SCR system is in operation.

## 2.5 Schedule

The SCR project is currently scheduled for operation in December 2008. Initial foundation construction is scheduled for the third quarter of 2007. Some small existing equipment at grade is planned for relocation during the Spring 2007 outage to allow future construction space for constructing the SCR foundation.

The conceptual SCR system design characteristics are listed below:

- Baseline $NO_x$ Loading: 0.36 lb/MMBtu (after installation of LNB, 0.36lb/MMbtu is the SCR Design basis and is calculated at 20% over 0.30lb/MMbtu←LNB guarantee)
- Target $NO_x$ Emissions: 0.10 lb/MMBtu (annual average)
- $NH_3$ Slip: 2 ppm volume dry (vd) at 4 percent $O_2$
- $SO_2$ to $SO_3$ Conversion: 0.8 percent
- Catalyst Type: High Dust
- Catalyst Configuration: Vertical
- Number of Reactors : 2
- Number of Initial Catalyst Layers (Per Reactor): 3
- Number of Spare Layers (Per Reactor): 1
- Modules Per Layer (Per Reactor): 9 x 5
- Reactor Dimensions (Inside x Inside)" 34'- 3" x 30'- 3"
- Full Load Gas Flow: 1,730,060 actual cubic feet per meter (acfm) at SCR inlet
- Normal Operating Temperature 640° F
- Superficial Velocity Through Catalyst: 15 to 16 feet per second (ft/sec)
- Pressure Drop Through Box and Ductwork: 10.0 inches (w.c.)
- $NH_3$ Consumption at Design Conditions: 415 pounds per hour (lb/hr)
- Reagent ($NH_3$) Storage Required: 2 x 30,000 gallons = ~ 2 x 75 tons at 60°F

**TABLE 2-1**
**MCINTOSH UNIT 3 ANNUAL HEAT INPUT, 2002 - 2005**

| Year | Heat Input (MMBtu/yr) | | | | |
|---|---|---|---|---|---|
| | Coal | Oil/Gas | Pet Coke | MSW | Total |
| 2005 | 24,739,432 | 88,531 | 2,202,682 | 0 | 27,030,645 |
| 2004 | 18,727,073 | 149,795 | 398,533 | 0 | 19,275,401 |
| 2003 | 23,556,583 | 170,380 | 541,898 | 62,413 | 24,331,274 |
| 2002 | 19,914,927 | 284,194 | 3,012,015 | 135,529 | 23,346,665 |
| 2001 | 22,521,423 | 480 | 3,868,418 | 261,180 | 26,651,502 |

Note: Heat Input calculated from Annual Operating Reports based on fuel use and heat content.

**TABLE 2-2**
**MCINTOSH UNIT 3 ANNUAL EMISSIONS REPORTED IN ANNUAL OPERATING REPORTS, 1999 - 2003**

| Year | Pollutant | Unit 3 (tons) |
|---|---|---|
| **2005** | CO | 136.1 |
| | PM | 264.6 |
| | SAM | 147.3 |
| **2004** | CO | 93.1 |
| | PM | 302.1 |
| | SAM | 103.9 |
| **2003** | CO | 129.5 |
| | PM | 486.0 |
| | SAM | 131.1 |
| **2002** | CO | 157.4 |
| | PM | 390.1 |
| | SAM | 125.6 |
| **2001** | CO | 195.7 |
| | PM | 266.5 |
| | SAM | 145.6 |

Note: Data from Annual Operating Reports.

FIGURE 2-1

PROCESS FLOW DIAGRAM

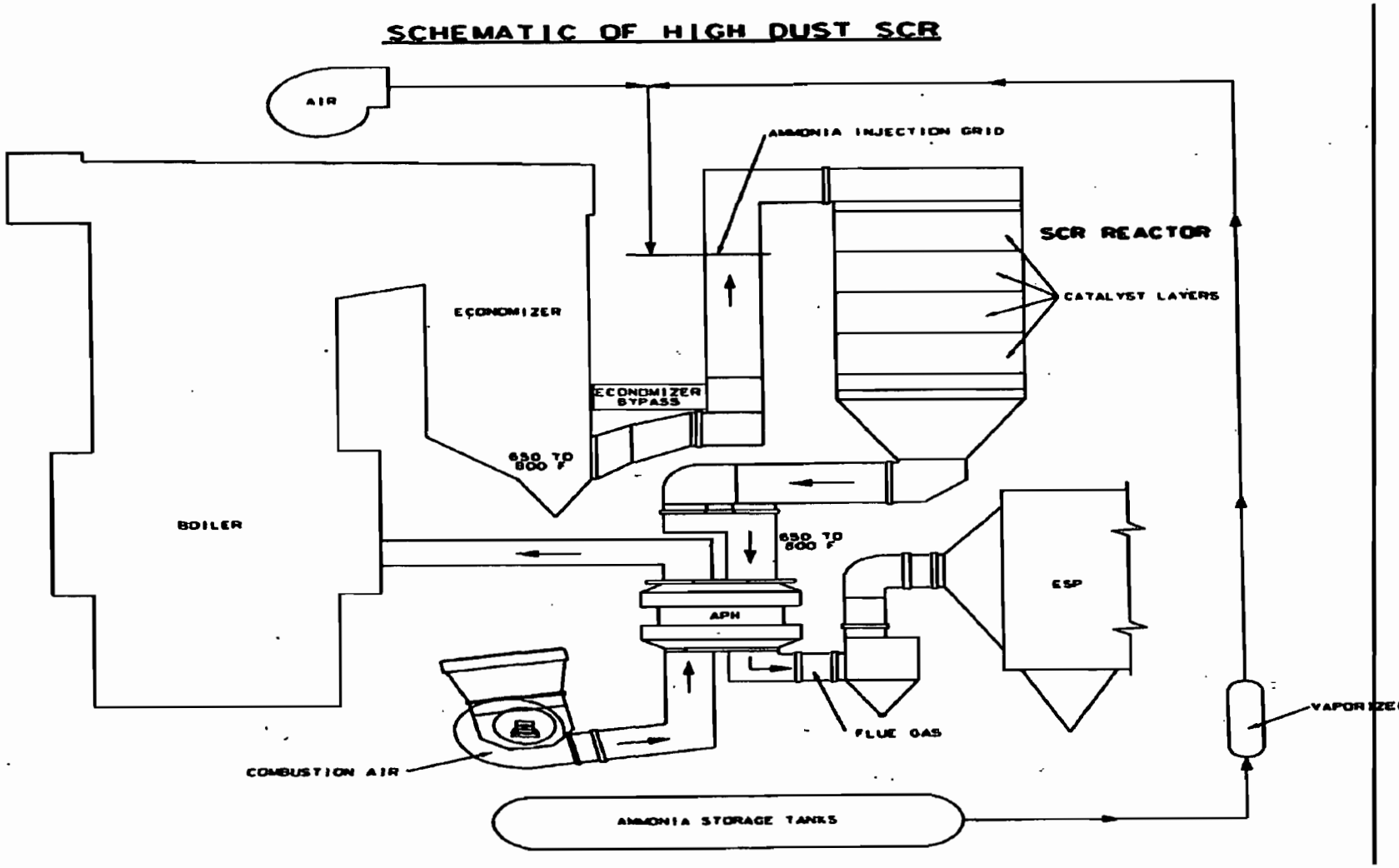


FIGURE 2-2

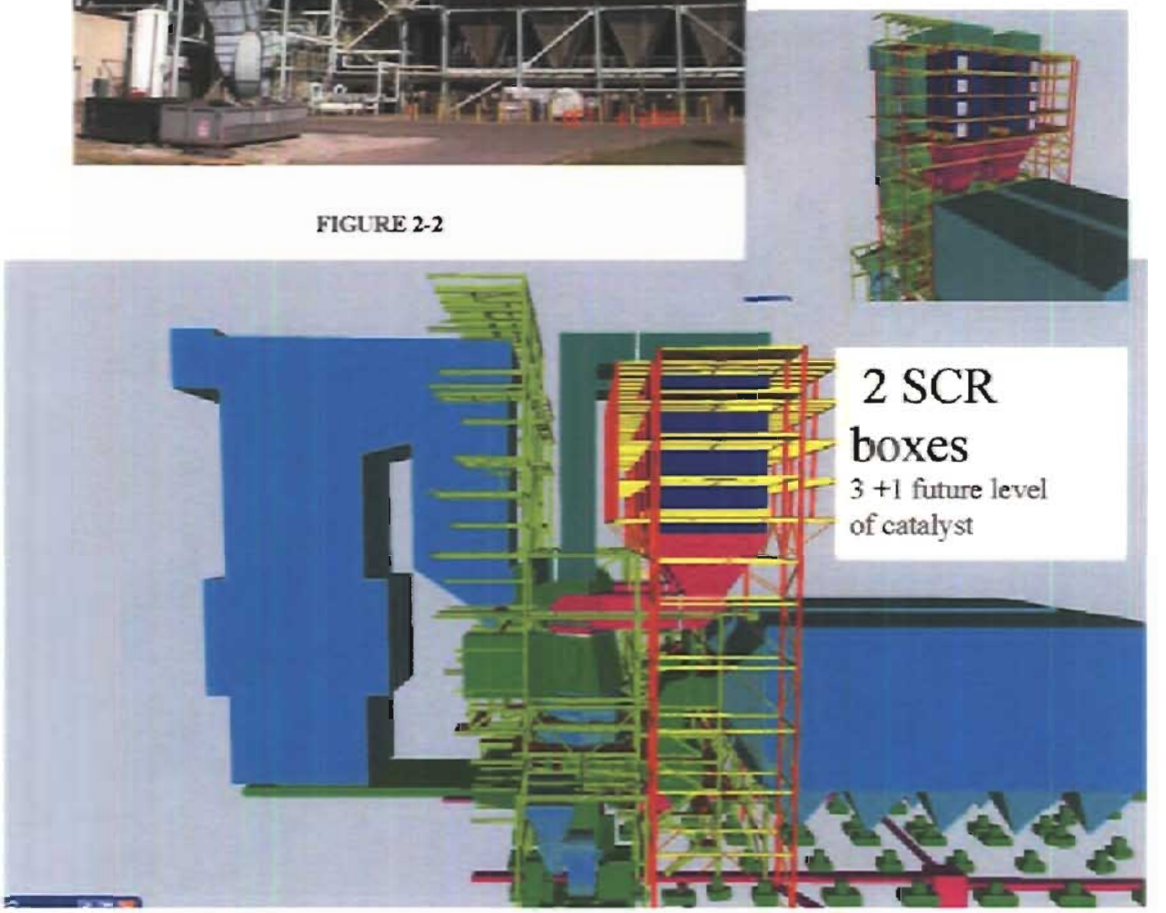


FIGURE 2-3 –SCR General Arrangement

| BUILDING AND FACILITIES LEGEND | |
|---|---|
| NO | DESCRIPTION |
| 01 | ADMINISTRATIVE OFFICES |
| 02 | TECHNICAL SERVICES |
| 03 | MAIN LABORATORY |
| 04 | MAINTENANCE SHOP |
| 05 | INSTRUMENT SHOP |
| 06 | POWER ISLAND CONTROL CENTER |
| 07 | WATER OPERATIONS OFFICES |
| 08 | WELDING SHOP |
| 09 | RESOURCE TRAINING CENTER |
| 10 | PAINT SHOP |
| 11 | PLANT EQUIPMENT OPERATIONS OFFICES |
| 12 | UNIT 3 DEMINERALIZER BUILDING |
| 13 | CONDENSATE POLISHER BUILDING |
| 14 | DIESEL PEAKER NO. 2 |
| 15 | DIESEL PEAKER NO. 3 |
| 16 | GAS TURBINE PEAKER NO. 1 |
| 17 | MAIN GUARD HOUSE |
| 18 | PROCESS WATER TREATMENT SYSTEM (P.W.T.S.) |
| 19 | PROCESS WATER PONDS |
| 20 | UNIT 3 COOLING TOWER – CELLS 1 THRU 13 |
| 21 | UNIT 3 COOLING TOWER – CELLS 14 AND 15 |
| 22 | FUEL OIL TANK FARM |
| 23 | WASTER WATER TREATMENT FACILITY |
| 24 | 230KV SWITCHYARD |
| 25 | 69KV SWITCHYARD |
| 26 | ELECTROSTATIC PRECIPITATOR |
| 27 | FLUE GAS DESULFURIZATION SYSTEM |
| 28 | UNIT NO. 2 BOILER |
| 29 | UNIT NO. 1 BOILER |
| 30 | UNIT NO. 3 BOILER |
| 31 | UNIT 3 COOLING TOWER |
| 32 | WAREHOUSE AND STORES |
| 33 | C.S.U. FACILITY |
| 34 | REFUSE DERIVED FUEL (RDF) PROCESSING FACILITY |
| 35 | E. LAKE PARKER DRIVE |
| 36 | MAIN PLANT ACCESS ROAD FROM NORTH COMBEE ROAD |
| 37 | DEAD COAL STORAGE |
| 38 | STORMWATER RETENTION POND |
| 39 | UNIT 5 CONTROL BUILDING |
| 40 | TENOROC SUBSTATION |
| 41 | UNIT 5 COOLING TOWER |
| 42 | UNIT 5 CONTRACTOR PARKING |
| 43 | UNIT 5 WAREHOUSE |
| 44 | SCR AMMONIA STORAGE FACILITY |
| 45 | SELECTIVE CATALYTIC REACTOR (SCR) UNIT |
| 46 | AMMONIA PIPING LOCATED ON EXISTING PIPERACKS |
| 47 | EXISTING UNIT 5 AMMONIA BULLET |

| REV. NO. | DRN. BY | DATE | CHK. BY | APPR. | REVISION |
|---|---|---|---|---|---|
| | | | | | |

DRAWING TITLE: McINTOSH POWER PLANT OVERALL SITE PLAN

DIVISION: PRODUCTION ENGINEERING
ENGINEER: MILLER
DRN. BY: MDIEGER
APPR. BY:
DATE: 09-26-01

PROJ. NO.:
PLOT DATE: 09-26-01
DWG. NO.: SK-1

SCALE: NONE
CAD NO.: stateplane
SHT. NO.: 1 OF 1
REV.: 1

SIZE B

## 3.0 RULE APPLICABILITY

Under Federal and State of Florida PSD review requirements, all major new or modified sources of air pollutants regulated under the Clean Air Act (CAA) must be reviewed and a pre-construction permit issued. EPA has approved Florida's State Implementation Plan (SIP), which contains PSD regulations. Therefore, PSD approval authority has been granted to the FDEP. For projects approved under the Florida PPSA, the PSD program is delegated.

A "major facility" is defined as any 1 of 28 named source categories that have the potential to emit 100 tons per year (TPY) or more, or any other stationary facility that has the potential to emit 250 TPY or more of any pollutant regulated under CAA. "Potential to emit" means the capability, at maximum design capacity, to emit a pollutant after the application of control equipment. Once a new source is determined to be a "major facility" for a particular pollutant, any pollutant emitted in amounts greater than the PSD significant emission rates is subject to PSD review. For an existing source for which a modification is proposed, the modification is subject to PSD review if the net increase in emissions due to the modification is greater than the PSD significant emission rates.

PSD review is used to determine whether significant air quality deterioration will result from the new or modified facility. Federal PSD requirements are contained in 40 Code of Federal Regulations (CFR) 52.21, *Prevention of Significant Deterioration of Air Quality*. The State of Florida has adopted the federal PSD regulations by reference (Rule 62-212.400, FAC). Major facilities and major modifications are required to undergo the following analysis related to PSD for each pollutant emitted in significant amounts:

- Control technology review;
- Source impact analysis;
- Air quality analysis (monitoring);
- Source information; and
- Additional impact analyses.

The McIntosh Power Plant is a major facility under FDEP Rules. Because there is a physical change with the addition of LNB, OFA, and SCR and the pollution control exemption in the PSD rules have been vacated, the project is a potential modification as defined in the FDEP Rules in 62-210.200 and under the PSD rules in 62-212.400, FAC. PSD review would be required for the project if there were a significant net increase in emissions. The comparison is made based on the projected future actual

emissions and the baseline actual emissions. The baseline actual emissions for a fossil fuel fired steam electric generating unit are the emissions over a consecutive 24-month period, 5 years immediately preceding the date that a complete application is submitted. The use of different consecutive 24-month periods for each pollutant are allowed. For an existing facility for which a modification is proposed, the modification is subject to PSD review if the net increase in emissions due to the modification is greater than the PSD significant emission rates. The net emissions increase is determined using the baseline-to-projected actual test. In this comparison, if the projected actual emissions minus the baseline actual emissions equal or exceed the PSD significant emission rates, then PSD review would apply.

Presented in Table 3-1 is the heat input reported in the Annual Operating Report (AOR) for the period 2001 through 2005. Table 3-2 presents the annual emissions reported in the AORs for the years 2001 through 2005 for CO, PM and SAM. Table 3-2 also presents the average calendar year emissions for each consecutive 2-year period from 2001 through 2005 based on the average calendar year emissions. The use of calendar year dates from the AOR is representative of historic normal operation. The annual average emissions for each consecutive 2-year period are consistent with the definition of baseline actual emissions for fossil fuel fired steam electric generating units. The highest two consecutive 2-year averages in Table 3-2 for the period 2001-2002 are proposed as the basis for future comparisons for CO and SAM emissions and 2003-2002 for PM emissions. Years 2001-2002 also have the highest 2-year average heat input.

Boiler Unit No. 3 operates as a base-load unit, but, for any given year, operation can vary slightly due to electric demand and operational variability due to outages and maintenance. Due to this slight variability, two consecutive years out of the last 5 years are appropriate for any future comparisons.

The proposed conditions for the installation of the LNB/SCR/OFA system with $NH_3$ control for SAM emissions are presented below:

SCR Systems: The permittee shall construct, tune, operate, and maintain a new LNB, OFA, and SCR system for Units No. 3 to reduce emissions of $NO_x$ as described in the application and the control system shall be operated as necessary to comply with CAIR at Lakeland Electric's discretion.

The applicant shall maintain and submit to the FDEP on an annual basis for a period of 5 years from the date the SCR systems are initially operated, information demonstrating in accordance with 62-212.300(1)(e) F.A.C. that the installation of LNB, OFA and SCR did not result in emission

increases of PM and SAM. The future emissions shall be compared with the baseline actual emissions for the period 2002-2001 for SAM and 2003-2002 for PM as reported in the AORs using EPA Method 5B for PM and Method 8A (controlled condensate) for SAM.

**TABLE 3-1**
**MCINTOSH UNIT 3 ANNUAL HEAT INPUT, 2001-2005**

| Year | Heat Input (MMBtu/yr) | | | | |
|---|---|---|---|---|---|
| | Coal | Oil/Gas | Pet Coke | MSW | Total |
| 2005 | 24,739,432 | 88,531 | 2,202,682 | 0 | 27,030,645 |
| 2004 | 18,727,073 | 149,795 | 398,533 | 0 | 19,275,401 |
| 2003 | 23,556,583 | 170,380 | 541,898 | 62,413 | 24,331,274 |
| 2002 | 19,914,927 | 284,194 | 3,012,015 | 135,529 | 23,346,665 |
| 2001 | 22,521,423 | 480 | 3,868,418 | 261,180 | 26,651,502 |

Note: Heat Input calculated from Annual Operating Reports based on fuel use and heat content.

**TABLE 3-2**
**MCINTOSH UNIT 3 ANNUAL EMISSIONS REPORTED IN AORS, 2001-2005**

| Year | Pollutant | Unit 3 (tons) | 2-year Average (tons) | 2-year Average (period) |
|---|---|---|---|---|
| **2005** | CO | 136.1 | 114.6 | 2005-2004 |
| | PM | 264.6 | 283.3 | |
| | SAM | 147.3 | 125.6 | |
| **2004** | CO | 93.1 | 111.3 | 2004-2003 |
| | PM | 302.1 | 394.1 | |
| | SAM | 103.9 | 117.5 | |
| **2003** | CO | 129.5 | 143.5 | 2003-2002 |
| | PM | 486.0 | **438.1** | |
| | SAM | 131.1 | 128.3 | |
| **2002** | CO | 157.4 | **176.6** | 2002-2001 |
| | PM | 390.1 | 328.3 | |
| | SAM | 125.6 | ***135.6*** | |
| **2001** | CO | 195.7 | - | - |
| | PM | 266.5 | | |
| | SAM | 145.6 | | |

Note: Data from Annual Operating Reports. Highest 2-year averages indicated in bold format.

# 4.0 PSD EVALUATION FOR CO

The Project is considered a modification under PSD regulation. A modification under PSD rules would occur if a physical or operational change causes an increase in annual emissions by more than the PSD significant emission rates. The comparison is made based on the projected future actual emissions and the baseline actual emissions. The baseline actual emissions are the emissions over a consecutive 24-month period, 5 years immediately preceeding the date that a complete application and the use of different consecutive 24-month periods for each pollutant are allowed.

For an existing source for which a modification is proposed, the modification is subject to PSD review if the net increase in emissions due to the modification is greater than the PSD significant emission rates. The net emissions increase is determined using the baseline-to-projected actual test. In this comparison, if the projected actual emissions minus the baseline actual emissions equal or exceed the PSD significant emission rates, then PSD review would apply. For the Project, the emissions of CO are projected to exceed the significant emission rate.

## 4.1 CO BACT Evaluation

There are no applicable new source performance standards (NSPS) requirements for the control of CO from utility boilers. CO emissions result from incomplete combustion of the fuel. CO emissions are controlled by good combustion practices (GCP). The boilers are currently operated for high-combustion efficiency, which will inherently minimize the production of CO. After the implementation of the project, the operation of the boilers will continue to maximize combustion efficiency while reducing CO emissions.

Theoretically, CO emissions can be reduced by passing the flue gas over an oxidation catalyst at a suitable temperature (900 to 1,000°F). In practice, this technology has several unknowns and disadvantages, including the following:

1. No utility pulverized coal-fired boilers are operating with catalytic CO control systems and it would be difficult to locate an oxidation catalyst in the proper temperature zone in a boiler.
2. Oxidation catalyst can convert up to 70 percent of $SO_2$ to $SO_3$.
3. There is a lack of experience with large-scale operation of this technology using particulate-laden gases from coal-fired boilers. Oxidation catalysts can be easily eroded and fouled by silica and trace metals in the flue gas.

4. The temperature profile of the flue gas does not match the temperature requirements of typical catalysts which would have to be installed within the boiler make such application extremely difficult.

   a. Use of an undemonstrated catalyst technology would reduce the availability and reliability of the plant (e.g., catalyst plugging).

   b. The high costs to install and operate the system (additional pressure drop, catalyst replacement and disposal, etc.) are without corresponding demonstrated needs or benefits. Design and operation of the boilers to efficiently combust the fuel will minimize CO emissions. The additional costs to further lower emissions are not justified.

A review of the BACT/LAER (best available control technology/lowest achievable emission rate) Clearing house and individual permits from states indicates that BACT emission limits established over the last 5 years range from 0.1 to 0.16 lb/MMBtu for new units. Combustion control is the primary method used to control CO emissions.

Efficiently burning the coal represents BACT for control of CO emissions although Unit 3 is not a new unit. A CO emission rate for the existing Unit 3 pulverized coal boiler of 0.20 lb/MMBtu limit is proposed as BACT. Although recently permitted projects have lower limits the project does not include the construction of a new boiler, but the addition of new burners, OFA and SCR. CO formation is a function of combustion efficiency, boiler design, and residence time and as such the BACT limits of new construction boilers are not directly applicable to the project. As an existing boiler the proposed limit of 0.20 lb/MMBtu limit is proposed as BACT. In addition, air quality impacts of the proposed power plant are not significant.

**TABLE 4-1**
**REPRESENTATIVE PROJECT COMPARISONS FOR RECENTLY PERMITTED PROJECTS**

| Project | Date | Status | Plant Size MW | Type |
|---|---|---|---|---|
| Seminole Electric Unit 3 - Flroida | Aug-06 | Draft Permit | 750 | SCPC |
| Thoroughbred - Kentucky | May-06 (Revision) | Final Permit | 1,500 | PC |
| Louisville Gas & Electric - Kentucky | Jan-06 (Revision) | Final Permit | 750 | SCPC |
| River Hill Power - Pennsylvania | July - 05 | Final Permit | 290 | CFB -Waste Coal |
| Prairie State-Illinois | Apr-05 | Final Permit | 1,500 | PC |
| Elm Road-Wisconsin | Jan-04 | Final Permit | 1,830 | SCPC |
| Longview-West Virginia | Mar-04 | Final Permit | 600 | PC |
| City Public Service-Texas | Sep-05 | Draft Permit | 750 | PC |
| Public Service of Colorado | Jul-05 | Final Permit | 1,410 | PC |
| Public Service Corp Wausau - Wisconsin | Oct-04 | Final Permit | 500 | SCPC |
| NRG Energy - Louisiana | Aug-05 | Final Permit | 675 | SCPC |
| Southwest Springfield - Missouri | Dec-04 | Final Permit | 275 | PC |
| Omaha Public Power - Nebraska | March-05 | Final Permit | 660 | PC |
| Municipal Energy Hastings - Nebraska | March-04 | Final Permit | 220 | PC |
| Xcel Energy - Colorodo | July-05 | Final Permit | 750 | SCPC |
| Bull Mountain - Montana | July-03 | Final Permit | 780 | PC |
| Intermountain Power Service - Utah | Oct-04 | Final Permit | 950 | PC |
| NEVCO Energy - Utah | Oct-04 | Final Permit | 270 | CFB |
| Springerville Generating Station Units 3 and 4 - Arizona | April-02 | Final Permit | 800 | PC |
| TS Power Plant - Nevada | May-05 | Final Permit | 200 | PC |
| Indeck-Elwood LLC - Illinois | Oct-03 | Final Permit | 660 | two CFB |
| JEA Northside - Florida | May-99 | Final Permit | 595 | CFB |
| MidAmerican Energy - Iowa | Jun-03 | Final Permit | 765 | SCPC |
| Sante Cooper - South Carolina | Feb-04 | Final Permit | 1320 | two CFB |
| Montana Dakota Utilities - North Dakota | Jun-05 | Final Permit | 220 | PC |
| Newmont - Nevada | May-05 | Final Permit | 200 | PC |
| Sand Sage - Kansas | Oct-02 | Final Permit | 660 | PC |
| KCP&L - Missouri | Jan-06 | Final Permit | 930 | PC |

**TABLE 4-2**
**COMPARISON OF CO AND VOCS EMISSIONS FROM RECENTLY PERMITTED PROJECTS**

| Project | Plant Size MW | Heat Input MMBtu/hr | Controlled CO lb/MMBtu | CO lb/MW-hr | Comments |
|---|---|---|---|---|---|
| Seminole Electric Unit 3 - Flroida | 750 | 7,500 | 0.13<br>0.15 | 1.30<br>1.50 | Coal Only, Combustion Controls<br>30-day Average All Fuels |
| Thoroughbred - Kentucky | 1,500 | 14,886 | 0.1 | 0.99 | Combustion Controls |
| Louisville Gas & Electric - Kentucky | 750 | 6,942 | 0.1/0.5 | 0.93/4.6 | CO 30-day/3-hour average, VOC 3-hr Average, Combustion Controls |
| River Hill Power - Pennsylvania | 290 | NA | 0.2 | NA | >70% Load, Combustion Controls |
| Prairie State-Illinois | 1,500 | 14,900 | 0.12 | 1.19 | Combustion Controls |
| Elm Road-Wisconsin | 1,230 | 12,360 | 0.12 | 1.21 | Combustion Controls |
| Longview-West Virginia | 600 | 6,114 | 0.11 | 1.12 | Combustion Controls |
| City Public Service-Texas | 750 | 8,000 | 0.15 | 1.60 | Combustion Controls |
| Public Service of Colorado | 750 | 7,421 | 0.13 | 1.29 | Combustion Controls |
| Public Service Corp Wausau - Wisconsin | 500 | 5176 | 0.15 | 1.55 | Combustion Controls |
| NRG Energy - Louisiana | 675 | 6566 | 0.135 | 1.31 | Combustion Controls |
| Southwest Springfield - Missouri | 275 | 2725 | 0.16 | 1.59 | Combustion Controls |
| Omaha Public Power - Nebraska | 660 | NA | 0.16 | NA | Combustion Controls |
| Municipal Energy Hastings - Nebraska | 220 | 2210.5 | 0.15 | 1.51 | Combustion Controls |
| Xcel Energy - Colorodo | 750 | 7421 | 0.13 | 1.29 | Combustion Controls |
| Bull Mountain - Montana | 780 | 8026 | 0.15 | 1.54 | Combustion Controls |
| Intermountain Power Service - Utah | 950 | 9050 | 0.15 | 1.43 | Combustion Controls |
| NEVCO Energy - Utah | 270 | 2531.5 | 0.115 | 1.08 | Combustion Controls |
| Springerville Generating Station Units 3 and 4 - Arizona | 800 | 8400 | 0.15 | 1.58 | VOC limit = 0.06 lb/ton coal combusted, Combustion Controls |
| TS Power Plant - Nevada | 200 | 2030 | 0.15 | 1.52 | Combustion Controls |
| Indeck-Elwood LLC - Illinois | 660 | 5800 | 0.11 | 0.97 | Combustion Controls |
| JEA Northside - Florida | 595 | 5528 | - | - | CO = 350 lb/hr, 24-hr block average, VOC = 14 lb/hr, Combustion Controls |
| MidAmerican Energy - Iowa | 765 | - | 0.154 | - | Combustion Controls |
| Sante Cooper - South Carolina | 1320 | 11,100 | 0.16 | 1.35 | units 2, 3 and 4 |
| Montana Dakota Utilities - North Dakota | 220 | 2,116 | 0.154 | 1.48 | 3-hr average |
| Newmont - Nevada | 200 | 2,030 | 0.15 | 1.52 | 24-hr rolling |
| Sand Sage - Kansas | 660 | 6,501 | 0.15 | 1.48 | Combustion Controls |
| KCP&L - Missouri | 930 | 7,800 | 0.16 | 1.34 | Combustion Controls |

# 5.0 AIR QUALITY IMPACT ANALYSIS METHODOLOGY

## 5.1 Significant Impact Analysis

A significant impact analysis was performed to determine the maximum air quality impacts of the proposed project's CO emission increase. The highest predicted 8-hour and 1-hour CO concentrations were compared to the EPA significant impact levels for CO. If the maximum air quality impacts exceed the significant impact levels, than a detailed cumulative source analysis needs to be performed to demonstrate compliance with the CO ambient air quality standards (AAQS).

### 5.1.1 AAQS Analysis

In general, when 5 years of meteorological data are used, the highest annual and the highest-second-highest (H2H) short-term concentrations are compared to the applicable CO AAQS. The H2H short-term concentration is calculated for a receptor field by:

1. Eliminating the highest concentration predicted at each receptor,
2. Identifying the second-highest concentration at each receptor, and
3. Selecting the highest concentration among these second-highest concentrations.

This approach is consistent with most air quality standards which permit a short-term average concentration to be exceeded once per year at each receptor.

For the AAQS analysis, the future emissions of the McIntosh Power Plant are to be modeled along with background CO emission facilities. The total air quality concentration is estimated by adding the maximum concentrations from all modeled sources to a non-modeled background concentration. The maximum total air quality concentrations are then compared to the AAQS.

### 5.1.2 Model Selection

The selection of an air quality model to predict air quality impacts for the proposed project was based on the ability of the model to simulate impacts in the area surrounding the proposed project. The American Meteorological Society and EPA Regulatory Model (AERMOD, Version 04300) was selected for this analysis. The AERMOD dispersion model is available on the EPA's Internet web site, Support Center for Regulatory Air Models (SCRAM), within the Technical Transfer Network (TTN). A listing of the AERMOD model features is presented in Table 3-1.

On November 9, 2005, the EPA implemented AERMOD into its Guideline of Air Quality Models (Appendix W to 40 CFR Part 51) as the recommended model for regulatory modeling applications.

The FDEP is allowing the use of AERMOD for air permitting projects as a replacement for the Industrial Source Complex Short-Term Model (ISCST3) which will no longer be in effect as of December 2006.

The EPA and FDEP recommend that the AERMOD model be used to predict pollutant concentrations at receptors located within 50 km from a source. The AERMOD model calculates hourly concentrations based on hourly meteorological data. The AERMOD model is applicable for most applications since it is recognized as containing the latest scientific algorithms for simulating plume behavior in all types of terrain. For evaluating plume behavior within the building wake of structures, the AERMOD model incorporates the Plume Rise Model Enhancement (PRIME) downwash algorithm developed by the Electric Power Research Institute (EPRI). AERMOD can predict pollutant concentrations for averaging times of annual and 24-, 8-, 3-, and 1-hours.

The AERMOD model was used to predict the maximum pollutant concentrations in nearby areas surrounding the McIntosh Power Plant. The EPA regulatory default options were used to predict all maximum impacts.

These options include:

- Final plume rise at all receptor locations,
- Stack-tip downwash,
- Buoyancy-induced dispersion,
- Default wind speed profile coefficients,
- Default vertical potential temperature gradients, and
- Calm wind processing.

### 5.1.3 Meteorological Data

Meteorological data used in the AERMOD model to determine air quality impacts consisted of a concurrent 5-year period of hourly surface weather observations from the National Weather Service (NWS) office located at the Tampa International Airport (TPA) and twice-daily upper air soundings collected at Ruskin for the years 2001 through 2005. The NWS office at TPA is located approximately 62 kilometers (km) west-southwest of the McIntosh Power Plant site and is the closest primary weather station to the study area considered to have meteorological data representative of the site. The meteorological data from this NWS station have been used for numerous air modeling

studies for the City of Lakeland. The meteorological data has been obtained and processed by FDEP into a format that is suitable for input to AERMOD using the meteorological preprocessor program AERMET.

### 5.1.4 Source Data

The Universal Transverse Mercator (UTM) coordinate location and stack parameters for Unit 3 that were used for the modeling analysis are presented in Table 5-2. The Unit 3 stack height is 250 feet. The project's maximum CO emission increase is 800.8 lb/hr.

### 5.1.5 Building Downwash Effects

The only significant structure in the vicinity of Unit 3's stack is the unit's boiler building, which is 209 feet tall. As the Unit 3 stack height is less than GEP, the potential for building downwash to occur was evaluated in the air modeling analysis for this stack. Direction-specific building parameters were calculated with the Building Profile Input Program (BPIP), Version 04274, which incorporates PRIME algorithms developed by the EPRI.

### 5.1.6 Receptor Locations

To predict maximum concentrations in the vicinity of the proposed project, a receptor grid was developed in UTM coordinate system, zone 17, North American Datum 1927 (NAD27), and included the following:

- 50-meter intervals along the fence line or restricted property boundary,
- 100-meter intervals beyond the fence line to 1.5 km from the site, and
- 150-meter intervals from 1.5 to 3 km from the site.

The fence line was determined from a plot plan of the site in AutoCad format. For the receptors, elevations and hill scale heights were obtained from 7.5-minute U.S. Geological Survey (USGS) Digital Elevation Model (DEM) data using the AERMOD terrain pre-processor program AERMAP, Version 04300.

## 5.2 Air Modeling Results

### 5.2.1 Significant Impact Analysis

A summary of the air modeling results is presented in Table 5-3. The maximum predicted 1- and 8-hour CO impacts are well below their respective significant impact levels. Therefore, additional

cumulative source modeling analyses are not required and the proposed project will be in compliance with the CO AAQS.

## TABLE 5-1

## MAJOR FEATURES OF THE AERMOD MODEL, VERSION 04300

| AERMOD Model Features |
|---|
| • Plume dispersion/growth rates are determined by the profile of vertical and horizontal turbulence, vary with height, and use a continuous growth function. |
| • In a convective atmosphere, uses three separate algorithms to describe plume behavior as it comes in contact with the mixed layer lid; in a stable atmosphere uses a mechanically mixed layer near the surface. |
| • Polar or Cartesian coordinate systems for receptor locations can be included directly or by an external file reference. |
| • Urban model dispersion is input as a function of city size and population density; sources can also be modeled individually as urban sources. |
| • Stable plume rise: uses Briggs equations with winds and temperature gradients at stack top up to half-way up to plume rise. Convective plume rise: plume superimposed on random convective velocities. |
| • Procedures suggested by Briggs (1974) for evaluating stack-tip downwash. |
| • Has capability of simulating point, volume, area, and multi-sized area sources. |
| • Accounts for the effects of vertical variations in wind and turbulence (Brower *et al.*, 1998). |
| • Uses measured and computed boundary layer parameters and similarity relationships to develop vertical profiles of wind, temperature, and turbulence (Brower *et al.*, 1998). |
| • Concentration estimates for 1-hour to annual average times. |
| • Creates vertical profiles of wind, temperature, and turbulence using all available measurement levels. |
| • Terrain features are depicted by use of a controlling hill elevation and a receptor point elevation. |
| • Modeling domain surface characteristics are determined by selected direction and month/season values of surface roughness length, Albedo, and Bowen ratio. |
| • Contains a mechanical and convective mixed layer height, the latter based on the hourly accumulation of sensible heat flux. |
| • The method of Pasquill (1976) to account for buoyancy-induced dispersion. |
| • A default regulatory option to set various model options and parameters to EPA-recommended values. |
| • Contains procedures for calm-wind and missing data for the processing of short term averages. |

Note: AERMOD = the American Meteorological Society and Environmental Protection Agency Regulatory Model.

Source: Paine *et al.*, 2004.

**TABLE 5-2**
**CITY OF LAKELAND UNIT 3 STACK PARAMETERS**

| Source | | UTM NAD27 | | Stack Parameters | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Physical | | | | Operating | | | |
| | Model | East | North | Height | | Diameter | | Temperature | | Velocity | |
| Description | ID | (m) | (m) | (ft) | (m) | (ft) | (m) | (°F) | (K) | (fps) | (m/s) |
| Boiler Unit 3 | UNIT 3 | 409364.79 | 3106270.99 | 250 | 76.2 | 18.0 | 5.49 | 125 | 324.8 | 91.9 | 28.02 |

**TABLE 5-3**
**SIGNIFICANT IMPACT ANALYSIS RESULTS FOR UNIT 3**

| Averaging Period | Year | Maximum Predicted Impact ($mg/m^3$) | Receptor Location[a] | | Period Ending (YYMMDDHH) | Significant Impact Level ($mg/m^3$) | Monitoring de Minimis Concentration ($mg/m^3$) |
|---|---|---|---|---|---|---|---|
| | | | East (m) | North (m) | | | |
| 1-hour High 1st High | 2001 | 145.4 | 410250 | 3106450 | 01121419 | 2000 | -- |
| | 2002 | 155.7 | 410250 | 3106350 | 02102821 | | |
| | 2003 | 149.7 | 410250 | 3106450 | 03052601 | | |
| | 2004 | 151 | 410150 | 3106650 | 04053124 | | |
| | 2005 | 165.2 | 410250 | 3106350 | 05070622 | | |
| 8-hour High 1st High | 2001 | 62.8 | 410650 | 3106350 | 01071216 | 500 | 575 |
| | 2002 | 52.8 | 408807 | 3105966 | 02061116 | | |
| | 2003 | 49.3 | 408850 | 3105350 | 03110924 | | |
| | 2004 | 57.6 | 410350 | 3106450 | 04011508 | | |
| | 2005 | 56.9 | 410650 | 3106350 | 05061716 | | |

**Note:**

[a] UTM coordinates in Zone 17

YY =Year, MM=Month, DD=Day, HH=Hour

# AFFIDAVIT OF PUBLICATION
## THE LEDGER
## Lakeland, Polk County, Florida

**Case No's:**

**STATE OF FLORIDA)**
**COUNTY OF POLK)**

Before the undersigned authority personally appeared Paula Freeman, who on oath says that she is Inside Classified Sales Manager The Ledger, a daily newspaper published at Lakeland in Polk County, Florida; that the attached copy of advertisement, being A

**Notice of Intent**

in the matter of **Air Construction Permit**

Concerning **Lakeland Electric**

was published in said newspaper in the issues of **7-20; 2007**

Affiant further says that said The Ledger is a newspaper published at Lakeland, in said Polk County, Florida, and that the said newspaper has heretofore been continuously published in said Polk County, Florida, daily, and has been entered as second class matter at the post office in Lakeland, in said Polk County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that he has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Signed: .....
Paula Freeman
Inside Classified Sales Manager
Who is personally known to me.

Sworn to and subscribed before me this 20TH day of July A.D. 2007

Patricia Ann Rouse
Notary Public

(Seal)

PATRICIA ANN ROUSE
MY COMMISSION # DD 330015
EXPIRES: October 17, 2008
Bonded Thru Notary Public Underwriters

My Commission Expires .....

X806

In the Matter of an
Application for Permit by:

Lakeland Electric
East Lemon Street
Lakeland, Florida 33805

DEPFile No. 1050004-019-AC
C.D. McIntosh Jr. Power Plant Unit 3
Selective Catalytic Reduction System
Polk County, Florida

Authorized Representative:
Timothy Bachand, Director Energy Supply

**INTENT TO ISSUE AIR CONSTRUCTION PERMIT**

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit (copy of draft permit enclosed) for the proposed project as detailed in the application specified above and the enclosed Technical Evaluation and Preliminary Determination for the reasons stated below.

Lakeland Electric (the Company) operates the C.D. McIntosh, Jr. Power Plant located at 3030 East Lake Parker Drive, Lakeland, Polk County, Florida. The Company applied for a permit on December 29, 2006 (complete on April 3, 2007) to install a selective catalytic reduction system for the existing Unit 3 at the plant.

The Department has permitting jurisdiction under the provisions of Chapter 403.087, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, 62-212 and 62-213. This action is not exempt from permitting procedures. The Department has determined that an air construction permit is required.

The Department intends to issue this permit based on the belief that reasonable assurances have been provided to indicate that operation of these emission units will not adversely impact air quality, and the emission units will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C.

Pursuant to Section 403.815, F.S., and Rule 62-110.106(7)(a)1., F.A.C., you (the applicant) are required to publish at your own expense the enclosed Public Notice of Intent to Issue Air Construction Permit. The notice shall be published one time only in the legal advertisement section of a newspaper of general circulation in the area affected. Rule 62-110.106(7)(b), F.A.C., requires that the applicant cause the notice to be published as soon as possible after notification by the Department of its intended action. For the purpose of these rules, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. If you are uncertain that a newspaper meets these requirements, please contact the Department at the address or telephone number listed below. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400 (Telephone: 850/488-0114; Fax: 850/922-6979). You must provide proof of publication within seven days of publication, pursuant to Rule 62-110.106(5), F.A.C. No permitting action for which published notice is required shall be granted until proof of publication of notice is made by furnishing a uniform affidavit in substantially the form prescribed in section 50.051, F.S. to the office of the Department issuing the permit. Failure to publish the notice and provide proof of publication may result in the denial of the permit pursuant to Rules 62-110.106(9) & (11), F.A.C.

The Department will issue the final construction permit unless a response received in accordance with the following procedures results in a different decision or significant chonge of terms or conditions.

The Department will accept written comments concerning the proposed permit issuance action for a period of 14 days from the date of publication of Public Notice. Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the construction permit with attached conditions unless a timely petition for an administrative hearing is filed pursuant to sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within 14 days of receipt of this notice of intent. Petitions filed by any persons toher than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within 14 days of publication of the public notice or within 14 days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at 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 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department'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 how and when petitioner received notice of the agency decision; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of 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 specified rules or statutes; and (g) A statement of the relief sought by the petitioner, stating precisely the action 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 Department'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.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above. Mediation is not available in this proceeding.

Executed in Tallahassee, Florida.

Trina L. Vielhauer, Chief
Bureau of Air Regulation

X806 7-20; 2007

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