Department of
Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Colleen M. Castille
Secretary

NOTICE OF FINAL PERMIT

In the Matter of an
Application for Permit by:

Ms. Karen Sheffield
General Manager
Tampa Electric Company
Post Office Box 111
Tampa, Florida 33601-0111

Big Bend Station
Air Permit No. **0570039-022-AC**

Enclosed is Final Air Construction Permit No. 0570039-022-AC. The air construction permit authorizes the installation of a selective catalytic reduction system for nitrogen oxides control on the solid fuel-fired Steam Generator Unit No. 3.

An electronic version of this document has been posted on the Division of Air Resource Management's world wide web site for the United States Environmental Protection Agency (U.S. EPA) Region 4 office's review. The web site address is:

http://www.dep.state.fl.us/air/eproducts/ards/default.asp

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 days after this order is filed with the clerk of the Department.

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 permit was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 11/10/05 to the person(s) listed:

Karen Sheffield*
U.S. EPA, Region 4
Alice Harmon, Hillsborough County
Shelly Castro, Tampa Electric Company
Thomas W. Davis, Environmental Consulting & Technology, Inc.

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.

(Clerk) 11/10/05 (Date)

FINAL DETERMINATION

Tampa Electric Company
Big Bend Station

Air Construction Permit No. **0570039-022-AC**
Selective Catalytic Reduction

The Department distributed a public notice package on October 5, 2005, that included an Intent to Issue Air Construction Permit No. 0570039-022-AC to the Tampa Electric Company (TEC) for the Big Bend Station, located at Wyandotte Road, Apollo Beach, Hillsborough County. The air construction permit authorizes the applicant to install a selective catalytic reduction system for nitrogen oxides control on the solid fuel-fired Steam Generator Unit No. 3.

The Public Notice of Intent to Issue was published in the Tampa Tribune on October 17, 2005.

COMMENTS/CHANGES

- Comments from the applicant on the draft air construction permit were received via e-mail. The comments were primarily minor language changes and clarifications. These minor changes and clarifications were adopted in the final air construction permit document.

- No other comments were received by the Department from the public, U.S.EPA, Hillsborough County, or the applicant.

CONCLUSION

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

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Colleen M. Castille
Secretary

FINAL AIR CONSTRUCTION PERMIT NO. 0570039-022-AC

PERMITTEE

Tampa Electric Company (TEC)	File/Permit No.	**0570039-022-AC**
Big Bend Station	Facility ID:	0570039
Post Office Box 111	Project:	NO_X Reduction (SCR)
Tampa, Florida 33601-0111		Steam Generator Unit 3
	SIC No.	4911
Authorized Representative:	Expires:	December 31, 2008
Karen Sheffield, General Manager	County	Hillsborough

PROJECT AND LOCATION

This is an Air Construction Permit for the installation of a selective catalytic reduction system for nitrogen oxides control on the solid fuel-fired Steam Generator Unit No. 3. The reductions are part of an emissions reduction program required by a Consent Final Judgment with the Department and a Consent Decree with the United States Environmental Protection Agency. The air construction permit also establishes these specific projects as applicable Title V Operation Permit conditions.

The Tampa Electric Company (TEC) Big Bend Station is located at Wyandotte Road, Apollo Beach, Hillsborough County. UTM Coordinates are Zone 17, 361.9 km East and 3075.0 km North; Latitude: 27° 47' 36" North and Longitude: 82° 24' 11" West.

STATEMENT OF BASIS

This Air 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.). The above named permittee is authorized to install the SCR system at the facility 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).

THE ATTACHED APPENDIX IS MADE A PART OF THIS PERMIT:

Appendix GC Construction Permit General Conditions

Michael G. Cooke, Director
Division of Air Resource Management

FACILITY DESCRIPTION

This facility consists primarily of four existing fossil fuel steam generators (boilers) and three simple-cycle combustion turbines. Emissions from all steam generators are controlled by electrostatic precipitators (ESPs), and flue gas desulfurization (FGD) systems. There are ongoing nitrogen oxides (NO_X) control projects pursuant to a Consent Final Judgment (CFJ) between TEC and the Department and a Consent Decree (CD) between TEC and the United States Environmental Protection Agency (EPA).

EMISSIONS UNITS

This permit addresses the installation of an ammonia injection system and catalyst at the following Unit:

Emission Unit No.	System	Emission Unit Description
003	Power Generation	445 MW Fossil Fuel Steam Generator

The proposed project is called selective catalytic reduction (SCR). A recent NO_X control project on Unit 3 includes installation of new coal nozzles suitable for low NO_X operation.

REGULATORY CLASSIFICATION

The facility is classified as a Major or Title V Source of air pollution because emissions of at least one regulated air pollutant, such as particulate matter (PM/PM_{10}), sulfur dioxide (SO_2), nitrogen oxides (NO_X), carbon monoxide (CO), or volatile organic compounds (VOC), exceed 100 tons per year (TPY).

The proposed project constitutes work that the Tampa Electric Company is expressly directed to undertake by a consent decree and a consent final judgment with the U.S. Environmental Protection Agency and the Florida Department of Environmental Protection.

PERMIT SCHEDULE

- October 17, 2005 Notice of Intent to Issue Permit published.
- October 5, 2005 Intent to Issue Permit distributed.
- September 15, 2005 Application deemed complete.
- June 6, 2005 Application received.

RELEVANT DOCUMENTS

The documents listed below are the basis of the permit. They are specifically related to this permitting action, but not all are incorporated into this permit. These documents are on file with the Department.

- Application received on June 6, 2005.
- The Department's Technical Evaluation and Preliminary Determination, issued concurrently with the draft air construction permit on October 5, 2005.
- EPA Consent Decree (U.S. vs. TEC) dated February 29, 2000, amended October 4, 2000.
- FDEP Consent Final Judgment (DEP vs. TEC) dated December 6, 1999.
- Title V Air Operation Permit Renewal No. 0570039-017-AV.
- Tampa Electric Submittals for PSC Docket 040750-EI.
- E-mail memorandum from EPA received on September 15, 2005.

PROJECT DESCRIPTION

TEC will install a SCR system for NO_X control on the facility's Unit No. 3 coal-fired boiler. This emissions unit is a Riley Stoker Corporation "wet" bottom utility boiler, with a generator nameplate rating of 445 megawatts (MW). The basic boiler startup and shutdown procedures will not need to be altered with the addition of the SCR (i.e., the existing Unit No. 3 boiler ramp rate is adequate for the SCR catalyst). The project consists of:

- Installation of a "three plus one" SCR reactor downstream of the economizer and upstream of the air preheater.
- Installation of an ammonia storage, supply, and injection system, the details of which are still under development.
- SCR tuning (i.e., adjustment of the ammonia injection grid) during the initial commissioning of the system and periodically thereafter.
- Installation of an ammonia injection sulfur trioxide (SO_3) control system downstream of the Unit No. 3 air preheater.
- Assessment of combined effects of SCR and previous NO_X and SO_3 control system projects upon fly ash marketability, and development of treatment, reuse, or disposal options for the fly ash.

The project is much more involved than suggested by the brief description above. Following are additional details of the work likely to occur in association with the SCR installation:

- Demolition of existing flue gas ductwork as necessary to tie-in the SCR system
- Demolition of existing structural steel, modification and reinforcement of existing steel supports for a new duct from the existing steel
- Economizer gas temperature control
- Gas ductwork from economizer outlet to the SCR inlet (includes hoppers, mixers and turning vanes)
- SCR reactor (includes equipment for catalyst management) and catalyst
- Gas ductwork between the SCR & air heater
- Foundations for ductwork and structural steel
- Structural modifications for construction cranes
- Ammonia or Urea to ammonia conversion system
- Air heater modifications
- Electrical modifications
- Relocation of existing equipment and utilities
- Mobilization/demobilization
- Equipment rental
- Engineering construction management
- Asbestos removal
- Boiler and ESP reinforcement
- New Induced Draft ("ID") fans and motors
- ID fan foundations and electrical
- New and modified ductwork
- Auxiliary power and controls modifications

PROJECT SCHEDULE

Emissions Unit ID Number	Estimated start date	Estimated completion date
003	November 1, 2005	May 1, 2008

ADMINISTRATIVE REQUIREMENTS

A.1. Regulating Agencies. All documents related to applications for permits to construct, operate or modify an emissions unit should be submitted to the Bureau of Air Regulation, Florida Department of Environmental Protection, at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, and phone number (850) 488-0114. All documents related to reports, tests, and notifications should be submitted to the Environmental Protection Commission of Hillsborough County, and copies of those submittals shall be sent to the Department of Environmental Protection, Southwest District Office.

Addresses and telephone numbers are:

Environmental Protection Commission of Hillsborough County
Roger P. Stewart Center
3629 Queen Palm Drive
Tampa, Florida 33619
Telephone: 813/272-5530; Fax: 813/272-5605

Department of Environmental Protection
Southwest District Office, Air Resources Section
3804 Coconut Palm Drive
Tampa, Florida 33619-1352
Telephone: 813/744-6100; Fax: 813/744-6084

A.2. General Conditions. The owner and operator is subject to, and shall operate under the attached General Permit Conditions **G.1.** through **G.15.** listed in Appendix GC of this permit. General Permit Conditions are binding and enforceable pursuant to Chapter 403 of the Florida Statutes.
[Rule 62-4.160, F.A.C.]

A.3. Terminology. The terms used in this permit have specific meanings as defined in the corresponding chapters of the Florida Administrative Code (F.A.C.).

A.4. Forms and Application Procedures. The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C., and follow the application procedures in Chapter 62-4, F.A.C.
[Rule 62-210.900, F.A.C.]

A.5. Modifications. The permittee shall give written notification to the Department when there is any modification to this facility. This notice shall be submitted sufficiently in advance of any critical date involved to allow sufficient time for review, discussion, and revision of plans, if necessary. Such notice shall include, but not be limited to, information describing the precise nature of the change; modifications to any emission control system; production capacity of the facility before and after the change; and the anticipated completion date of the change. [Chapters 62-210 and 62-212, F.A.C.]

A.6. 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.]

A.7. Permit Extension. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Bureau of Air Regulation prior to 60 days before the expiration of the permit. [Rule 62-4.080, F.A.C.]

APPLICABLE STANDARDS AND REGULATIONS

A.8. Unless otherwise indicated in this permit, the construction and operation of the subject emission unit(s) 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 Florida Administrative Code Chapters 62-4, 62-103, 62-204, 62-210, 62-212, 62-213, 62-214, 62-296, and 62-297.

A.9. 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.]

A.10. The facility is subject to all of the requirements specified in Title V Air Operation Permit Renewal No. 0570039-017-AV.

A.10.1. An application for a Title V Air Operation Permit Revision, pursuant to Chapter 62-213, F.A.C., must be submitted to the Department's Bureau of Air Regulation to incorporate the specific conditions of this Air Construction Permit. [Chapter 62-213, F.A.C.]

GENERAL OPERATION REQUIREMENTS

A.11. 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)(c)., F.A.C.]

A.12. 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 Environmental Protection Commission of Hillsborough County 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.]

A.13. 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.]

A.14. Circumvention. The owner or operator shall not circumvent the air pollution control equipment nor operate the SCR equipment in such a manner which would violate allowable emission rates stated herein, notwithstanding the conditions provided in A.15.1. [Rules 62-210.650, F.A.C.]

CONTROL TECHNOLOGY

A.15. The permittee shall install a selective catalytic reduction (SCR) system for nitrogen oxides (NO_X) control on the facility's Unit No. 3 solid fuel-fired boiler.
[Applicant Request and EPA Consent Decree (U.S. vs. TEC) dated February 29, 2000, amended October 4, 2000, and FDEP Consent Final Judgment (DEP vs. TEC) dated December 6, 1999.]

SCR OPERATION

A.15.1 The permittee shall operate the SCR system in accordance with the SCR system suppliers' recommendations, including operating the SCR between minimum and maximum operating temperatures.

A.15.2. The partial SCR maintenance bypass duct is normally closed except during maintenance periods.

A.15.3. Abnormal events: "Abnormal events" are defined as an unanticipated interruption, malfunction, or failure of the pipeline or associated equipment utilized to supply ammonia to the Big Bend Station for use in the operation of the selective catalytic reduction control system. Excess emissions occurring from

operation of the boilers during an abnormal event are authorized provided that best operational practices are employed to minimize the amount and duration of the emissions during an abnormal event. Emissions data collected during "abnormal events" may be excluded from the 30-day rolling compliance averages in accordance with this condition.

EMISSION LIMITS AND STANDARDS

A.16. After April 30, 2008, NO_X emissions (reported as NO_2) from Unit No. 3 when combusting solid fuel, shall not exceed 0.12 lb NO_x/million Btu heat input on a heat input weighted 30 day rolling average basis. Based upon a maximum heat input of 4115 million Btu/hour, NO_X emissions shall not exceed 494 lb/hr. These emission limits are based on the definition of "emission rate" so that an equation is used that divides total pounds of NO_x by total heat input in each 30-day period to reach a 30-day rolling average. [Applicant Request and EPA Consent Decree (U.S. vs. TEC) dated February 29, 2000, amended October 4, 2000, and FDEP Consent Final Judgment (DEP vs. TEC) dated December 6, 1999; and E-mail memorandum from EPA received on September 15, 2005.]

{Permitting Note: Limits in this condition are sufficient to also comply with requirements of: Rule 62-204.800(7)(b)2., F.A.C.; 40 CFR 60.44a(a); 40 CFR 60.4a(c); and PSD-FL-040]

A.17. Ammonia slip, measured at the stack downstream of all emissions control systems, shall not exceed 10 parts per million by volume (ppmv). Annual testing of ammonia slip shall be conducted, and corrective measures taken if measured values exceed 5 ppmv.
[Applicant request; and Rule 62-4.070(3), F.A.C.]

COMPLIANCE DETERMINATION

A.18. Nitrogen oxides emissions shall be continuously monitored to confirm compliance, using the Unit's existing continuous emissions monitoring system (CEMS). Compliance is determined by calculating the heat input weighted average of all hourly emission rates for NO_X for the 30 successive boiler operating days, except for data obtained during startup, shutdown, malfunction, or abnormal events. [Rule 62-204.800(7)(b)2., F.A.C.; 40 CFR 60.46a(g), 0570039-017-AV]

A.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.]

A.20. Compliance with the emission limiting standards specified in this Air Construction Permit shall be determined by April 30, 2008, and annually thereafter, using the appropriate specific conditions of the facility's existing Title V Air Operations Permit No. 0570039-017-AV, by using the appropriate EPA reference test methods, or Department test methods.
[0570039-017-AV; and Rules 62-204.220 and 62-4.070(3), F.A.C.]

A.21. Compliance with the heat input weighted 30-day rolling average NO_X emission limit of 0.12 lb NO_x/mmBtu shall be demonstrated using CEMS data beginning May 31, 2008 (or 30 boiler operating days after May 1, 2008), and every 30 boiler operating days thereafter.

A.22. Test Results. Compliance test results shall be submitted to the Environmental Protection Commission of Hillsborough County and the Department no later than 45 days after completion of the last test run. [Rule 62-297.310(8), F.A.C.]

NOTIFICATION, REPORTING, AND RECORDKEEPING

A.23. Emission Compliance Stack Test Reports. A test report indicating the results of the required compliance tests shall be filed as per Specific Condition **A.22.** 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.]

COMPLIANCE ASSURANCE

A.24. Compliance Assurance Monitoring (CAM). The permittee shall evaluate the applicability of CAM to Unit No. 3 and, if applicable, submit a CAM plan as a revision to the facility's current Title V air operation permit.
[40 CFR 64; and Rule 62-204.800, F.A.C.]

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, Florida Statutes. 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), Florida Statutes, the issuance of this permit does not convey and 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.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

13. This permit also constitutes:

    a. Determination of Best Available Control Technology (NA);
    b. Determination of Prevention of Significant Deterioration (NA); and
    c. Compliance with New Source Performance Standards (NA).

14. The permittee shall comply with the following:

    a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

    b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application or this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

    c. Records of monitoring information shall include:

        1) The date, exact place, and time of sampling or measurements;
        2) The person responsible for performing the sampling or measurements;
        3) The dates analyses were performed;
        4) The person responsible for performing the analyses;
        5) The analytical techniques or methods used; and
        6) The results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

7001 0320 0001 3692 4118

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

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Ms. Karen Sheffield, General Manager
Big Bend Station
Tampa Electric Company
Post Office Box 111
Tampa, Florida 33601-0111

PS Form 3800, January 2001 See Reverse for Instructions

TAMPA ELECTRIC

June 3, 2005

Mr. Tom Cascio,
Florida Department of
Environmental Protection
111 South Magnolia Drive, Suite 4
Tallahassee, FL 32301

Via FedEx
Airbill No. 7922 9890 5641

Re: Tampa Electric Company
Big Bend Station
Consent Decree
Civil Action No. 99-2524 CIV-T-23F
Air Construction Permit Application for
Unit 3 Selective Catalytic Reduction (SCR) Project
0570039-022-AC

Dear Mr. Cascio,

Tampa Electric Company (TEC) requests an air construction permit to install a selective catalytic reduction (SCR) system for nitrogen oxides (NO_x) control on its Big Bend Station Unit 3 coal-fired boiler. TEC entered into the agreements with the Environmental Protection Agency (EPA) and the Florida Department of Environmental Protection (FDEP) concerning the installation of additional air pollution control systems at Big Bend Station. These agreements (EPA Consent Decree and FDEP Consent Final Judgment) included requirements to install additional air pollution control systems for NO_x control on Unit 3. In response to these requirements, TEC determined that the installation of low NO_x burners (LNB) and an SCR system are the technologies to be utilized to reduce the NO_x emissions on Big Bend Unit 3 to satisfy the requirements of the agreements.

Additionally, TEC reviewed the impacts with the operation of the SCR, associated combustion controls and associated systems (sulfur trioxide control) to determine the affects on the coal combustion byproducts and found that the fly ash would have limited marketability due to high ammonia content and carbon content. Therefore, a large portion of the fly ash could potentially need to be disposed of in a landfill. TEC researched this issue and found that several other companies mitigate the SCR impacts on fly ash by using carbon burnout (CBO) technology to reduce the carbon content. TEC has evaluated this technology and determined it to be feasible at Big Bend Station. A separate air construction permit for the CBO technology will be submitted.

As stated in a letter sent to the FDEP dated April 4, 2003 and as mentioned in the meeting between TEC and FDEP on May 31, 2005, TEC reviewed the effects of installing the future NO_x

control and SO_3 control systems and determined that there is a potential for increase in particulate matter (PM) and opacity. Therefore, a request for higher permit limits may be submitted in the future.

Please find the enclosed air construction permit application for Big Bend Station's Unit 3 SCR.

TEC appreciates the cooperation of the Department in this matter. If you have any questions or comments, please contact Shelly Castro or me at (813) 228-4408.

Sincerely,

Byron T. Burrows
Manager - Air Programs
Environmental, Health & Safety

EHS/rlk/SSC222

Enclosure

c/enc: Ms. Alice Harman, EPCHC
Mr. Jerry Kissel, FDEP SW
Mr. David Lloyd, EPA
Mr. Scott Sheplak, FDEP
Ms. Trina Vielhauer, FDEP
Mr. Sterlin Woodard, EPCHC

TAMPA ELECTRIC

October 21, 2005

Mr. Thomas Cascio,
Florida Department of Environmental Protection
111 South Magnolia Drive, Suite 4
Tallahassee, Florida 32301

Via FedEx
Airbill No. 7906 8673 7793

Re: Tampa Electric Company
Big Bend Station Unit 3
Selective Catalytic Reduction
Proof of Publication of the Intent to Issue
FDEP File No. 0570039-022-AC

Dear Mr. Cascio:

Pursuant to Rule 62-110.106(5), F.A.C., enclosed is the proof of publication of the Notice of Intent to Issue the Tampa Electric Company Big Bend Station Unit 3 Selective Catalytic Reduction Air Construction Permit. This notice was published in the legal section of the Tampa Tribune on Monday, October 17, 2005.

Thank you for your attention to this matter. If you have any concerns or questions feel free to contact me or Shelly Castro at (813) 228-4408.

Sincerely,

Byron T. Burrows
Manager - Air Programs
Environmental, Health & Safety

EHS\rlk\SSC232

Enclosure

c/enc: Mr. Al Linero-FDEP
Mr. Sterlin Woodard-EPC
Ms. Alice Harman-EPC

RECEIVED

OCT 24 2005

BUREAU OF AIR REGULATION

THE TAMPA TRIBUNE
Published Daily
Tampa, Hillsborough County, Florida

State of Florida }
County of Hillsborough } ss.

Before the undersigned authority personally appeared C. Offner, who on oath says that she is the Advertising Billing Supervisor of The Tampa Tribune, a daily newspaper published at Tampa in Hillsborough County, Florida; that the attached copy of advertisement being a

LEGAL NOTICE IN THE TAMPA TRIBUNE

in the matter of PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION

was published in said newspaper in the issues of

OCTOBER 17, 2005

Affiant further says that the said The Tampa Tribune is a newspaper published at Tampa in said Hillsborough County, Florida, and that the said newspaper has heretofore been continuously published in said Hillsborough County, Florida, each day and has been entered as second class mail matter at the post office in Tampa, in said Hillsborough County, Florida for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that she has neither paid nor promised any person, this advertisement for publication in the said newspaper.

C. Offner

Sworn to and subscribed by me, this 19 day of OCTOBER, A.D. 20 05

Personally Known ✓ or Produced Identification ____
Type of Identification Produced ____

NOTARY PUBLIC STATE OF FLORIDA
OFFICIAL NOTARY SEAL
TANYA PATRICK
COMMISSION NUMBER
DD 136745
MY COMMISSION EXP.
JULY 7, 2006

Tanya Patrick

PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT

STATE OF FLORIDA
DEPARTMENT OF
ENVIRONMENTAL
PROTECTION

DEP File No.
0570039-022-AC

Tampa Electric Company
Big Bend Station
Hillsborough County

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit to the Tampa Electric Company (TEC) for the Big Bend Station located at Big Bend Road, North Ruskin, Hillsborough County. This permit is for installation of a selective catalytic reduction (SCR) system on Steam Generator No. 3 for the reduction of emissions of nitrogen oxides (NOx). A Best Available Control Technology (SACT) determination was not required pursuant to Rules 62-212.400, F.A.C. and 40 CFR 52.21, Prevention of Significant Deterioration (PSD). The applicant's mailing address is: Tampa Electric Company, P.O. Box 111, Tampa, Florida 33601-0111.

The SCR project is part of a larger program by TEC pursuant to a Consent Final Judgment (CFJ) with the Department and a Consent Decree (CD) with the Environmental Protection Agency to reduce emissions from its coal fired plants. There have been very substantial reductions of sulfur dioxide (SO2) to-date primarily due to the installation of a scrubber on Units 1 and 2. Other NOx control projects including installation of Low NOx burners and separate overfire air were previously approved.

This air construction permit will establish the SCR project as an applicable requirement for subsequent incorporation into the facility's Title V Air Operation Permit. For reference, the permit will include a limit of 0.12 pounds of NOx per million Btu of heat input (lb/mmBtu) from Unit 3.

The new NOx emissions limit is much less than the other applicable limits of 0.53 lb/mmBtu and 0.70 lb/mmBtu for the same unit under the Federal Acid Rain Program and the applicable New Source Performance Standard. Further control of NOx will reduce smog formation potential in the Tampa Bay area. SCR in combination with the existing scrubber on Unit 3 is also expected to reduce mercury emissions.

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 construction Permit issuance action for a period of fourteen (14) days from the date of publication of this Public Notice of Intent to Issue Air Construction Permit. Written comments should he provided to the Departments 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 fourteen 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 fourteen days of publication of the public notice or within fourteen 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 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 action or proposed action; (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 fact 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; 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 signed 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 am. to 5:00 p.m., Monday through Friday, except legal holidays, at:

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

Dept. of Environmental Protection
Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619-8218
Telephone: 813/744-6100
Fax: 813/774-6084

Hillsborough County Environmental Protection Commission
Air Management Division
3629 Queen Palm Drive
Tampa, Florida 33619
Telephone: 813/627-2600

The complete project file includes the permit application, technical evaluation, Draft construction permit, 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 Casejo at MS 5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, 01 Tom.Cascio@dep.state.fl.us call 850/921-9526 for additional information. Key documents may also be viewed at: www.dep.state.fl.us/Air/permitting/construction.htm in the power plant category.

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Colleen M. Castille
Secretary

October 3, 2005

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Ms. Karen Sheffield, General Manager
Big Bend Station
Tampa Electric Company
Post Office Box 111
Tampa, Florida 33601-0111

Re: Big Bend Unit 3
DEP File No. 0570039-022-AC
Selective Catalytic Reduction System

Dear Ms. Sheffield:

Enclosed are documents indicating the Department's intent to issue an air construction permit for installation of a selective catalytic reduction system on Unit 3 at the Big Bend Station in Tampa. The documents include: the "Intent to Issue Air Construction Permit"; the "Public Notice of Intent to Issue Air Construction Permit"; the Department's "Technical Evaluation and Preliminary Determination"; and, the Draft Permit.

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 Chapter 50, Florida Statutes. Proof of publication, i.e., newspaper affidavit, must be provided to the Department's Bureau of Air Regulation office within seven (7) days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit.

Electronic versions of these documents have been posted on the Division of Air Resource Management's world wide web site for the United States Environmental Protection Agency (U.S. EPA) Region 4 office's review. The web site address is:

http://www.dep.state.fl.us/air/eproducts/ards/default.asp (Permit No. 0570039-022-AC)

Please submit any other written comments you wish to have considered concerning the Department's proposed action to Mr. A. A. Linero, Program Administrator, Permitting South Section at the above letterhead address. If you have any questions, please call Tom Cascio at 850/921-9526 or Mr. Linero at 850/921-9523.

Sincerely,

Trina L. Vielhauer

Trina L. Vielhauer, Chief
Bureau of Air Regulation

TLV/aal/tc

Enclosures

In the Matter of an
Application for Permit by:

Ms. Karen Sheffield, General Manager
Big Bend Station
Tampa Electric Company
P.O. Box 111
Tampa, FL 33601-0111

DEP File No. 0570039-022-AC
Nitrogen Oxides Reduction Project
Selective Catalytic Reduction
Big Bend Station Unit No. 3
Hillsborough County

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 permit attached) for the project, detailed in the application specified above and the enclosed Technical Evaluation and Preliminary Determination, for the reasons stated below.

The applicant, Tampa Electric Company (TEC), operates the Big Bend Station located at Big Bend Road, North Ruskin, Hillsborough County. TEC applied on June 6, 2005, for an air construction permit to install a selective catalytic reduction (SCR) system for nitrogen oxides (NO_x) control on the facility's Unit No. 3 coal-fired boiler. The project is part of a larger program by TEC pursuant to a Consent Final Judgment with the Department and a Consent Decree with the Environmental Protection Agency to reduce emissions from the coal fired plants. This air construction permit will also establish these specific projects as applicable requirements for subsequent incorporation into the facility Title V Operation Permit.

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 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 air construction 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 fourteen (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, 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 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 fourteen 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 fourteen days of publication of the public notice or within fourteen 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 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 action or proposed action; (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; 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.

In addition to the above, a person subject to regulation has a right to apply for a variance from or waiver of the requirements of particular rules, on certain conditions, under Section 120.542 F.S. The relief provided by this state statute applies only to state rules, not statutes, and not to any federal regulatory requirements. Applying for a variance or waiver does not substitute or extend the time for filing a petition for an administrative hearing or exercising any other right that a person may have in relation to the action proposed in this notice of intent.

The application for a variance or waiver is made by filing a petition with the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. The petition must specify the following information: (a) The name, address, and telephone number of the petitioner; (b) The name, address, and telephone number of the attorney or qualified representative of the petitioner, if any; (c) Each rule or portion of a rule from which a variance or waiver is requested; (d) The citation to the statute underlying

(implemented by) the rule identified in (c) above; (e) The type of action requested; (f) The specific facts that would justify a variance or waiver for the petitioner; (g) The reason why the variance or waiver would serve the purposes of the underlying statute (implemented by the rule); and (h) A statement whether the variance or waiver is permanent or temporary and, if temporary, a statement of the dates showing the duration of the variance or waiver requested.

The Department will grant a variance or waiver when the petition demonstrates both that the application of the rule would create a substantial hardship or violate principles of fairness, as each of those terms is defined in Section 120.542(2) F.S., and that the purpose of the underlying statute will be or has been achieved by other means by the petitioner.

Persons subject to regulation pursuant to any federally delegated or approved air program should be aware that Florida is specifically not authorized to issue variances or waivers from any requirements of any such federally delegated or approved program. The requirements of the program remain fully enforceable by the Administrator of the EPA and by any person under the Clean Air Act unless and until the Administrator separately approves any variance or waiver in accordance with the procedures of the federal program.

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 Intent to Issue Air Construction Permit (including the Public Notice, Technical Evaluation and Preliminary Determination, and the Draft permit) was sent by certified mail (*) and copies were mailed by U.S. Mail or by e-mail before the close of business on 10/5/05 to the person(s) listed:

Karen Sheffield, General Manager, TEC Big Bend Station*
Thomas Davis, P.E., Environmental Consulting and Technology, Inc.
Shelly Castro, TEC
Alice Harman, EPCHC
Jason Waters, FDEP-SWD
David Lloyd, EPA Region 4

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.

(Clerk) 10/5/05 (Date)

PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEP File No. 0570039-022-AC

Tampa Electric Company
Big Bend Station, Hillsborough County

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit to the Tampa Electric Company (TEC) for the Big Bend Station located at Big Bend Road, North Ruskin, Hillsborough County. This permit is for installation of a selective catalytic reduction (SCR) system on Steam Generator No. 3 for the reduction of emissions of nitrogen oxides (NO_X). A Best Available Control Technology (BACT) determination was not required pursuant to Rules 62-212.400, F.A.C. and 40 CFR 52.21, Prevention of Significant Deterioration (PSD). The applicant's mailing address is: Tampa Electric Company, P.O. Box 111, Tampa, Florida 33601-0111.

The SCR project is part of a larger program by TEC pursuant to a Consent Final Judgment (CFJ) with the Department and a Consent Decree (CD) with the Environmental Protection Agency to reduce emissions from its coal fired plants. There have been very substantial reductions of sulfur dioxide (SO_2) to-date primarily due to the installation of a scrubber on Units 1 and 2. Other NO_X control projects including installation of Low NO_X burners and separate overfire air were previously approved.

This air construction permit will establish the SCR project as an applicable requirement for subsequent incorporation into the facility's Title V Air Operation Permit. For reference, the permit will include a limit of 0.12 pounds of NO_X per million Btu of heat input (lb/mmBtu) from Unit 3.

The new NO_X emissions limit is much less than the other applicable limits of 0.53 lb/mmBtu and 0.70 lb/mmBtu for the same unit under the Federal Acid Rain Program and the applicable New Source Performance Standard. Further control of NO_X will reduce smog formation potential in the Tampa Bay area. SCR in combination with the existing scrubber on Unit 3 is also expected to reduce mercury emissions.

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fourteen days of publication of the public notice or within fourteen 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 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.

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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:

Dept. of Environmental Protection Bureau of Air Regulation Suite 4, 111 S. Magnolia Drive Tallahassee, Florida, 32301 Telephone: 850/488-0114 Fax: 850/922-6979	Dept. of Environmental Protection Southwest District 3804 Coconut Palm Drive Tampa, Florida 33619-8218 Telephone: 813/744-6100 Fax: 813/774-6084	Hillsborough County Environmental Protection Commission Air Management Division 3629 Queen Palm Drive Tampa, Florida 33619 Telephone: 813/627-2600

The complete project file includes the permit application, technical evaluation, Draft construction permit, 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 Tom.Cascio@dep.state.fl.us , or call 850/921-9526 for additional information. Key documents may also be viewed at: www.dep.state.fl.us/Air/permitting/construction.htm in the power plant category.

1.0 APPLICATION INFORMATION

1.1 Applicant Name and Address

Tampa Electric Company
P.O. Box 111
Tampa, Florida 33601-0111

Representative: Karen Sheffield, General Manager, Big Bend Station

1.2 Reviewing and Process Schedule

06-06-05: Date of receipt of request at FDEP Bureau of Air Regulation
09-15-05: Application deemed complete
Issued intent

2.0 FACILITY INFORMATION

2.1 Facility Location: Big Bend Station located at Big Bend Road, North Ruskin, Hillsborough County

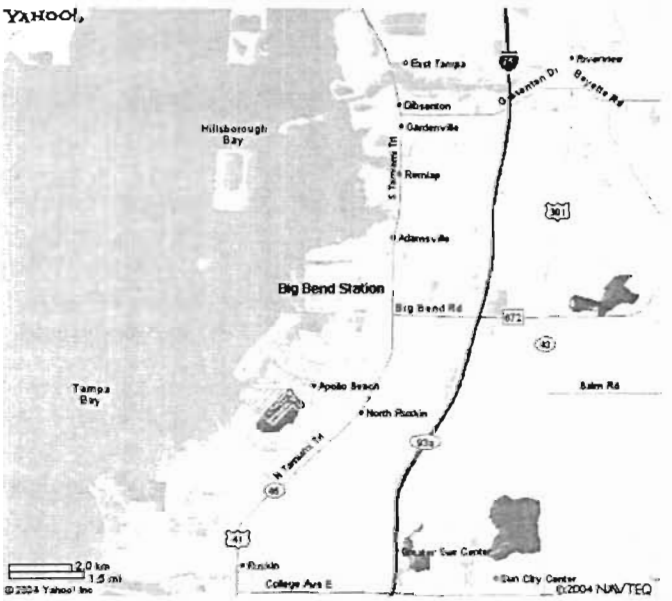

Figure 1. Ruskin, Apollo Beach, Big Bend

Figure 2. Big Bend Station

2.2 Standard Industrial Classification Code (SIC)

Major Group No.	49	Electric, Gas, and Sanitary Services
Group No.	491	Electric Services
Industry No.	4911	Electric Services

2.3 Existing Facility/Emission Unit Description

This facility is an electric utility.
This air construction permit will affect Steam Generator No. 3.

2.4 Regulatory Classification

Because potential emissions of at least one regulated pollutant exceed 100 tons per year, the existing facility is a Title V major source of air pollution in accordance with Chapter

62-213, F.A.C. 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).

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

The facility operates emissions units subject to the acid rain provisions of the Clean Air Act.

The facility is considered a "fossil fuel fired steam electric plant of more than 250 million BTU per hour of heat input". This kind of facility is one of the 28 source categories with the lower applicability threshold of 100 tons per year with respect to the Rule 62-212.400, Prevention of Significant Deterioration of Air Quality (PSD). Potential emissions of at least one regulated pollutant exceed 100 tons per year. Therefore, the facility is classified as a PSD-major source.

Unit 4 was certified pursuant Electrical Power Plant Siting in accordance with Chapter 62-17, F.A.C. and Chapter 403, Part II, F.S.

3.0 PERMITTING STATUS

Operation of the Big Bend Station is authorized by the Title V Operation Permit Revision 0570039-017-AV that has an effective date of January 1, 2005, and expires on December 31, 2009. The current permit includes the applicable requirements from federal and state regulations and construction permits. It also includes a Consent Final Judgment (CFJ, DEP vs. TEC) dated December 6, 1999, and a Consent Decree (CD, EPA vs. TEC) dated February 29, 2000, and amended October 4, 2000. The CFJ and CD require substantial progressive emission reductions from the four coal fired steam generation units by specific dates.

The current Title V Operation Permit includes a number of projects or improvements pursuant to the CFJ and CD including: improved scrubbing efficiency on Units 1 and 2; Low NO_X Burners (LNBs) on Units 1, 2, and 3; installation of new coal nozzles suitable for low NO_X operation; modification redesign of windbox components to allow for proper distribution and staging of air; and installation of a separate overfire air (SOFA) system on Unit 4.

4.0 ADDITIONAL NO_X CONTROL REQUIREMENTS

Section V.E. of the CFJ requires that:

> *Tampa Electric Company shall add nitrogen oxide controls, repower or shut down Units 1 through 3 at Big Bend Station by May 2010 and at Unit 4 by May 2007. If SCRs or similar nitrogen oxide controls are installed, BACT for nitrogen oxide will be 0.10 lbs/mmBtu on Unit 4 and 0.15 lbs/mmBtu on Units 1, 2, and 3.*

Section IV.B.36 of the CD requires that:

> *Tampa Electric shall advise EPA in writing, on or before May 1, 2007, whether Big Bend Units 1, 2, or 3, or any combination of them, will be Shutdown, will be Re-Powered, or will continue to be fired by coal.*

By letter dated August 19, 2004, Tampa Electric advised EPA that:

Based on the results of a recent comprehensive study performed on Big Bend Station, Big Bend Units 1, 2, 3 and 4 will continue to be fired on coal and as such will comply with the applicable provisions of the Consent Decree associated with this decision.

Section IV.B.37.A of the CD requires that:

...Tampa Electric shall install, at each Unit that will continue to combust coal, the NO_x control technology designed to achieve the lowest Emission Rate that can be attained within the "installation cost ceiling." Notwithstanding any provision of this Consent Decree, including the "installation cost ceiling," Tampa Electric shall install NO_x control technology that is designed to achieve an Emission Rate no less stringent than 0.15 lb/mmBTU.

By letter dated May 31, 2005, Tampa electric advised EPA that:

The actual cost to install SCRs on Big Bend Units 1 through 3 is projected to be $264,387,249. Since the installation cost ceiling has been exceeded by $39,018,183, a NO_x emission limit of 0.15 lb/MMBtu is clearly applicable under Paragraph 37 of the CD.

In an e-mail memorandum from EPA dated September 15, 2005, the Department received the following additional information related to the proposed project:

As we discussed over the phone, here is a status update concerning NOx limits at Big Bend. EPA/DOJ and TECO have reached a verbal agreement to amend the Consent Decree in the following manner:

1. Assign a NOx "emissions rate" for Big Bend Units 1, 2 and 3 of 0.12 lbs/mmBtu.

2. Modify the definition of "emissions rate" so that an equation is used that divides total pounds by total heat in each 30-day period to reach a 30-day rolling average.

TAMPA ELECTRIC PROPOSAL TO COMPLY WITH CFJ AND CD

By letter dated July 15, 2004, Tampa Electric submitted a petition to the Florida Public Service Commission for approval of new environmental programs for cost recovery through the environmental Recovery Clause at Section 366.8255, Florida Statutes.

The petition summarizes the CFJ and CD and includes a study conducted by Tampa Electric and its consultant, Sargent Lundy. The study justifies the decision to continue operating Units 1 through 4 as coal-fired units and installing SCR to comply with the NO_X requirements of the CFJ and CD.

The repowering options evaluated in the study included reboilering with subcritical pulverized coal ("PC") boilers, circulating fluidized bed ("CFB") boilers, conversion of

the existing boilers to natural gas, combined cycle ("CC") gas turbine technology and IGCC similar to the Polk facility.

The greenfield options evaluated in the Study included all the foregoing repowering technologies with the exceptions that new PC boilers would be supercritical, and natural gas fired Rankin cycle units would not be evaluated due to lower cycle heat rates.

The cost to install SCR on the four existing coal-fired units was estimated to be $305,450,000 whereas the cost of the least expensive CFB repowering option was estimated to be $700,000,000 more. The cost to install SCRs on Units 1 through 3 was projected to be $264,387,249. The annual operating and maintenance costs for the four units were estimated to be $12,750,000.

By an order dated October 11, 2004, and consummated (made final) on November 4, 2004, the PSC granted Tampa Electric's petition.

5.0 SCR PROJECT ON UNIT 3

Much of the following description is from the application submitted to the Department on June 6, 2005. Some additional details are from the Tampa Electric website or their filings with the PSC.

Figure 3 is a diagram of the proposed SCR installation. This configuration is typically known as dusty or hot side SCR meaning it is placed before the electrostatic precipitator.

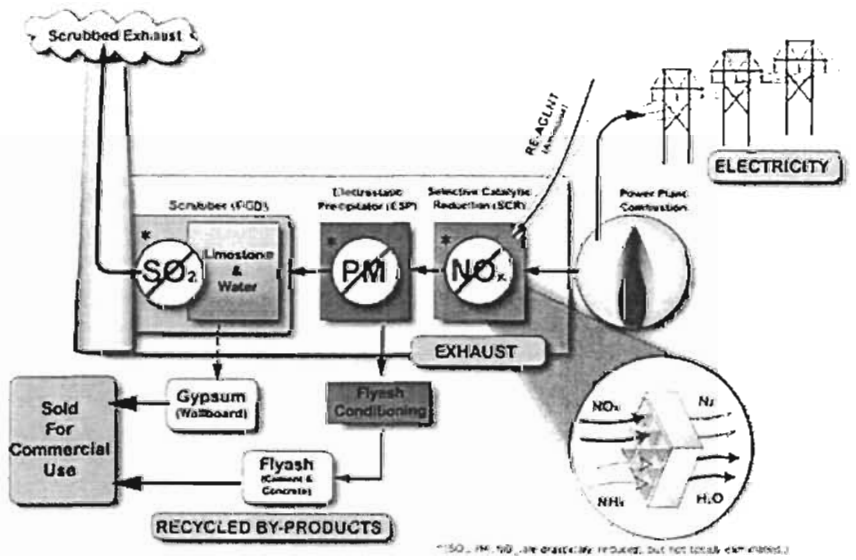

Figure 3. Diagram of SCR Installation and Existing Pollution Control Equipment

Following are key points regarding the proposed project:

- The SCR system will be installed downstream of the economizer and upstream of the preheater.
- The SCR reactor will be designed as a "three plus one" catalyst configuration. It is planned that the forth catalyst management layer, designed to maximize the residual

catalyst life and lower operating costs, will be initially empty and will be charged as the initial three catalyst layers lose activation.

- The applicant has indicated that available options with respect to ammonia type and supply are currently being evaluated. Thus, details of the installation of an ammonia storage, supply, and injection system are still under development. The options include use of anhydrous ammonia supplied by pipeline without on-site storage. TEC has indicated that they not have any management control over the operation of the pipeline. The Department will be sent update reports as the study progresses.
- SCR tuning (i.e., adjustment of the ammonia injection grid) will be performed during the initial commissioning of the system.
- The Applicant will install an ammonia injection system immediately downstream of the Unit No. 3 air preheater to control the increase of sulfur trioxide (SO_3) that the applicant expects will result from the use of a vanadium-containing catalyst in SCR systems.
- The Applicant has proposed that ammonia slip, measured at the stack downstream of all emissions control systems, be targeted at 5 parts per million by volume (ppmv). Annual testing of ammonia slip will be conducted and corrective measures taken if this target level is exceeded.
- The basic boiler startup and shutdown procedures will not need to be altered with the addition of the SCR (i.e., the existing Unit No. 3 boiler ramp rate is adequate for the SCR catalyst).
- The Applicant reviewed the impact that the operation of an SCR system would have on coal combustion by-products and found that the fly ash would have limited marketability due to high ammonia content and carbon content. Therefore, a large portion of the fly ash could potentially need to be disposed of in a landfill. The Applicant researched this issue and found that other companies mitigate the SCR impact on fly ash by using carbon burnout technology (CBO) to reduce the carbon content. The Applicant evaluated this technology, has determined it to be feasible at the facility, and has submitted an air construction permit application to the Department to implement the CBO technology.

More specific details of the capital cost components of the SCR system include:

- Demolition of existing flue gas ductwork as necessary to tie-in the SCR system
- Demolition of existing structural steel, modification and reinforcement of existing steel supports for a new duct from the existing steel
- Economizer bypass for gas temperature control
- Gas ductwork from economizer outlet to the SCR inlet (includes hoppers, mixers and turning vanes)
- SCR reactor (includes equipment for catalyst management)
- Gas ductwork between the SCR & air heater
- Foundations for ductwork and structural steel

- Structural modifications for construction cranes
- Electrical modifications
- Relocation of existing equipment and utilities
- Mobilization/demobilization
- Equipment rental
- Engineering construction management
- New and modified ductwork
- Auxiliary power and controls modifications

The Department notes that the scrubber should be able to remove SO_3 formed in the SCR system and ammonium sulfate/sulfite/bisulfite species to a high degree. The Department notes that with respect to combustion by-products, the ash would most likely be affected by previous combustion modifications rather than by the SCR system. The SCR system could have some effect on the ash due to presence of ammonia, some of which could adhere to the fly ash.

6.0 PROJECT SCHEDULE

Emissions Unit ID Number	Estimated Start Date	Estimated Completion Date
003	November 1, 2005	May 1, 2008

7.0 PROJECT EMISSIONS & RULE APPLICABILITY

There will be a decrease in the allowable emissions of nitrogen oxides (NO x) as a result of implementing this project. Noted below are the existing limits and the proposed changes for the pollutant:

Pollutant	Existing limits	Proposed limit
Nitrogen Oxides (NO_X)	0.70 pounds per mmBtu heat input (Title V Permit Specific Condition **A.10.**), based on a 30-day rolling average. 0.53 pounds per mmBtu heat input (Acid Rain Part requirement using the NO_x emissions averaging plan). Heat input to Unit No. 3 is limited to 4115 mmBtu/hour.	0.12 pounds per mmBtu heat input. This emission limit is based on the definition of "emission rate" so that an equation is used that divides total pounds of NO_x by total heat input in each 30-day period to reach a 30-day rolling average. Emissions will be continuously monitored to confirm compliance, using the Unit's existing continuous emissions monitoring system (CEMS).

According to the EPA Clean Air Markets Website, Unit 3 emitted 0.57 lb/mmBtu in 1998. In 2003, Unit 3 emitted 0.55 lb/mmBtu. Emissions through the first quarter of 2005 indicate emissions of 0.48 lb/mmBtu. This shows that a modest reduction to-date has been achieved.

Further reduction to 0.10 lb/mmBtu can be accomplished without aggressive ammonia or urea injection. This supports the idea that SCR will not necessarily have as much effect on ash properties compared with similar projects at other plants. It is possible that Tampa Electric can back off somewhat in the combustion techniques used to reduce NO_X when SCR becomes available and then optimize the control stratagem to reduce impacts on ash.

Using the appropriate maximum heat input value for Unit No. 3 (i.e., 4,115 mmBtu/hour), and the existing and proposed emissions limits for NO_X noted above, results in a calculation of the expected reduction of potential NO_X emissions of about 7,390 tons per year. This is equivalent to a 77% reduction from current allowable limits under the Acid Rain Part of the facility's Title V Permit Renewal. Computations follow below:

(0.53 – 0.12) lbs/mmBtu = 0.41 lbs/mmBtu heat input reduction.

0.41 lbs/mmBtu x 4115 mmBtu/hour x 8760 hours per year / 2000 lbs/ton = 7,390 tons per year.

Based on a more realistic estimate of an 80 percent capacity factor and the most recent emission rate of 0.48 lb/mmBtu, the calculations would be as follows:

(0.48 – 0.12) lbs/mmBtu = 0.36 lbs/mmBtu heat input reduction

0.36 lbs/mmBtu x 4115 mmBtu/hour x (0.80) 8760 hours per year / 2000 lbs/ton = 5,191 tons per year

In summary, the addition of SCR to Unit No. 3 reduces actual as well as allowable NO_X emissions, and does not involve any other significant changes related to emissions of other pollutants or operational parameters (e.g., mass flow to the stack, other than the addition of dilution air for ammonia injection, or stack temperature). The SCR system in combination with the existing scrubbers should help reduce mercury emissions as well.

It has been determined by the Department that the project is a Pollution Control Project, as defined in 40 CFR 52.21(b)(32), and meets the requirements of Rule 62-212.400(2)(a)2., F.A.C., and 40 CFR 52.21(b)(2)(iii)(h). Therefore, the project is not defined as a modification under Department regulations.

Furthermore the additional projects related to the SCR installation and enumerated above are projects in support of a pollution control project. They are treated as pollution control projects and do not constitute modifications under Department regulations.

The emission unit affected by this permit shall comply with all applicable provisions of the Florida Administrative Code (including applicable portions of the Code of Federal Regulations incorporated therein), and all specific conditions of the facility's existing Title V Air Operation Permit Renewal No. 0590039-017-AV.

8.0 CONCLUSION

Based on the foregoing technical evaluation of the application and other available information, the Department has made a determination that the proposed project will comply with all applicable state and federal air pollution regulations. The Department will issue a Draft Air Construction Permit to the applicant that provides for the above changes at the facility.

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Colleen M. Castille
Secretary

DRAFT AIR CONSTRUCTION PERMIT NO. 0570039-022-AC

PERMITTEE

Tampa Electric Company (TEC)	File/Permit No.	**0570039-022-AC**
Big Bend Station	Facility ID:	0570039
Post Office Box 111	Project:	NO_X Reduction (SCR)
Tampa, Florida 33601-0111		Steam Generator Unit 3
	SIC No.	4911
Authorized Representative:	Expires:	December 31, 2008
Karen Sheffield, General Manager	County	Hillsborough

PROJECT AND LOCATION

This is an Air Construction Permit for the installation of a selective catalytic reduction system for nitrogen oxides control on the solid fuel-fired Steam Generator Unit No. 3. The reductions are part of an emissions reduction program required by a Consent Final Judgment with the Department and a Consent Decree with the United States Environmental Protection Agency. The air construction permit will also establish these specific projects as applicable Title V Operation Permit conditions.

The Tampa Electric Company (TEC) Big Bend Station is located at Wyandotte Road, Apollo Beach, Hillsborough County. UTM Coordinates are Zone 17, 361.9 km East and 3075.0 km North; Latitude: 27° 47' 36" North and Longitude: 82° 24' 11" West.

STATEMENT OF BASIS

This Air 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.). The above named permittee is authorized to install the SCR system at the facility 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).

THE ATTACHED APPENDIX IS MADE A PART OF THIS PERMIT:

Appendix GC	Construction Permit General Conditions

Michael G. Cooke, Director
Division of Air Resource Management

FACILITY DESCRIPTION

This facility consists primarily of four existing fossil fuel steam generators (boilers) and three simple-cycle combustion turbines. Emissions from all steam generators are controlled by electrostatic precipitators (ESPs), and flue gas desulfurization (FGD) systems. There are ongoing nitrogen oxides (NO_X) control projects pursuant to a Consent Final Judgment (CFJ) between TEC and the Department and a Consent Decree (CD) between TEC and the United States Environmental Protection Agency (EPA).

EMISSIONS UNITS

This permit addresses the installation of an ammonia injection system and catalyst at the following Unit:

Emission Unit No.	System	Emission Unit Description
003	Power Generation	445 MW Fossil Fuel Steam Generator

The proposed project is called selective catalytic reduction (SCR). A recent NO_X control project on Unit 3 includes installation of new coal nozzles suitable for low NO_X operation.

REGULATORY CLASSIFICATION

The facility is classified as a Major or Title V Source of air pollution because emissions of at least one regulated air pollutant, such as particulate matter (PM/PM_{10}), sulfur dioxide (SO_2), nitrogen oxides (NO_X), carbon monoxide (CO), or volatile organic compounds (VOC), exceed 100 tons per year (TPY).

The addition of SCR to Unit No. 3 reduces actual and allowable NO_X emissions. It has been determined by the Department that the project is classified as a Pollution Control Project, as defined in 40 CFR 52.21(b)32, and meets the requirements of Rule 62-212.400(2)(a)2., F.A.C., and 40 CFR 52.21(b)(2)(iii)(h). Therefore, the project is not a modification under Department regulations.

PERMIT SCHEDULE

- Month day, 2005 Notice of Intent to Issue Permit published.
- Month day, 2005 Intent to Issue Permit distributed.
- September 15, 2005 Application deemed complete.
- June 6, 2005 Application received.

RELEVANT DOCUMENTS

The documents listed below are the basis of the permit. They are specifically related to this permitting action, but not all are incorporated into this permit. These documents are on file with the Department.

- Application received on June 6, 2005.
- The Department's Technical Evaluation and Preliminary Determination, issued concurrently with this draft air construction permit.
- EPA Consent Decree (U.S. vs. TEC) dated February 29, 2000, amended October 4, 2000.
- FDEP Consent Final Judgment (DEP vs. TEC) dated December 6, 1999.
- Title V Air Operation Permit Renewal No. 0570039-017-AV.
- Tampa Electric Submittals for PSC Docket 040750-EI.
- E-mail memorandum from EPA received on September 15, 2005.

PROJECT DESCRIPTION

TEC will install a SCR system for NO_X control on the facility's Unit No. 3 coal-fired boiler. This emissions unit is a Riley Stoker Corporation "wet" bottom utility boiler, with a generator nameplate rating of 445 megawatts (MW). The basic boiler startup and shutdown procedures will not need to be altered with the addition of the SCR (i.e., the existing Unit No. 3 boiler ramp rate is adequate for the SCR catalyst). The project consists of:

- Installation of a "three plus one" SCR reactor downstream of the economizer and upstream of the air preheater.
- Installation of an ammonia storage, supply, and injection system, the details of which are still under development.
- SCR tuning (i.e., adjustment of the ammonia injection grid) during the initial commissioning of the system.
- Installation of an ammonia injection sulfur trioxide (SO_3) control system downstream of the Unit No. 3 air preheater.
- Assessment of combined effects of SCR and previous NO_X and SO_3 control system projects upon fly ash marketability, and development of treatment, reuse, or disposal options for the fly ash.

The project is much more involved than suggested by the brief description above. Following are additional details of the work likely to occur in association with the SCR installation:

- Demolition of existing flue gas ductwork as necessary to tie-in the SCR system
- Demolition of existing structural steel, modification and reinforcement of existing steel supports for a new duct from the existing steel
- Economizer bypass for gas temperature control
- Gas ductwork from economizer outlet to the SCR inlet (includes hoppers, mixers and turning vanes)
- SCR reactor (includes equipment for catalyst management) and catalyst
- Gas ductwork between the SCR & air heater
- Foundations for ductwork and structural steel
- Structural modifications for construction cranes
- Ammonia injection system
- Electrical modifications
- Relocation of existing equipment and utilities
- Mobilization/demobilization
- Equipment rental
- Engineering construction management
- New and modified ductwork
- Auxiliary power and controls modifications

PROJECT SCHEDULE

Emissions Unit ID Number	Estimated start date	Estimated completion date
003	November 1, 2005	May 1, 2008

ADMINISTRATIVE REQUIREMENTS

A.1. Regulating Agencies. All documents related to applications for permits to construct, operate or modify an emissions unit should be submitted to the Bureau of Air Regulation, Florida Department of Environmental Protection, at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, and phone number (850) 488-0114. All documents related to reports, tests, and notifications should be submitted to the Environmental Protection Commission of Hillsborough County, and copies of those submittals shall be sent to the Department of Environmental Protection, Southwest District Office.

Addresses and telephone numbers are:

Environmental Protection Commission of Hillsborough County
1410 North 21 Street
Tampa, Florida 33605
Telephone: 813/272-5530; Fax: 813/272-5605

Department of Environmental Protection
Southwest District Office, Air Resources Section
3804 Coconut Palm Drive
Tampa, Florida 33619-1352
Telephone: 813/744-6100; Fax: 813/744-6084

A.2. General Conditions. The owner and operator is subject to, and shall operate under the attached General Permit Conditions **G.1.** through **G.15.** listed in Appendix GC of this permit. General Permit Conditions are binding and enforceable pursuant to Chapter 403 of the Florida Statutes.
[Rule 62-4.160, F.A.C.]

A.3. Terminology. The terms used in this permit have specific meanings as defined in the corresponding chapters of the Florida Administrative Code (F.A.C.).

A.4. Forms and Application Procedures. The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C., and follow the application procedures in Chapter 62-4, F.A.C.
[Rule 62-210.900, F.A.C.]

A.5. Modifications. The permittee shall give written notification to the Department when there is any modification to this facility. This notice shall be submitted sufficiently in advance of any critical date involved to allow sufficient time for review, discussion, and revision of plans, if necessary. Such notice shall include, but not be limited to, information describing the precise nature of the change; modifications to any emission control system; production capacity of the facility before and after the change; and the anticipated completion date of the change. [Chapters 62-210 and 62-212, F.A.C.]

A.6. 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.]

A.7. Permit Extension. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Bureau of Air Regulation prior to 60 days before the expiration of the permit. [Rule 62-4.080, F.A.C.]

APPLICABLE STANDARDS AND REGULATIONS

A.8. Unless otherwise indicated in this permit, the construction and operation of the subject emission unit(s) 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 Florida Administrative Code Chapters 62-4, 62-103, 62-204, 62-210, 62-212, 62-213, 62-214, 62-296, and 62-297.

A.9. 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.]

A.10. The facility is subject to all of the requirements specified in Title V Air Operation Permit Renewal No. 0570039-017-AV.

A.10.1. An application for a Title V Air Operation Permit Revision, pursuant to Chapter 62-213, F.A.C., must be submitted to the Department's Bureau of Air Regulation to incorporate the specific conditions of this Air Construction Permit. [Chapter 62-213, F.A.C.]

GENERAL OPERATION REQUIREMENTS

A.11. 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)(c)., F.A.C.]

A.12. 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 Environmental Protection Commission of Hillsborough County 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.]

A.13. 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.]

A.14. Circumvention. The owner or operator shall not circumvent the air pollution control equipment or allow the emission of air pollutants without this equipment operating properly. [Rules 62-210.650, F.A.C.]

CONTROL TECHNOLOGY

A.15. The permittee shall install a selective catalytic reduction (SCR) system for nitrogen oxides (NO_X) control on the facility's Unit No. 3 solid fuel-fired boiler.
[Applicant Request and EPA Consent Decree (U.S. vs. TEC) dated February 29, 2000, amended October 4, 2000, and FDEP Consent Final Judgment (DEP vs. TEC) dated December 6, 1999.]

SCR OPERATION

A.15.1. The permitee shall operate the SCR system in accordance with the catalyst manufacturer's recommendations, including operating the SCR between minimum and maximum operating temperatures.

A.15.2. The partial SCR maintenance bypass duct is normally closed except during maintenance periods.

EMISSION LIMITS AND STANDARDS

A.16. After April 30, 2008, NO_X emissions (reported as NO_2) from Unit No. 3 when combusting bituminous or anthracite coal, or a coal/petroleum coke blend, shall not exceed 0.12 lb/million Btu heat input. Based upon a heat input limit of 4115 million Btu/hour, NO_X emissions shall not exceed 494 lb/hr. These emission limits are based on the definition of "emission rate" so that an equation is used that divides total pounds of NO_x by total heat input in each 30-day period to reach a 30-day rolling average. [Applicant Request and EPA Consent Decree (U.S. vs. TEC) dated February 29, 2000, amended October 4, 2000, and FDEP Consent Final Judgment (DEP vs. TEC) dated December 6, 1999; and E-mail memorandum from EPA received on September 15, 2005.]

{Permitting Note: Limits in this condition are sufficient to also comply with requirements of: Rule 62-204.800(7)(b)2., F.A.C.; 40 CFR 60.44a(a); 40 CFR 60.4a(c); and PSD-FL-040]

A.17. Ammonia slip, measured at the stack downstream of all emissions control systems, shall not exceed 10 parts per million by volume (ppmv). Annual testing of ammonia slip shall be conducted, and corrective measures taken if measured values exceed 5 ppmv.
[Applicant request; and Rule 62-4.070(3), F.A.C.]

COMPLIANCE DETERMINATION

A.18. Nitrogen oxides emissions shall be continuously monitored to confirm compliance, using the Unit's existing continuous emissions monitoring system (CEMS). Compliance is determined by calculating the arithmetic average of all hourly emission rates for NO_X for the 30 successive boiler operating days, except for data obtained during startup, shutdown, or malfunction.
[Rule 62-204.800(7)(b)2., F.A.C.; 40 CFR 60.46a(g), 0570039-017-AV]

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

A.20. Compliance with the allowable emission limiting standards specified in this Air Construction Permit shall be determined by April 30, 2008, and annually thereafter, using the appropriate specific conditions of the facility's existing Title V Air Operations Permit No. 0570039-017-AV, by using the appropriate EPA reference test methods, or Department test methods.
[0570039-017-AV; and Rules 62-204.220 and 62-4.070(3), F.A.C.]

A.21. Compliance with the additional 30-day NO_X limit of 0.12 lb/mmBtu shall be demonstrated using CEMS data beginning May 31, 2008 (or 30 boiler operating days after May 1, 2008), and every 30 boiler operating days thereafter.

A.22. Test Results. Compliance test results shall be submitted to the Environmental Protection Commission of Hillsborough County and the Department no later than 45 days after completion of the last test run. [Rule 62-297.310(8), F.A.C.]

NOTIFICATION, REPORTING, AND RECORDKEEPING

A.23. Emission Compliance Stack Test Reports. A test report indicating the results of the required compliance tests shall be filed as per Specific Condition **A.22.** 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.]

COMPLIANCE ASSURANCE

A.24. Compliance Assurance Monitoring (CAM). The permittee shall evaluate the applicability of CAM to Unit No. 3 and, if applicable, submit a CAM plan as a revision to the facility's current Title V air operation permit.
[40 CFR 64; and Rule 62-204.800, F.A.C.]

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Big Bend Station
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Big Bend Station
Tampa Electric Company
Post Office Box 111
Tampa, Florida 33601-0111

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X ☐ Agent ☐ Addressee

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2600 Blair Stone Rd., MS 5505
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Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Colleen M. Castille
Secretary

June 30, 2005

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Ms. Karen Sheffield, General Manager
Big Bend Station
Tampa Electric Company
Post Office Box 111
Tampa, Florida 33601-0111

Re: Big Bend Unit 3
DEP File No. 0570039-022-AC
Selective Catalytic Reduction (SCR) System

Dear Ms. Sheffield:

We have begun the review of your air construction permit application received on June 6, 2005. However, we must deem your application *incomplete*, because we need further information relative to the following items:

- You are requesting a permit condition authorizing the cessation of the ammonia injection during periods of low load and exhaust temperature. Please provide documentation from the SCR catalyst manufacturer recommending this operating practice.
- Please provide a status report concerning EPA's responses to the items in Mr. Gregory Nelson's letter of June 24, 2005, on the SCR project, specifically:
  - Approval of the emissions limit of 0.15 lb/mmBtu for NO_x for the Unit.
  - Assessment of the request for cessation of the ammonia injection during periods of low load and exhaust temperature (SCR bypass).
- We note that one difference between the Big Bend 3 and Big Bend 4 projects is the addition of a "partial SCR maintenance bypass" duct as indicated in the Flow Diagram. Although logical for maintenance needs, perhaps a condition identifying the need to ensure closure of this duct when not in a maintenance period should be added. Please comment on this item.

When we receive this information, we will continue processing your application. If you have any questions, please contact Tom Cascio at 850-921-9526.

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 62-4.055(1), 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.

Sincerely,

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

Cc: Thomas Davis, P.E.
Shelly Castro, TEC
Alice Harman, EPCHC
Jason Waters, FDEP-SWD
David Lloyd, EPA Region 4

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- Attach this card to the back of the mailpiece, or on the front if space permits.

1 Article Addressed to:

Ms. Karen SHeffield, General Manager
Big Bend Station
Tampa Electric Company
Post Office box 111
Tampa, Florida 33601-0111

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

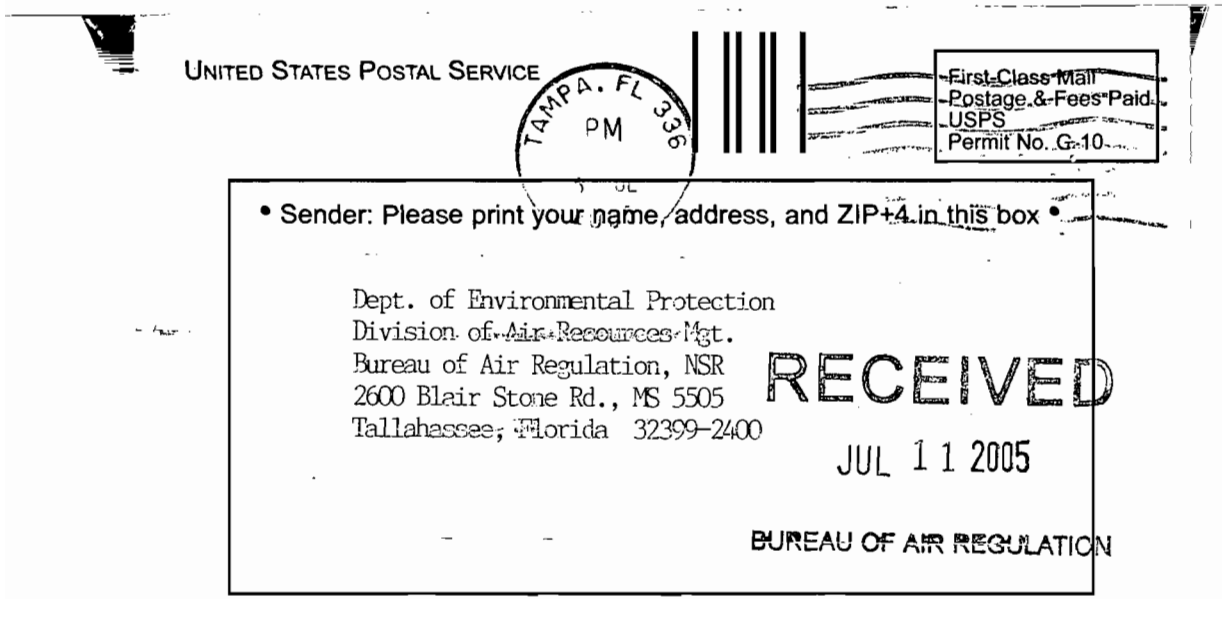
DOWNTOWN STATION JUL -5 2005 TAMPA FL 33601

3. Service Type
XX ☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number
(Transfer from service label) 7000 2870 0000 7028 2430

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540


UNITED STATES POSTAL SERVICE
TAMPA, FL 336
PM
First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10
• Sender: Please print your name, address, and ZIP+4 in this box •
Dept. of Environmental Protection
Division of Air Resources Mgt.
Bureau of Air Regulation, NSR
2600 Blair Stone Rd., MS 5505
Tallahassee, Florida 32399-2400
RECEIVED
JUL 11 2005
BUREAU OF AIR REGULATION

TAMPA ELECTRIC

RECEIVED

JUN 06 2005

BUREAU OF AIR REGULATION

June 3, 2005

Mr. Tom Cascio,
Florida Department of
Environmental Protection
111 South Magnolia Drive, Suite 4
Tallahassee, FL 32301

Via FedEx
Airbill No. 7922 9890 5641

Re: Tampa Electric Company
Big Bend Station
Consent Decree
Civil Action No. 99-2524 CIV-T-23F
Air Construction Permit Application for
Unit 3 Selective Catalytic Reduction (SCR) Project

Dear Mr. Cascio,

Tampa Electric Company (TEC) requests an air construction permit to install a selective catalytic reduction (SCR) system for nitrogen oxides (NO_x) control on its Big Bend Station Unit 3 coal-fired boiler. TEC entered into the agreements with the Environmental Protection Agency (EPA) and the Florida Department of Environmental Protection (FDEP) concerning the installation of additional air pollution control systems at Big Bend Station. These agreements (EPA Consent Decree and FDEP Consent Final Judgment) included requirements to install additional air pollution control systems for NO_x control on Unit 3. In response to these requirements, TEC determined that the installation of low NO_x burners (LNB) and an SCR system are the technologies to be utilized to reduce the NO_x emissions on Big Bend Unit 3 to satisfy the requirements of the agreements.

Additionally, TEC reviewed the impacts with the operation of the SCR, associated combustion controls and associated systems (sulfur trioxide control) to determine the affects on the coal combustion byproducts and found that the fly ash would have limited marketability due to high ammonia content and carbon content. Therefore, a large portion of the fly ash could potentially need to be disposed of in a landfill. TEC researched this issue and found that several other companies mitigate the SCR impacts on fly ash by using carbon burnout (CBO) technology to reduce the carbon content. TEC has evaluated this technology and determined it to be feasible at Big Bend Station. A separate air construction permit for the CBO technology will be submitted.

As stated in a letter sent to the FDEP dated April 4, 2003 and as mentioned in the meeting between TEC and FDEP on May 31, 2005, TEC reviewed the effects of installing the future NO_x

control and SO_3 control systems and determined that there is a potential for increase in particulate matter (PM) and opacity. Therefore, a request for higher permit limits may be submitted in the future.

Please find the enclosed air construction permit application for Big Bend Station's Unit 3 SCR.

TEC appreciates the cooperation of the Department in this matter. If you have any questions or comments, please contact Shelly Castro or me at (813) 228-4408.

Sincerely,

Byron T. Burrows
Manager - Air Programs
Environmental, Health & Safety

EHS/rlk/SSC222

Enclosure

c/enc: Ms. Alice Harman, EPCHC
Mr. Jerry Kissel, FDEP SW
Mr. David Lloyd, EPA
Mr. Scott Sheplak, FDEP
Ms. Trina Vielhauer, FDEP
Mr. Sterlin Woodard, EPCHC

BIG BEND STATION

SELECTIVE CATALYTIC REDUCTION

UNIT 3 NO_x EMISSIONS CONTROL SYSTEM RETROFIT PROJECT

APPLICATION FOR AIR CONSTRUCTION PERMIT

Prepared for:

TAMPA ELECTRIC
Tampa, Florida

Prepared by:

Environmental Consulting & Technology, Inc.
3701 Northwest 98th Street
Gainesville, Florida 32606

ECT No. 040923-0100

June 2005

INTRODUCTION

Tampa Electric Company (TEC) requests an air construction permit to add a selective catalytic reduction (SCR) system for nitrogen oxides (NO_x) control to its Big Bend Station Unit 3 coal-fired boiler. TEC entered into agreements with the U.S. Environmental Protection Agency (EPA) and the Florida Department of Environmental Protection (FDEP) which embody the resolutions between the agencies and Tampa Electric stemming from disputed issues surrounding Tampa Electric's maintenance activities to its Big Bend and Gannon Stations that were alleged to be in violation of the EPA's New Source Review rules and New Source Performance Standards which are currently codified in Title I of the Clean Air Act Amendment. These settlements and amendments are collectively known as the (Agreements). These Agreements include requirements to install additional systems for NO_x control on Unit 3. In response to these requirements, TEC determined that the installation of a SCR system is required to reduce Big Bend Station Unit 3 NO_x emissions.

Figure 1 shows the location of the Big Bend Unit 3 SCR, which will be installed downstream of the economizer and upstream of the air preheater. The SCR reactor is designed as a three plus one catalyst configuration. The fourth catalyst management layer, designed to maximize the residual catalyst life and lower operating costs, will be initially empty and will be installed as the initial three catalyst layers lose activation.

TEC is currently evaluating available options with respect to ammonia type and supply, and will notify FDEP when TEC's plans are finalized. Current plans include the use of anhydrous ammonia supplied by pipeline without on-site storage. Tampa Electric will not have any control over the operation of the anhydrous ammonia pipeline. Should there be an interruption in the supply of anhydrous ammonia through this pipeline, TEC will be unable to continue SCR ammonia injection and will notify the Department in accordance with the requirements of Rule 62-4.130, *Plant Operation – Problems*. SCR tuning (i.e., adjustment of the ammonia injection grid) will be performed during the initial commissioning of the system and periodically thereafter.

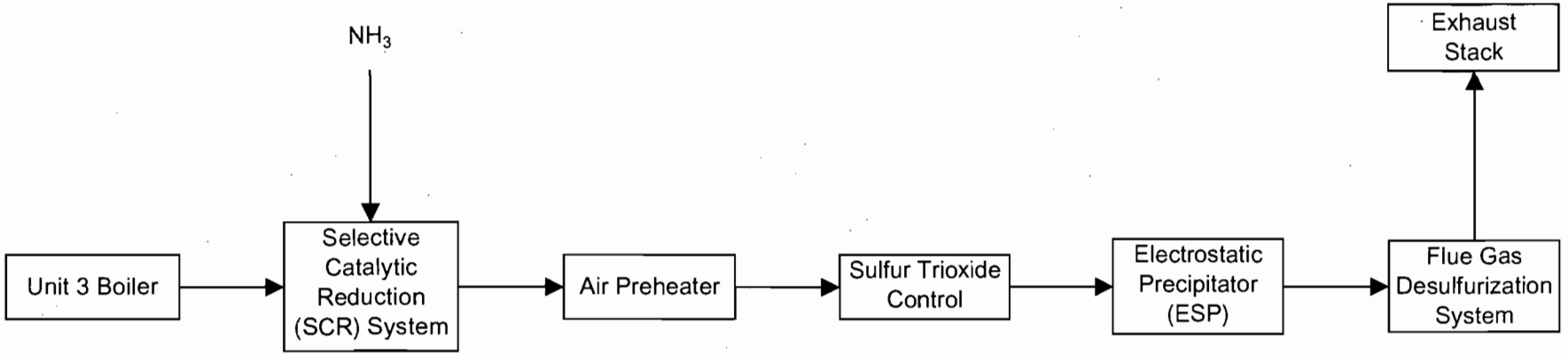


FIGURE 1.

SIMPLIFIED FLOW DIAGRAM OF BIG BEND UNIT 3 CONTROL SYSTEMS

Source: ECT, 2005.

ECT
Environmental Consulting & Technology, Inc.

TEC proposes to install a system immediately downstream of the Unit 3 air preheater to control the inherent increases of sulfur trioxide (SO_3) that result from the use of vanadium-containing catalyst in SCR control systems.

TEC is proposing that ammonia slip, measured at the stack downstream of all emission control systems, be targeted at 5 parts per million by volume (ppmv). TEC is also proposing to conduct annual testing of ammonia slip and perform corrective measures if the target level is being exceeded.

The minimum operating temperature of the SCR catalyst is approximately 625 degrees. Extended operation below this temperature is not recommended by the catalyst manufacturer since it will likely damage the catalyst, create pluggage in the air preheater, and will void the manufacturer's guarantees/warrantees. For these reasons, ammonia typically will not be injected into the SCR system. This will include events such as boiler startups and shutdowns, equipment malfunctions, operating and maintenance requirements such as condenser cleanings, and various other low load conditions. The Unit 3 SCR control system will not include a bypass. TEC requests that a permit condition be included in the Unit 3 SCR air construction permit authorizing the cessation of SCR ammonia injection during periods of low loads and exhaust temperatures in accordance with the SCR catalyst manufacturer recommended operating procedures.

Big Bend Unit 3 SCR will be designed to meet a NO_x emission limit of 0.15 pound per million British thermal unit (lb/MMBtu) based on a 30-day rolling average inclusive of low load operation. NO_x will be continuously monitored using the existing Unit 3 NO_x continuous emissions monitoring system to confirm compliance. The SCR system does not add significant mass flow to the stack other than the addition of dilution air for ammonia injection. The stack temperature will be unaffected.

Major construction activities for the Big Bend Station Unit 3 SCR control system are scheduled to begin August 1, 2005, and be completed by May 1, 2008.

FDEP's Application for Air Permit, Long Form, follows this introduction. Attachment A provides a process flow diagram of Unit 3 SCR. Attachment B provides a permit template with proposed wording.

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
- at an existing federally enforceable state air operation permit (FESOP) or Title V permitted facility.

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: **Tampa Electric Company**	
2. Site Name: **Big Bend Station**	
3. Facility Identification Number: **0570039**	
4. Facility Location...: Street Address or Other Locator: **13031 Wyandotte Road** City: **Apollo Beach** County: **Hillsborough** Zip Code: **33572**	
5. Relocatable Facility? ☐ Yes ☒ No	6. Existing Title V Permitted Facility? ☒ Yes ☐ No

Application Contact

1. Application Contact Name: **Shelly Castro, Engineer – Air Programs**
2. Application Contact Mailing Address... Organization/Firm: **Tampa Electric Company** Street Address: **P. O. Box 111** City: **Tampa** State: **FL** Zip Code: **33601**
3. Application Contact Telephone Numbers... Telephone: **(813) 228-4408** ext. Fax: **(813) 228-1308**
4. Application Contact Email Address: **sscastro@tecoenergy.com**

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	6-6-05
2. Project Number(s):	0570039-022-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 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

Project consists of the addition of selective catalytic reduction (SCR) to emissions unit (E.U.) 003. This NO_x control system is being installed in accordance with agreements between Tampa Electric Company (TEC) and the U.S. Environmental Protection Agency (EPA Consent Decree) and the Florida Department of Environmental Protection (FDEP Consent Final Judgment).

The Big Bend Station Unit 3 SCR NO_x control system constitutes a pollution control project and therefore is exempt from Prevention of Significant Deterioration (PSD) New Source Review (NSR). As requested by FDEP, this application constitutes TEC's request for an air construction permit for the Big Bend Station Unit 3 SCR NO_x pollution control project.

APPLICATION INFORMATION

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Proc. Fee
003	Unit No. 3 Steam Generator	N/A	N/A

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:
   Karen Sheffield, General Manager, Big Bend Station
2. Owner/Authorized Representative Mailing Address...
   Organization/Firm: **Tampa Electric Company**
   Street Address: **P.O. Box 111**
   City: **Tampa** State: **Florida** Zip Code: **33601-0111**
3. Owner/Authorized Representative Telephone Numbers...
   Telephone: **813-228-4111** ext. Fax: **813-228-1308**
4. Owner/Authorized Representative Email Address: **kasheffield@tecoenergy.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.

   Karen Sheffield — Signature

   5/24/05 — Date

APPLICATION INFORMATION

Application Responsible Official Certification **N/A**

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: **Thomas W. Davis**
   Registration Number: **36777**
2. Professional Engineer Mailing Address...
   Organization/Firm: **Environmental Consulting & Technology, Inc.**
   Street Address: **3701 Northwest 98th Street**
   City: **Gainesville** State: **FL** Zip Code: **32606-5004**
3. Professional Engineer Telephone Numbers...
   Telephone: **(352) 332-0444** ext. Fax: **(352) 332-6722**
4. Professional Engineer Email Address: **tdavis@ectinc.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.

Signature (seal) Date: 5/20/05

* Attach any exception to certification statement.

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates... Zone **17** East (km) **361.9** North (km) **3,075.0**		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
3. Governmental Facility Code: **0**	4. Facility Status Code: **A**	5. Facility Major Group SIC Code: **49**	6. Facility SIC(s): **4911**
7. Facility Comment :			

Facility Contact

1. Facility Contact Name: **Karen Zwolak, Senior Environmental Consultant**
2. Facility Contact Mailing Address... Organization/Firm: **Tampa Electric Company** Street Address: **P. O. Box 111** City: **Tampa** State: **FL** Zip Code: **33601**
3. Facility Contact Telephone Numbers: Telephone: **(813) 228-4111** ext. Fax: **(813) 228-1308**
4. Facility Contact Email Address: **kozwolak@tecoenergy.com**

Facility Primary Responsible Official **N/A**

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... Organization/Firm: Street Address: City: State: Zip Code:
3. Facility Primary Responsible Official Telephone Numbers... Telephone: ( ) - ext. Fax: ( ) -
4. Facility Primary Responsible Official Email Address:

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:	

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
NOX	**A**	**N**
SO2	**A**	**Y**
CO	**A**	**N**
PM10	**A**	**Y**
PM	**A**	**Y**
VOC	**A**	**N**
H106 (Hydrogen Chloride)	**A**	**N**
H107 (Hydrogen Fluoride)	**A**	**N**
H133 (Nickel Compounds)	**A**	**N**
HAPS (Total)	**A**	**N**

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
SO2	**N**	**001 – 004**		**71,810**	**ESCPSD**
PM/PM10	**N**	**001 – 004**		**2,767**	**ESCPSD**

7. Facility-Wide or Multi-Unit Emissions Cap Comment:

Additional SO_2 caps for Units 001 – 003 are 31.5 ton/hr (3-hour average), and 25 ton/hr (24-hour block average). In addition, Units 001 and 002 are limited to 16.5 ton/hr SO_2 (24-hour block average).

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)
   ☐ Attached, Document ID: _____ ☒ Previously Submitted, Date: **Oct. 2004**
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)
   ☒ Attached, Document ID: **Att. A** ☐ 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)
   ☐ Attached, Document ID: _____ ☒ Previously Submitted, Date: **Oct. 2004**

Additional Requirements for Air Construction Permit Applications

1. Area Map Showing Facility Location:
   ☐ Attached, Document ID: ☒ Previously Submitted, Date: **June 30, 2004**
2. Description of Proposed Construction or Modification:
   ☒ Attached, Document ID: **See comment below** ☐ Not Applicable
3. Rule Applicability Analysis:
   ☐ Attached, Document ID: ☒ Previously Submitted, Date: **June 30, 2004**
4. List of Exempt Emissions Units (Rule 62-210.300(3)(a) or (b)1., F.A.C.):
   ☐ Attached, Document ID: _____ ☒ Not Applicable
5. Fugitive Emissions Identification (Rule 62-212.400(2), F.A.C.):
   ☐ Attached, Document ID: ☒ Previously Submitted, Date: **June 30, 2004**
6. Preconstruction Air Quality Monitoring and Analysis (Rule 62-212.400(5)(f), F.A.C.):
   ☐ Attached, Document ID: _____ ☒ Not Applicable
7. Ambient Impact Analysis (Rule 62-212.400(5)(d), F.A.C.):
   ☐ Attached, Document ID: ☒ Not Applicable
8. Air Quality Impact since 1977 (Rule 62-212.400(5)(h)5., F.A.C.):
   ☐ 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.):
   ☐ Attached, Document ID: _____ ☒ Not Applicable
10. Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.):
    ☐ Attached, Document ID: _____ ☒ Not Applicable

Additional Requirements for FESOP Applications N/A

1. List of Exempt Emissions Units (Rule 62-210.300(3)(a) or (b)1., F.A.C.):
   ☐ Attached, Document ID: ☒ Not Applicable

Additional Requirements for Title V Air Operation Permit Applications N/A

See comment below

1. List of Insignificant Activities (Required for initial/renewal applications only):
   ☐ Attached, Document ID: _____ ☐ Not Applicable
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
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

A description of the proposed addition of selective catalytic reduction NO_x control system to Unit 3 is provided in the Introduction and also in Application Comment section on Page 2 of this application.

EMISSIONS UNIT INFORMATION

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:
Riley Stoker wet bottom fossil fuel steam boiler

3. Emissions Unit Identification Number: **003**

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			**49**	☒ Yes ☐ No

9. Package Unit:
Manufacturer: **Riley Stoker** Model Number:

10. Generator Nameplate Rating: **445 MW**

11. Emissions Unit Comment:

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description:

Low-NO_x Burners (LNB) - NO_x
[Control Device Code 205]

Selective Catalytic Reduction (SCR) - NO_x
[Control Device Code 139]

Miscellaneous Control Devices - SO_3
[Control Device Code 099]

Electrostatic Precipitator (ESP) - PM/PM_{10}
[Control Device Code 010]

Wet Limestone Injection Flue Gas Desulfurization (FGD) - SO_2 & PM/PM_{10}
[Control Device Code 042] (Integrated mode and when firing coal/petroleum coke blends and coal residual)

2. Control Device or Method Code(s): **205, 139, 099, 010, 042**

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: **445 MW**		
3. Maximum Heat Input Rate: **4,115 million Btu/hr**		
4. Maximum Incineration Rate:	pounds/hr 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:		

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: **CS002**	2. Emission Point Type Code: **2**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: **N/A**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: **V**	6. Stack Height: **490 feet**	7. Exit Diameter: **24 feet**
8. Exit Temperature: **308** °F	9. Actual Volumetric Flow Rate: **1,389,740 acfm**	10. Water Vapor: %
11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: East (km): North (km):	14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment: **Stack data is for Unit 3, unscrubbed. In Unit 3 flue gas integration mode, Unit 4 FGD receives exhaust flow from both Units 3 and 4 and discharges to both CS002 and CS003.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 5

1. Segment Description (Process/Fuel Type): **Coal burned in Unit No. 3.**		
2. Source Classification Code (SCC): **1-01-002-01**	3. SCC Units: **Tons Burned**	
4. Maximum Hourly Rate: **187.0**	5. Maximum Annual Rate: **1,638,518**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **5.4**	8. Maximum % Ash: **13.3**	9. Million Btu per SCC Unit: **22**
10. Segment Comment: **Btu per SCC unit value (Field 9) based on a nominal coal heat content of 11,000 Btu/lb. Maximum % sulfur (Field 7) is estimated based on 2005 purchases.**		

Segment Description and Rate: Segment 2 of 5

1. Segment Description (Process/Fuel Type): **No. 2 fuel oil burned in Unit No. 3.**		
2. Source Classification Code (SCC): **1-01-005-01**	3. SCC Units: **1,000 Gallons Burned**	
4. Maximum Hourly Rate: **N/A**	5. Maximum Annual Rate: **N/A**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **0.5**	8. Maximum % Ash: **0.1**	9. Million Btu per SCC Unit: **139**
10. Segment Comment: **No. 2 fuel oil burned only during startup, shutdown, flame stabilization, and during the start of a mill.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)

Segment Description and Rate: Segment 3 of 5

1. Segment Description (Process/Fuel Type): **Petroleum coke burned in Unit No. 3.**		
2. Source Classification Code (SCC): **1-01-008-01**	3. SCC Units: **Tons Burned**	
4. Maximum Hourly Rate: **37.4**	5. Maximum Annual Rate: **327,704**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **7.0**	8. Maximum % Ash: **0.8**	9. Million Btu per SCC Unit: **28**
10. Segment Comment: **Maximum petcoke rates (Fields 4 and 5) based on 20% of coal rates.**		

Segment Description and Rate: Segment 4 of 5

1. Segment Description (Process/Fuel Type): **Raw coal residual burned in Unit No. 3.**		
2. Source Classification Code (SCC): **1-01-002-01**	3. SCC Units: **Tons Burned**	
4. Maximum Hourly Rate: *	5. Maximum Annual Rate: **73,000**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **1.43**	8. Maximum % Ash: **57.7**	9. Million Btu per SCC Unit: **6.1**
10. Segment Comment: ***Firing of raw coal residual is limited to 200 tons per day total for Units 1 through 4. Maximum annual coal residual rate (Field 5) is the total for Units 1 through 4.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)

Segment Description and Rate: Segment 5 of 5

1. Segment Description (Process/Fuel Type): **Beneficiated coal residual burned in Unit No. 4.**		
2. Source Classification Code (SCC): **1-01-002-01**	3. SCC Units: **Tons Burned**	
4. Maximum Hourly Rate: *	5. Maximum Annual Rate: **182,500**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **1.5**	8. Maximum % Ash: **35.4**	9. Million Btu per SCC Unit: **17.95**
10. Segment Comment: ***Firing of beneficiated coal residual is limited to 500 tons per day total for Units 1 through 4. Maximum annual coal residual rate (Field 5) is the total for Units 1 through 4. Sulfur, ash, and heat contents are on a dry basis.**		

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
1 - NOX	**205 (Low NO_x Burners)**	**139 [SCR])**	**EL**
2 - CO			**NS**
3 - PM	**010 (ESP)**	**042 (FGD)**	**EL**
4 - PM10	**010 (ESP)**	**042 (FGD)**	**NS**
5 - SO2	**042 (FGD)**		**EL**
6 - VOC			**NS**
7 - H106 (HCl)			**NS**
8 - H107 (HF)			**NS**
9- HAPS			**NS**

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: **NO_x**	2. Total Percent Efficiency of Control: **80 percent**
3. Potential Emissions: **617.3** lb/hour **2,704** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** to tons/year	
6. Emission Factor: **N/A** Reference:	7. Emissions Method Code: **0**

8. Calculation of Emissions:

$$\frac{0.15\ lb\ NO_x}{MMBtu} \times \frac{4{,}115\ MMBtu}{hr} = 617.3\ lb\ \frac{NO_x}{hr}$$

$$617.3\ lb\ \frac{NO_x}{hr} \times 8{,}760\ \frac{hr}{yr} \times \frac{ton}{2{,}000} = 2{,}704\ \frac{ton}{yr}$$

9. 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: **May 1, 2008**
3. Allowable Emissions and Units: **0.15 lb/MMBtu, 30-day rolling average**	4. Equivalent Allowable Emissions: **617.3** lb/hour **2,704** tons/year
5. Method of Compliance: **NO_x CEMS**	
6. Allowable Emissions Comment (Description of Operating Method): **Basis for allowable emissions is the EPA Consent Decree and the FDEP Consent Final Judgment**	

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:	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 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:
8. Calculation of Emissions:	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **Other than NO_x, TEC is not requesting any revisions to currently authorized emission standards as specified in FINAL Title V Permit No. 0570039-021-AV. The information requested by Section F1 regarding Unit 3 allowable emissions for pollutants other than NO_x can be found in FINAL Title V Permit No. 0570039-021-AV.**	

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 ___ 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): **Other than NO_x, TEC is not requesting any revisions to currently authorized emission standards as specified in FINAL Title V Permit No. 0570039-021-AV. The information requested by Section F2 regarding allowable emissions for pollutants other than NO_x for Unit No. 3 can be found in FINAL Title V Permit No. 0570039-021-AV.**	

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 ___ of

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: ☐ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment: **TEC is not requesting any revisions to currently authorized visible emission standards as specified in FINAL Title V Permit No. 0570039-021-AV. The information requested by Section G regarding visible emissions for Unit No. 3 can be found in FINAL Title V Permit No. 0570039-021-AV.**	

Visible Emissions Limitation: Visible Emissions Limitation ___ of

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: ☐ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

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:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **Information regarding Unit No. 3 CEMS remains unchanged from the data previously provided to the Department.**	

Continuous Monitoring System: Continuous Monitor __ of

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

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: **A** ☐ 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 **June 2004**

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: **Intro.** ☐ 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 **June 2004**
   ☐ 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 **June 2004**
   ☐ 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

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))
   ☐ Attached, Document ID: ___ ☒ 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.)
   ☐ Attached, Document ID: ___ ☒ Not Applicable
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only)
   ☐ Attached, Document ID: ___ ☒ Not Applicable

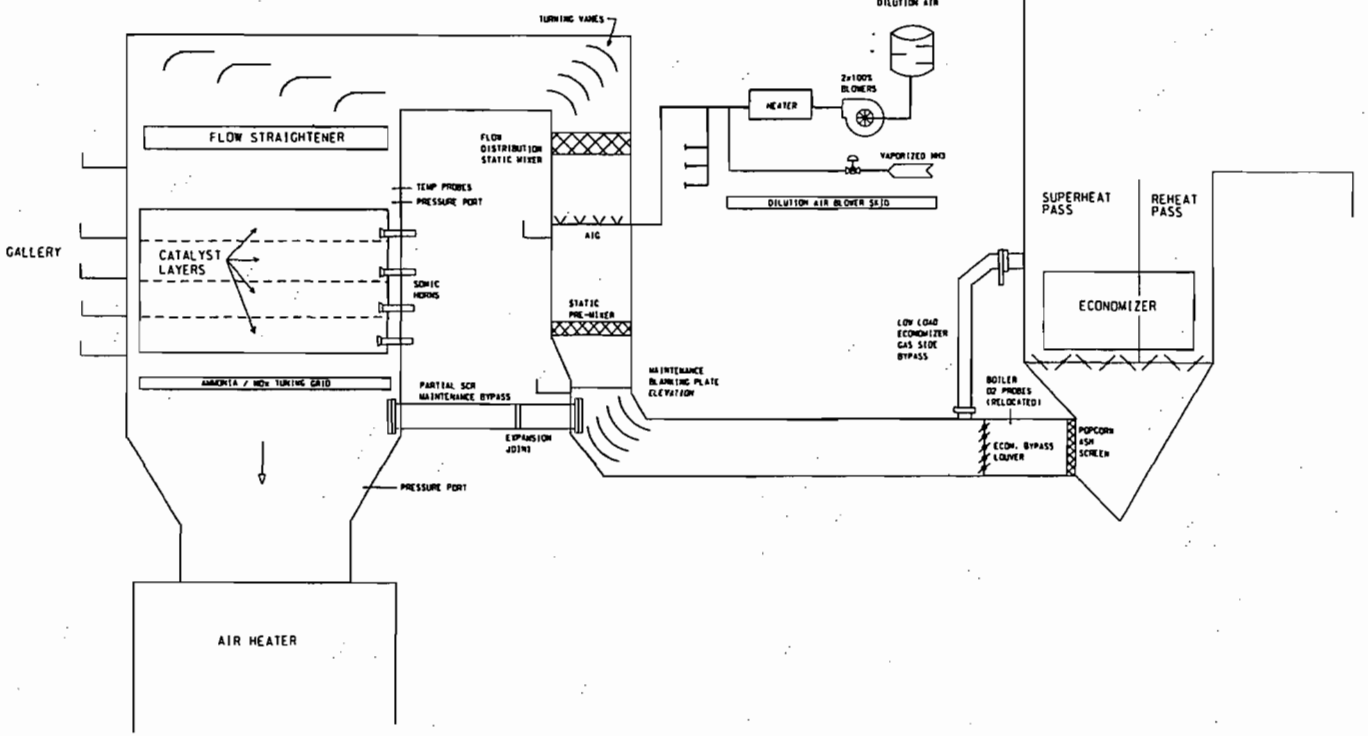
Additional Requirements for Title V Air Operation Permit Applications N/A

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

Additional Requirements Comment

ATTACHMENT A

PROCESS FLOW DIAGRAM



CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S /INSTALLER'S PERSONNEL (OR THAT OF ITS SUBCONTRACTOR(S)) PERFORMING THE WORK

FILE I.D.:

DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE	FILM
A	03/04/2005	J. DONAJKOWSKI	K. HOPKINS	D. ANDERSON	FOR INFORMATION	

TAMPA ELECTRIC

Bergen & Lundy

SCALE: NONE

PROJECT NUMBER: 05476-018

FLOW DIAGRAM

UNIT 3
SCR PROJECT
BIG BEND POWER STATION
TAMPA ELECTRIC CO.

DRAWING NO.: MSK03042005 REV.: A

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ATTACHMENT B

PROPOSED PERMIT

DRAFT AIR CONSTRUCTION PERMIT NO. 0570039-021-AC

PERMITTEE

Tampa Electric Company (TEC)	File/Permit No.	0570039-021-AC
Big Bend Station	Facility ID:	0570039
Post Office Box 111	Project:	NO_X Reduction (SCR)
Tampa, Florida 33601-0111		Steam Generator Unit 3
	SIC No.	4911
Authorized Representative:	Expires:	*Insert Date*
Karen Sheffield, General Manager	County	Hillsborough

PROJECT AND LOCATION

This is an Air Construction Permit for the installation of a selective catalytic reduction system for nitrogen oxides control on the solid fuel-fired Steam Generator Unit No. 3. The reductions are part of an emissions reduction program required by a Consent Final Judgment with the Department and a Consent Decree with the United States Environmental Protection Agency. The air construction permit will also establish these specific projects as applicable Title V Operation Permit conditions.

The Tampa Electric Company (TEC) Big Bend Station is located at Wyandotte Road, Apollo Beach, Hillsborough County. UTM Coordinates are Zone 17, 361.9 km East and 3075.0 km North; Latitude: 27° 47' 36" North and Longitude: 82° 24' 11" West.

STATEMENT OF BASIS

This Air 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.). The above named permittee is authorized to install the SCR system at the facility 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).

THE ATTACHED APPENDIX IS MADE A PART OF THIS PERMIT:

Appendix GC Construction Permit General Conditions

Michael G. Cooke, Director
Division of Air Resource Management

FACILITY DESCRIPTION

This facility consists primarily of four existing fossil fuel steam generators (boilers) and three simple-cycle combustion turbines. Emissions from all steam generators are controlled by electrostatic precipitators (ESPs), and flue gas desulfurization (FGD) systems. There are ongoing nitrogen oxides (NO_X) control projects pursuant to a Consent Final Judgment (CFJ) between TEC and the Department and a Consent Decree (CD) between TEC and the United States Environmental Protection Agency (EPA).

EMISSIONS UNITS

This permit addresses the installation of an ammonia injection system and catalyst at the following Unit:

Emission Unit No.	System	Emission Unit Description
003	Power Generation	445 MW Fossil Fuel Steam Generator

The proposed project is called selective catalytic reduction (SCR). A recent NO_X control project on Unit 3 includes installation of new coal nozzles suitable for low NO_X operation.

REGULATORY CLASSIFICATION

The facility is classified as a Major or Title V Source of air pollution because emissions of at least one regulated air pollutant, such as particulate matter (PM/PM_{10}), sulfur dioxide (SO_2), nitrogen oxides (NO_X), carbon monoxide (CO), or volatile organic compounds (VOC), exceed 100 tons per year (TPY).

The addition of SCR to Unit No. 3 reduces actual and allowable NO_X emissions. It has been determined by the Department that the project is classified as a Pollution Control Project, as defined in 40 CFR 52.21(b)32, and meets the requirements of Rule 62-212.400(2)(a)2., F.A.C., and 40 CFR 52.21(b)(2)(iii)(h). Therefore, the project is not a modification under Department regulations.

PERMIT SCHEDULE

- Month Day, 2005 Notice of Intent to Issue Permit published.
- Month Day, 2005 Intent to Issue Permit distributed.
- Month Day, 2005 Application deemed complete.
- Month Day, 2005 Application received.

RELEVANT DOCUMENTS

The documents listed below are the basis of the permit. They are specifically related to this permitting action, but not all are incorporated into this permit. These documents are on file with the Department.

- Application received on Month Day, 2005.
- The Department's Technical Evaluation and Preliminary Determination, issued concurrently with this draft permit.
- EPA Consent Decree (U.S. vs. TEC) dated February 29, 2000, amended October 4, 2000.
- FDEP Consent Final Judgment (DEP vs. TEC) dated December 6, 1999.
- Title V Air Operation Permit Renewal No. 0570039-017-AV.
- Tampa Electric Submittals for PSC Docket 040750-EI.

PROJECT DESCRIPTION

TEC will install an SCR system for NO_X control on the facility's Unit No. 3 coal-fired boiler. This emissions unit is a Riley Stoker Corporation "wet" bottom utility boiler, with a generator nameplate rating of 445 megawatts (MW). The basic boiler startup and shutdown procedures will not need to be altered with the addition of the SCR (i.e., the existing Unit No. 3 boiler ramp rate is adequate for the SCR catalyst). The project consists of:

- Installation of a "three plus one" SCR reactor downstream of the economizer and upstream of the air preheater.
- Installation of an ammonia storage, supply, and injection system the details of which are still under development.
- SCR tuning (i.e., adjustment of the ammonia injection grid) during the initial commissioning of the system.
- Installation of an ammonia injection sulfur trioxide (SO_3) control system downstream of the Unit No. 3 air preheater.
- Assessment of combined effects of SCR and previous NO_X control and SO_3 control system projects upon fly ash marketability and development of treatment, reuse, or disposal options for the fly ash.

The project is much more involved than suggested by the brief description above. Following are additional details of the work likely to occur in association with the SCR installation:

- Demolition of existing flue gas ductwork as necessary to tie-in the SCR system
- Demolition of existing structural steel, modification and reinforcement of existing steel supports for a new duct from the existing steel
- Economizer bypass for gas temperature control
- Gas ductwork from economizer outlet to the SCR inlet (includes hoppers, mixers and turning vanes)
- SCR reactor (includes equipment for catalyst management) and catalyst
- Gas ductwork between the SCR & air heater
- Foundations for ductwork and structural steel
- Structural modifications for construction cranes
- Ammonia injection system
- Electrical modifications
- Relocation of existing equipment and utilities
- Mobilization/demobilization
- Equipment rental
- Engineering construction management
- New and modified ductwork
- Auxiliary power and controls modifications

PROJECT SCHEDULE

Emissions Unit ID Number	Estimated start date	Estimated completion date
003	August 1, 2005	May 1, 2008

ADMINISTRATIVE REQUIREMENTS

A.1. Regulating Agencies. All documents related to applications for permits to construct, operate or modify an emissions unit should be submitted to the Bureau of Air Regulation, Florida Department of Environmental Protection, at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, and phone number (850) 488-0114. All documents related to reports, tests, and notifications should be submitted to the Environmental Protection Commission of Hillsborough County, and copies of those submittals shall be sent to the Department of Environmental Protection, Southwest District Office.

Addresses and telephone numbers are:

Environmental Protection Commission of Hillsborough County
1410 North 21 Street
Tampa, Florida 33605
Telephone: 813/627.2600; Fax: 813/627-2660

Department of Environmental Protection
Southwest District Office, Air Resources Section
3804 Coconut Palm Drive
Tampa, Florida 33619-1352
Telephone: 813/744-6100; Fax: 813/744-6084

A.2. General Conditions. The owner and operator is subject to, and shall operate under the attached General Permit Conditions **G.1.** through **G.15.** listed in Appendix GC of this permit. General Permit Conditions are binding and enforceable pursuant to Chapter 403 of the Florida Statutes.
[Rule 62-4.160, F.A.C.]

A.3. Terminology. The terms used in this permit have specific meanings as defined in the corresponding chapters of the Florida Administrative Code (F.A.C.).

A.4. Forms and Application Procedures. The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C., and follow the application procedures in Chapter 62-4, F.A.C.
[Rule 62-210.900, F.A.C.]

A.5. Modifications. The permittee shall give written notification to the Department when there is any modification to this facility. This notice shall be submitted sufficiently in advance of any critical date involved to allow sufficient time for review, discussion, and revision of plans, if necessary. Such notice shall include, but not be limited to, information describing the precise nature of the change; modifications to any emission control system; production capacity of the facility before and after the change; and the anticipated completion date of the change. [Chapters 62-210 and 62-212, F.A.C.]

A.6. 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.]

A.7. Permit Extension. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Bureau of Air Regulation prior to 60 days before the expiration of the permit. [Rule 62-4.080, F.A.C.]

APPLICABLE STANDARDS AND REGULATIONS

A.8. Unless otherwise indicated in this permit, the construction and operation of the subject emission unit(s) 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 Florida Administrative Code Chapters 62-4, 62-103, 62-204, 62-210, 62-212, 62-213, 62-214, 62-296, and 62-297.

A.9. 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.]

A.10. The facility is subject to all of the requirements specified in Title V Air Operation Permit Renewal No. 0570039-017-AV.

A.10.1. An application for a Title V Air Operation Permit Revision, pursuant to Chapter 62-213, F.A.C., must be submitted to the Department's Bureau of Air Regulation to incorporate the specific conditions of this Air Construction Permit. [Chapter 62-213, F.A.C.]

GENERAL OPERATION REQUIREMENTS

A.11. 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)(c)., F.A.C.]

A.12. 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 Environmental Protection Commission of Hillsborough County 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.]

A.13. 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.]

A.14. Circumvention. The owner or operator shall not circumvent the air pollution control equipment or allow the emission of air pollutants without this equipment operating properly. [Rules 62-210.650, F.A.C.]

CONTROL TECHNOLOGY

A.15. The permittee shall install a selective catalytic reduction (SCR) system for nitrogen oxides (NO_X) control on the facility's Unit No. 3 solid fuel-fired boiler.
[Applicant Request and EPA Consent Decree (U.S. vs. TEC) dated February 29, 2000, amended October 4, 2000, and FDEP Consent Final Judgment (DEP vs. TEC) dated December 6, 1999.]

SCR OPERATION

A.16. The permittee shall operate the SCR system in accordance with the catalyst manufacturer recommendations, including operating the SCR between minimum and maximum operating temperatures.

EMISSION LIMITS AND STANDARDS

A.17. After April 30, 2008 NO_X emissions (reported as NO_2) from Unit No. 3 when combusting bituminous or anthracite coal, or a coal/petroleum coke blend, shall not exceed 0.15 lb/million Btu heat input. Based upon a maximum heat input of 4115 million Btu/hr, NOx emissions shall not exceed 617 lb/hr. These emission limits are based on a 30-day rolling average.
[Applicant Request and EPA Consent Decree (U.S. vs. TEC) dated February 29, 2000, amended October 4, 2000, and FDEP Consent Final Judgment (DEP vs. TEC) dated December 6, 1999.]

{Permitting Note: Limits in condition are sufficient to also comply with requirements of: Rule 62-204.800(7)(b)2., F.A.C.; 40 CFR 60.44a(a); 40 CFR 60.4a(c); and PSD-FL-040} {Permitting note: The heat input limitation has been placed in this permit to identify the capacity of the 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 recordkeeping, other than annual, 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 rate capacity that the unit was tested. Rule 62-297.310(5), F.A.C., requires measurement of the process variables for emission tests. Such heat input determination may be based on measurements of fuel consumption by various methods to calculate average hourly heat input during the test. Annual heat input must be calculated in order to determine annual emissions of pollutants whose limits are based upon heat input.}

A.18. Ammonia slip, measured at the stack downstream of all emissions control systems, shall not exceed 10 parts per million by volume (ppmv). Corrective measures shall be taken if measured values exceed 5 ppmv.
[Applicant request; and Rule 62-4.070(3), F.A.C.]

COMPLIANCE DETERMINATION

A.19. Nitrogen oxides emissions shall be continuously monitored to confirm compliance, using the Unit's existing continuous emissions monitoring system (CEMS). Compliance is determined by calculating the arithmetic average of all hourly emission rates for NO_X for the 30 successive boiler operating days, except for data obtained during startup, shutdown, malfunction.
[Rule 62-204.800(7)(b)2., F.A.C.; 40 CFR 60.46a(g), 0570039-017-AV]

A.20. Compliance with the ammonia (NH_3) slip limit shall be determined using EPA conditional test method (CTM-027) or other methods approved by the Department. .[Rule 62-4.070 (3), F.A.C.]

A.21. Compliance with the allowable emission limiting standards specified in this Air Construction Permit shall be determined by April 30, 2008, and annually thereafter, using the appropriate specific conditions of the facility's existing Title V Air Operations Permit No. 0570039-017-AV, by using the appropriate EPA reference test methods, or Department test methods. [0570039-017-AV; and Rules 62-204.220 and 62-4.070 (3), F.A.C.]

A.22. Compliance with the additional 30-day NO_X limit of 0.15 lb/mmBtu shall be demonstrated using CEMS data beginning May 31, 2008 (or 30 boiler operating days after May 1, 2008), and every 30 boiler operating days thereafter.

A.23. Test Results. Compliance test results shall be submitted to the Environmental Protection Commission of Hillsborough County and the Department no later than 45 days after completion of the last test run. [Rule 62-297.310(8), F.A.C.]

NOTIFICATION, REPORTING, AND RECORDKEEPING

A.24. Emission Compliance Stack Test Reports. A test report indicating the results of the required compliance tests shall be filed as per Specific Condition **A.22.** 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.]

COMPLIANCE ASSURANCE

A.25. Compliance Assurance Monitoring (CAM). The permittee shall evaluate the applicability of CAM to Unit No. 3 and, if applicable, submit a CAM plan as a revision to the facility's current Title V air operation permit. [40 CFR 64; and Rule 62-204.800, F.A.C.]

RECEIVED
OCT 24 2005
BUREAU OF AIR REGULATION

THE TAMPA TRIBUNE

Published Daily
Tampa, Hillsborough County, Florida

State of Florida }
County of Hillsborough } ss.

Before the undersigned authority personally appeared C. Offner, who on oath says that she is the Advertising Billing Supervisor of The Tampa Tribune, a daily newspaper published at Tampa in Hillsborough County, Florida; that the attached copy of advertisement being a

LEGAL NOTICE IN THE TAMPA TRIBUNE

in the matter of PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION

was published in said newspaper in the issues of

OCTOBER 17, 2005

Affiant further says that the said The Tampa Tribune is a newspaper published at Tampa in said Hillsborough County, Florida, and that the said newspaper has heretofore been continuously published in said Hillsborough County, Florida, each day and has been entered as second class mail matter at the post office in Tampa, in said Hillsborough County, Florida for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that she has neither paid nor promised any person, this advertisement for publication in the said newspaper.

C. Offner

Sworn to and subscribed by me, this 19 day of OCTOBER, A.D. 20 05

Personally Known ✓ or Produced Identification ____
Type of Identification Produced ____

NOTARY PUBLIC STATE OF FLORIDA
OFFICIAL NOTARY SEAL
TANYA PATRICK
COMMISSION NUMBER
DD 136745
MY COMMISSION EXP.
JULY 7, 2006

Tanya Patrick

PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT

STATE OF FLORIDA
DEPARTMENT OF
ENVIRONMENTAL
PROTECTION

DEP File No.
0570039-022-AC

Tampa Electric Company
Big Bend Station
Hillsborough County

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit to the Tampa Electric Company (TEC) for the Big Bend Station located at Big Bend Road, North Ruskin, Hillsborough County. This permit is for installation of a selective catalytic reduction (SCR) system on Steam Generator No. 3 for the reduction of emissions of nitrogen oxides (NOx). A Best Available Control Technology (SACT) determination was not required pursuant to Rules 62-212.400, F.A.C. and 40 CFR 52.21, Prevention of Significant Deterioration (PSD). The applicant's mailing address is: Tampa Electric Company, P.O. Box 111, Tampa, Florida 33601-0111.

The SCR project is part of a larger program by TEC pursuant to a Consent Final Judgment (CFJ) with the Department and a Consent Decree (CD) with the Environmental Protection Agency to reduce emissions from its coal fired plants. There have been very substantial reductions of sulfur dioxide (SO2) to-date primarily due to the installation of a scrubber on Units 1 and 2. Other NOx control projects including installation of Low NOx burners and separate overfire air were previously approved.

This air construction permit will establish the SCR project as an applicable requirement for subsequent incorporation into the facility's Title V Air Operation Permit. For reference, the permit will include a limit of 0.12 pounds of NOx per million Btu of heat input (lb/mmBtu) from Unit 3.

The new NOx emissions limit is much less than the other applicable limits of 0.53 lb/mmBtu and 0.70 lb/mmBtu for the same unit under the Federal Acid Rain Program and the applicable New Source Performance Standard. Further control of NOx will reduce smog formation potential in the Tampa Bay area. SCR in combination with the existing scrubber on Unit 3 is also expected to reduce mercury emissions.

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 construction Permit issuance action for a period of fourteen (14) days from the date of publication of this Public Notice of Intent to Issue Air Construction Permit. Written comments should he provided to the Departments 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 fourteen 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 fourteen days of publication of the public notice or within fourteen 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 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 actioh 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 action or proposed action; (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 fact 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; 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 signed 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 am. to 5:00 p.m., Monday through Friday, except legal holidays, at:

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

Dept. of Environmental Protection
Southwest District
3804 Coconut Palm Drive

Tampa, Florida 33619-8218
Telephone: 813/744-6100
Fax: 813/774-6084

Hillsborough County Environmental Protection Commission
Air Management Division
3629 Queen Palm Drive
Tampa, Florida 33619
Telephone: 813/627-2600

The complete project file includes the permit application, technical evaluation, Draft construction permit, 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 Casejo at MS 5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, 01 Tom.Cascio@dep.state.fl.us call 850/921-9526 for additional information. Key documents may also be viewed at: www.dep.state.fl.us/Air/permitting/construction.htm in the power plant category.

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Colleen M. Castille
Secretary

October 3, 2005

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Ms. Karen Sheffield, General Manager
Big Bend Station
Tampa Electric Company
Post Office Box 111
Tampa, Florida 33601-0111

Re: Big Bend Unit 3
DEP File No. 0570039-022-AC
Selective Catalytic Reduction System

Dear Ms. Sheffield:

Enclosed are documents indicating the Department's intent to issue an air construction permit for installation of a selective catalytic reduction system on Unit 3 at the Big Bend Station in Tampa. The documents include: the "Intent to Issue Air Construction Permit"; the "Public Notice of Intent to Issue Air Construction Permit"; the Department's "Technical Evaluation and Preliminary Determination"; and, the Draft Permit.

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 Chapter 50, Florida Statutes. Proof of publication, i.e., newspaper affidavit, must be provided to the Department's Bureau of Air Regulation office within seven (7) days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit.

Electronic versions of these documents have been posted on the Division of Air Resource Management's world wide web site for the United States Environmental Protection Agency (U.S. EPA) Region 4 office's review. The web site address is:

http://www.dep.state.fl.us/air/eproducts/ards/default.asp (Permit No. 0570039-022-AC)

Please submit any other written comments you wish to have considered concerning the Department's proposed action to Mr. A. A. Linero, Program Administrator, Permitting South Section at the above letterhead address. If you have any questions, please call Tom Cascio at 850/921-9526 or Mr. Linero at 850/921-9523.

Sincerely,

Trina L. Vielhauer, Chief
Bureau of Air Regulation

TLV/aal/tc

Enclosures

In the Matter of an
Application for Permit by:

Ms. Karen Sheffield, General Manager
Big Bend Station
Tampa Electric Company
P.O. Box 111
Tampa, FL 33601-0111

DEP File No. 0570039-022-AC
Nitrogen Oxides Reduction Project
Selective Catalytic Reduction
Big Bend Station Unit No. 3
Hillsborough County

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 permit attached) for the project, detailed in the application specified above and the enclosed Technical Evaluation and Preliminary Determination, for the reasons stated below.

The applicant, Tampa Electric Company (TEC), operates the Big Bend Station located at Big Bend Road, North Ruskin, Hillsborough County. TEC applied on June 6, 2005, for an air construction permit to install a selective catalytic reduction (SCR) system for nitrogen oxides (NO_x) control on the facility's Unit No. 3 coal-fired boiler. The project is part of a larger program by TEC pursuant to a Consent Final Judgment with the Department and a Consent Decree with the Environmental Protection Agency to reduce emissions from the coal fired plants. This air construction permit will also establish these specific projects as applicable requirements for subsequent incorporation into the facility Title V Operation Permit.

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 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 air construction 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 fourteen (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, 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 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 fourteen 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 fourteen days of publication of the public notice or within fourteen 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 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 action or proposed action; (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; 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.

In addition to the above, a person subject to regulation has a right to apply for a variance from or waiver of the requirements of particular rules, on certain conditions, under Section 120.542 F.S. The relief provided by this state statute applies only to state rules, not statutes, and not to any federal regulatory requirements. Applying for a variance or waiver does not substitute or extend the time for filing a petition for an administrative hearing or exercising any other right that a person may have in relation to the action proposed in this notice of intent.

The application for a variance or waiver is made by filing a petition with the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. The petition must specify the following information: (a) The name, address, and telephone number of the petitioner; (b) The name, address, and telephone number of the attorney or qualified representative of the petitioner, if any; (c) Each rule or portion of a rule from which a variance or waiver is requested; (d) The citation to the statute underlying

(implemented by) the rule identified in (c) above; (e) The type of action requested; (f) The specific facts that would justify a variance or waiver for the petitioner; (g) The reason why the variance or waiver would serve the purposes of the underlying statute (implemented by the rule); and (h) A statement whether the variance or waiver is permanent or temporary and, if temporary, a statement of the dates showing the duration of the variance or waiver requested.

The Department will grant a variance or waiver when the petition demonstrates both that the application of the rule would create a substantial hardship or violate principles of fairness, as each of those terms is defined in Section 120.542(2) F.S., and that the purpose of the underlying statute will be or has been achieved by other means by the petitioner.

Persons subject to regulation pursuant to any federally delegated or approved air program should be aware that Florida is specifically not authorized to issue variances or waivers from any requirements of any such federally delegated or approved program. The requirements of the program remain fully enforceable by the Administrator of the EPA and by any person under the Clean Air Act unless and until the Administrator separately approves any variance or waiver in accordance with the procedures of the federal program.

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 Intent to Issue Air Construction Permit (including the Public Notice, Technical Evaluation and Preliminary Determination, and the Draft permit) was sent by certified mail (*) and copies were mailed by U.S. Mail or by e-mail before the close of business on 10/5/05 to the person(s) listed:

Karen Sheffield, General Manager, TEC Big Bend Station*
Thomas Davis, P.E., Environmental Consulting and Technology, Inc.
Shelly Castro, TEC
Alice Harman, EPCHC
Jason Waters, FDEP-SWD
David Lloyd, EPA Region 4

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.

(Clerk) 10/5/05 (Date)

PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEP File No. 0570039-022-AC

Tampa Electric Company
Big Bend Station, Hillsborough County

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit to the Tampa Electric Company (TEC) for the Big Bend Station located at Big Bend Road, North Ruskin, Hillsborough County. This permit is for installation of a selective catalytic reduction (SCR) system on Steam Generator No. 3 for the reduction of emissions of nitrogen oxides (NO_X). A Best Available Control Technology (BACT) determination was not required pursuant to Rules 62-212.400, F.A.C. and 40 CFR 52.21, Prevention of Significant Deterioration (PSD). The applicant's mailing address is: Tampa Electric Company, P.O. Box 111, Tampa, Florida 33601-0111.

The SCR project is part of a larger program by TEC pursuant to a Consent Final Judgment (CFJ) with the Department and a Consent Decree (CD) with the Environmental Protection Agency to reduce emissions from its coal fired plants. There have been very substantial reductions of sulfur dioxide (SO_2) to-date primarily due to the installation of a scrubber on Units 1 and 2. Other NO_X control projects including installation of Low NO_X burners and separate overfire air were previously approved.

This air construction permit will establish the SCR project as an applicable requirement for subsequent incorporation into the facility's Title V Air Operation Permit. For reference, the permit will include a limit of 0.12 pounds of NO_X per million Btu of heat input (lb/mmBtu) from Unit 3.

The new NO_X emissions limit is much less than the other applicable limits of 0.53 lb/mmBtu and 0.70 lb/mmBtu for the same unit under the Federal Acid Rain Program and the applicable New Source Performance Standard. Further control of NO_X will reduce smog formation potential in the Tampa Bay area. SCR in combination with the existing scrubber on Unit 3 is also expected to reduce mercury emissions.

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 construction permit issuance action for a period of fourteen (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 fourteen 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

fourteen days of publication of the public notice or within fourteen 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 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 action or proposed action; (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; 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:

Dept. of Environmental Protection Bureau of Air Regulation Suite 4, 111 S. Magnolia Drive Tallahassee, Florida, 32301 Telephone: 850/488-0114 Fax: 850/922-6979	Dept. of Environmental Protection Southwest District 3804 Coconut Palm Drive Tampa, Florida 33619-8218 Telephone: 813/744-6100 Fax: 813/774-6084	Hillsborough County Environmental Protection Commission Air Management Division 3629 Queen Palm Drive Tampa, Florida 33619 Telephone: 813/627-2600

The complete project file includes the permit application, technical evaluation, Draft construction permit, 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 Tom.Cascio@dep.state.fl.us , or call 850/921-9526 for additional information. Key documents may also be viewed at: www.dep.state.fl.us/Air/permitting/construction.htm in the power plant category.

1.0 APPLICATION INFORMATION

1.1 Applicant Name and Address

Tampa Electric Company
P.O. Box 111
Tampa, Florida 33601-0111

Representative: Karen Sheffield, General Manager, Big Bend Station

1.2 Reviewing and Process Schedule

06-06-05: Date of receipt of request at FDEP Bureau of Air Regulation
09-15-05: Application deemed complete
Issued intent

2.0 FACILITY INFORMATION

2.1 Facility Location: Big Bend Station located at Big Bend Road, North Ruskin, Hillsborough County

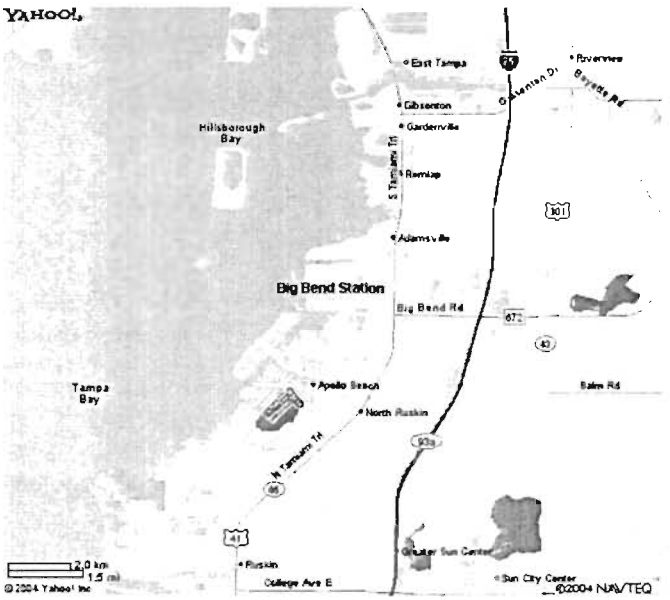

Figure 1. Ruskin, Apollo Beach, Big Bend

Figure 2. Big Bend Station

2.2 Standard Industrial Classification Code (SIC)

Major Group No.	49	Electric, Gas, and Sanitary Services
Group No.	491	Electric Services
Industry No.	4911	Electric Services

2.3 Existing Facility/Emission Unit Description

This facility is an electric utility.
This air construction permit will affect Steam Generator No. 3.

2.4 Regulatory Classification

Because potential emissions of at least one regulated pollutant exceed 100 tons per year, the existing facility is a Title V major source of air pollution in accordance with Chapter

62-213, F.A.C. 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).

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

The facility operates emissions units subject to the acid rain provisions of the Clean Air Act.

The facility is considered a "fossil fuel fired steam electric plant of more than 250 million BTU per hour of heat input". This kind of facility is one of the 28 source categories with the lower applicability threshold of 100 tons per year with respect to the Rule 62-212.400, Prevention of Significant Deterioration of Air Quality (PSD). Potential emissions of at least one regulated pollutant exceed 100 tons per year. Therefore, the facility is classified as a PSD-major source.

Unit 4 was certified pursuant Electrical Power Plant Siting in accordance with Chapter 62-17, F.A.C. and Chapter 403, Part II, F.S.

3.0 PERMITTING STATUS

Operation of the Big Bend Station is authorized by the Title V Operation Permit Revision 0570039-017-AV that has an effective date of January 1, 2005, and expires on December 31, 2009. The current permit includes the applicable requirements from federal and state regulations and construction permits. It also includes a Consent Final Judgment (CFJ, DEP vs. TEC) dated December 6, 1999, and a Consent Decree (CD, EPA vs. TEC) dated February 29, 2000, and amended October 4, 2000. The CFJ and CD require substantial progressive emission reductions from the four coal fired steam generation units by specific dates.

The current Title V Operation Permit includes a number of projects or improvements pursuant to the CFJ and CD including: improved scrubbing efficiency on Units 1 and 2; Low NO_X Burners (LNBs) on Units 1, 2, and 3; installation of new coal nozzles suitable for low NO_X operation; modification redesign of windbox components to allow for proper distribution and staging of air; and installation of a separate overfire air (SOFA) system on Unit 4.

4.0 ADDITIONAL NO_X CONTROL REQUIREMENTS

Section V.E. of the CFJ requires that:

> *Tampa Electric Company shall add nitrogen oxide controls, repower or shut down Units 1 through 3 at Big Bend Station by May 2010 and at Unit 4 by May 2007. If SCRs or similar nitrogen oxide controls are installed, BACT for nitrogen oxide will be 0.10 lbs/mmBtu on Unit 4 and 0.15 lbs/mmBtu on Units 1, 2, and 3.*

Section IV.B.36 of the CD requires that:

> *Tampa Electric shall advise EPA in writing, on or before May 1, 2007, whether Big Bend Units 1, 2, or 3, or any combination of them, will be Shutdown, will be Re-Powered, or will continue to be fired by coal.*

By letter dated August 19, 2004, Tampa Electric advised EPA that:

Based on the results of a recent comprehensive study performed on Big Bend Station, Big Bend Units 1, 2, 3 and 4 will continue to be fired on coal and as such will comply with the applicable provisions of the Consent Decree associated with this decision.

Section IV.B.37.A of the CD requires that:

...Tampa Electric shall install, at each Unit that will continue to combust coal, the NO_x control technology designed to achieve the lowest Emission Rate that can be attained within the "installation cost ceiling." Notwithstanding any provision of this Consent Decree, including the "installation cost ceiling," Tampa Electric shall install NO_x control technology that is designed to achieve an Emission Rate no less stringent than 0.15 lb/mmBTU.

By letter dated May 31, 2005, Tampa electric advised EPA that:

The actual cost to install SCRs on Big Bend Units 1 through 3 is projected to be $264,387,249. Since the installation cost ceiling has been exceeded by $39,018,183, a NO_x emission limit of 0.15 lb/MMBtu is clearly applicable under Paragraph 37 of the CD.

In an e-mail memorandum from EPA dated September 15, 2005, the Department received the following additional information related to the proposed project:

As we discussed over the phone, here is a status update concerning NOx limits at Big Bend. EPA/DOJ and TECO have reached a verbal agreement to amend the Consent Decree in the following manner:

1. Assign a NOx "emissions rate" for Big Bend Units 1, 2 and 3 of 0.12 lbs/mmBtu.

2. Modify the definition of "emissions rate" so that an equation is used that divides total pounds by total heat in each 30-day period to reach a 30-day rolling average.

TAMPA ELECTRIC PROPOSAL TO COMPLY WITH CFJ AND CD

By letter dated July 15, 2004, Tampa Electric submitted a petition to the Florida Public Service Commission for approval of new environmental programs for cost recovery through the environmental Recovery Clause at Section 366.8255, Florida Statutes.

The petition summarizes the CFJ and CD and includes a study conducted by Tampa Electric and its consultant, Sargent Lundy. The study justifies the decision to continue operating Units 1 through 4 as coal-fired units and installing SCR to comply with the NO_X requirements of the CFJ and CD.

The repowering options evaluated in the study included reboilering with subcritical pulverized coal ("PC") boilers, circulating fluidized bed ("CFB") boilers, conversion of

the existing boilers to natural gas, combined cycle ("CC") gas turbine technology and IGCC similar to the Polk facility.

The greenfield options evaluated in the Study included all the foregoing repowering technologies with the exceptions that new PC boilers would be supercritical, and natural gas fired Rankin cycle units would not be evaluated due to lower cycle heat rates.

The cost to install SCR on the four existing coal-fired units was estimated to be $305,450,000 whereas the cost of the least expensive CFB repowering option was estimated to be $700,000,000 more. The cost to install SCRs on Units 1 through 3 was projected to be $264,387,249. The annual operating and maintenance costs for the four units were estimated to be $12,750,000.

By an order dated October 11, 2004, and consummated (made final) on November 4, 2004, the PSC granted Tampa Electric's petition.

5.0 SCR PROJECT ON UNIT 3

Much of the following description is from the application submitted to the Department on June 6, 2005. Some additional details are from the Tampa Electric website or their filings with the PSC.

Figure 3 is a diagram of the proposed SCR installation. This configuration is typically known as dusty or hot side SCR meaning it is placed before the electrostatic precipitator.

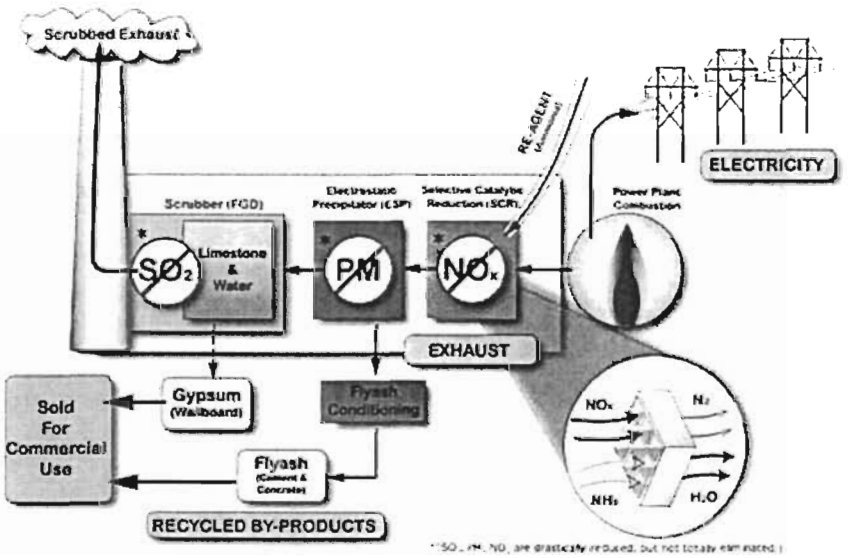

Figure 3. Diagram of SCR Installation and Existing Pollution Control Equipment

Following are key points regarding the proposed project:

- The SCR system will be installed downstream of the economizer and upstream of the preheater.
- The SCR reactor will be designed as a "three plus one" catalyst configuration. It is planned that the forth catalyst management layer, designed to maximize the residual

catalyst life and lower operating costs, will be initially empty and will be charged as the initial three catalyst layers lose activation.

- The applicant has indicated that available options with respect to ammonia type and supply are currently being evaluated. Thus, details of the installation of an ammonia storage, supply, and injection system are still under development. The options include use of anhydrous ammonia supplied by pipeline without on-site storage. TEC has indicated that they not have any management control over the operation of the pipeline. The Department will be sent update reports as the study progresses.
- SCR tuning (i.e., adjustment of the ammonia injection grid) will be performed during the initial commissioning of the system.
- The Applicant will install an ammonia injection system immediately downstream of the Unit No. 3 air preheater to control the increase of sulfur trioxide (SO_3) that the applicant expects will result from the use of a vanadium-containing catalyst in SCR systems.
- The Applicant has proposed that ammonia slip, measured at the stack downstream of all emissions control systems, be targeted at 5 parts per million by volume (ppmv). Annual testing of ammonia slip will be conducted and corrective measures taken if this target level is exceeded.
- The basic boiler startup and shutdown procedures will not need to be altered with the addition of the SCR (i.e., the existing Unit No. 3 boiler ramp rate is adequate for the SCR catalyst).
- The Applicant reviewed the impact that the operation of an SCR system would have on coal combustion by-products and found that the fly ash would have limited marketability due to high ammonia content and carbon content. Therefore, a large portion of the fly ash could potentially need to be disposed of in a landfill. The Applicant researched this issue and found that other companies mitigate the SCR impact on fly ash by using carbon burnout technology (CBO) to reduce the carbon content. The Applicant evaluated this technology, has determined it to be feasible at the facility, and has submitted an air construction permit application to the Department to implement the CBO technology.

More specific details of the capital cost components of the SCR system include:

- Demolition of existing flue gas ductwork as necessary to tie-in the SCR system
- Demolition of existing structural steel, modification and reinforcement of existing steel supports for a new duct from the existing steel
- Economizer bypass for gas temperature control
- Gas ductwork from economizer outlet to the SCR inlet (includes hoppers, mixers and turning vanes)
- SCR reactor (includes equipment for catalyst management)
- Gas ductwork between the SCR & air heater
- Foundations for ductwork and structural steel

- Structural modifications for construction cranes
- Electrical modifications
- Relocation of existing equipment and utilities
- Mobilization/demobilization
- Equipment rental
- Engineering construction management
- New and modified ductwork
- Auxiliary power and controls modifications

The Department notes that the scrubber should be able to remove SO_3 formed in the SCR system and ammonium sulfate/sulfite/bisulfite species to a high degree. The Department notes that with respect to combustion by-products, the ash would most likely be affected by previous combustion modifications rather than by the SCR system. The SCR system could have some effect on the ash due to presence of ammonia, some of which could adhere to the fly ash.

6.0 PROJECT SCHEDULE

Emissions Unit ID Number	Estimated Start Date	Estimated Completion Date
003	November 1, 2005	May 1, 2008

7.0 PROJECT EMISSIONS & RULE APPLICABILITY

There will be a decrease in the allowable emissions of nitrogen oxides (NO x) as a result of implementing this project. Noted below are the existing limits and the proposed changes for the pollutant:

Pollutant	Existing limits	Proposed limit
Nitrogen Oxides (NO_X)	0.70 pounds per mmBtu heat input (Title V Permit Specific Condition **A.10.**), based on a 30-day rolling average. 0.53 pounds per mmBtu heat input (Acid Rain Part requirement using the NO_x emissions averaging plan). Heat input to Unit No. 3 is limited to 4115 mmBtu/hour.	0.12 pounds per mmBtu heat input. This emission limit is based on the definition of "emission rate" so that an equation is used that divides total pounds of NO_x by total heat input in each 30-day period to reach a 30-day rolling average. Emissions will be continuously monitored to confirm compliance, using the Unit's existing continuous emissions monitoring system (CEMS).

According to the EPA Clean Air Markets Website, Unit 3 emitted 0.57 lb/mmBtu in 1998. In 2003, Unit 3 emitted 0.55 lb/mmBtu. Emissions through the first quarter of 2005 indicate emissions of 0.48 lb/mmBtu. This shows that a modest reduction to-date has been achieved.

Further reduction to 0.10 lb/mmBtu can be accomplished without aggressive ammonia or urea injection. This supports the idea that SCR will not necessarily have as much effect on ash properties compared with similar projects at other plants. It is possible that Tampa Electric can back off somewhat in the combustion techniques used to reduce NO_X when SCR becomes available and then optimize the control stratagem to reduce impacts on ash.

Using the appropriate maximum heat input value for Unit No. 3 (i.e., 4,115 mmBtu/hour), and the existing and proposed emissions limits for NO_X noted above, results in a calculation of the expected reduction of potential NO_X emissions of about 7,390 tons per year. This is equivalent to a 77% reduction from current allowable limits under the Acid Rain Part of the facility's Title V Permit Renewal. Computations follow below:

(0.53 – 0.12) lbs/mmBtu = 0.41 lbs/mmBtu heat input reduction.

0.41 lbs/mmBtu x 4115 mmBtu/hour x 8760 hours per year / 2000 lbs/ton = 7,390 tons per year.

Based on a more realistic estimate of an 80 percent capacity factor and the most recent emission rate of 0.48 lb/mmBtu, the calculations would be as follows:

(0.48 – 0.12) lbs/mmBtu = 0.36 lbs/mmBtu heat input reduction

0.36 lbs/mmBtu x 4115 mmBtu/hour x (0.80) 8760 hours per year / 2000 lbs/ton = 5,191 tons per year

In summary, the addition of SCR to Unit No. 3 reduces actual as well as allowable NO_X emissions, and does not involve any other significant changes related to emissions of other pollutants or operational parameters (e.g., mass flow to the stack, other than the addition of dilution air for ammonia injection, or stack temperature). The SCR system in combination with the existing scrubbers should help reduce mercury emissions as well.

It has been determined by the Department that the project is a Pollution Control Project, as defined in 40 CFR 52.21(b)(32), and meets the requirements of Rule 62-212.400(2)(a)2., F.A.C., and 40 CFR 52.21(b)(2)(iii)(h). Therefore, the project is not defined as a modification under Department regulations.

Furthermore the additional projects related to the SCR installation and enumerated above are projects in support of a pollution control project. They are treated as pollution control projects and do not constitute modifications under Department regulations.

The emission unit affected by this permit shall comply with all applicable provisions of the Florida Administrative Code (including applicable portions of the Code of Federal Regulations incorporated therein), and all specific conditions of the facility's existing Title V Air Operation Permit Renewal No. 0590039-017-AV.

8.0 CONCLUSION

Based on the foregoing technical evaluation of the application and other available information, the Department has made a determination that the proposed project will comply with all applicable state and federal air pollution regulations. The Department will issue a Draft Air Construction Permit to the applicant that provides for the above changes at the facility.

Department of
Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Colleen M. Castille
Secretary

DRAFT AIR CONSTRUCTION PERMIT NO. 0570039-022-AC

PERMITTEE

Tampa Electric Company (TEC)	File/Permit No.	**0570039-022-AC**
Big Bend Station	Facility ID:	0570039
Post Office Box 111	Project:	NO_X Reduction (SCR)
Tampa, Florida 33601-0111		Steam Generator Unit 3
	SIC No.	4911
Authorized Representative:	Expires:	December 31, 2008
Karen Sheffield, General Manager	County	Hillsborough

PROJECT AND LOCATION

This is an Air Construction Permit for the installation of a selective catalytic reduction system for nitrogen oxides control on the solid fuel-fired Steam Generator Unit No. 3. The reductions are part of an emissions reduction program required by a Consent Final Judgment with the Department and a Consent Decree with the United States Environmental Protection Agency. The air construction permit will also establish these specific projects as applicable Title V Operation Permit conditions.

The Tampa Electric Company (TEC) Big Bend Station is located at Wyandotte Road, Apollo Beach, Hillsborough County. UTM Coordinates are Zone 17, 361.9 km East and 3075.0 km North; Latitude: 27° 47' 36" North and Longitude: 82° 24' 11" West.

STATEMENT OF BASIS

This Air 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.). The above named permittee is authorized to install the SCR system at the facility 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).

THE ATTACHED APPENDIX IS MADE A PART OF THIS PERMIT:

Appendix GC Construction Permit General Conditions

Michael G. Cooke, Director
Division of Air Resource Management

FACILITY DESCRIPTION

This facility consists primarily of four existing fossil fuel steam generators (boilers) and three simple-cycle combustion turbines. Emissions from all steam generators are controlled by electrostatic precipitators (ESPs), and flue gas desulfurization (FGD) systems. There are ongoing nitrogen oxides (NO_X) control projects pursuant to a Consent Final Judgment (CFJ) between TEC and the Department and a Consent Decree (CD) between TEC and the United States Environmental Protection Agency (EPA).

EMISSIONS UNITS

This permit addresses the installation of an ammonia injection system and catalyst at the following Unit:

Emission Unit No.	System	Emission Unit Description
003	Power Generation	445 MW Fossil Fuel Steam Generator

The proposed project is called selective catalytic reduction (SCR). A recent NO_X control project on Unit 3 includes installation of new coal nozzles suitable for low NO_X operation.

REGULATORY CLASSIFICATION

The facility is classified as a Major or Title V Source of air pollution because emissions of at least one regulated air pollutant, such as particulate matter (PM/PM_{10}), sulfur dioxide (SO_2), nitrogen oxides (NO_X), carbon monoxide (CO), or volatile organic compounds (VOC), exceed 100 tons per year (TPY).

The addition of SCR to Unit No. 3 reduces actual and allowable NO_X emissions. It has been determined by the Department that the project is classified as a Pollution Control Project, as defined in 40 CFR 52.21(b)32, and meets the requirements of Rule 62-212.400(2)(a)2., F.A.C., and 40 CFR 52.21(b)(2)(iii)(h). Therefore, the project is not a modification under Department regulations.

PERMIT SCHEDULE

- Month day, 2005 — Notice of Intent to Issue Permit published.
- Month day, 2005 — Intent to Issue Permit distributed.
- September 15, 2005 — Application deemed complete.
- June 6, 2005 — Application received.

RELEVANT DOCUMENTS

The documents listed below are the basis of the permit. They are specifically related to this permitting action, but not all are incorporated into this permit. These documents are on file with the Department.

- Application received on June 6, 2005.
- The Department's Technical Evaluation and Preliminary Determination, issued concurrently with this draft air construction permit.
- EPA Consent Decree (U.S. vs. TEC) dated February 29, 2000, amended October 4, 2000.
- FDEP Consent Final Judgment (DEP vs. TEC) dated December 6, 1999.
- Title V Air Operation Permit Renewal No. 0570039-017-AV.
- Tampa Electric Submittals for PSC Docket 040750-EI.
- E-mail memorandum from EPA received on September 15, 2005.

PROJECT DESCRIPTION

TEC will install a SCR system for NO_X control on the facility's Unit No. 3 coal-fired boiler. This emissions unit is a Riley Stoker Corporation "wet" bottom utility boiler, with a generator nameplate rating of 445 megawatts (MW). The basic boiler startup and shutdown procedures will not need to be altered with the addition of the SCR (i.e., the existing Unit No. 3 boiler ramp rate is adequate for the SCR catalyst). The project consists of:

- Installation of a "three plus one" SCR reactor downstream of the economizer and upstream of the air preheater.
- Installation of an ammonia storage, supply, and injection system, the details of which are still under development.
- SCR tuning (i.e., adjustment of the ammonia injection grid) during the initial commissioning of the system.
- Installation of an ammonia injection sulfur trioxide (SO_3) control system downstream of the Unit No. 3 air preheater.
- Assessment of combined effects of SCR and previous NO_X and SO_3 control system projects upon fly ash marketability, and development of treatment, reuse, or disposal options for the fly ash.

The project is much more involved than suggested by the brief description above. Following are additional details of the work likely to occur in association with the SCR installation:

- Demolition of existing flue gas ductwork as necessary to tie-in the SCR system
- Demolition of existing structural steel, modification and reinforcement of existing steel supports for a new duct from the existing steel
- Economizer bypass for gas temperature control
- Gas ductwork from economizer outlet to the SCR inlet (includes hoppers, mixers and turning vanes)
- SCR reactor (includes equipment for catalyst management) and catalyst
- Gas ductwork between the SCR & air heater
- Foundations for ductwork and structural steel
- Structural modifications for construction cranes
- Ammonia injection system
- Electrical modifications
- Relocation of existing equipment and utilities
- Mobilization/demobilization
- Equipment rental
- Engineering construction management
- New and modified ductwork
- Auxiliary power and controls modifications

PROJECT SCHEDULE

Emissions Unit ID Number	Estimated start date	Estimated completion date
003	November 1, 2005	May 1, 2008

ADMINISTRATIVE REQUIREMENTS

A.1. Regulating Agencies. All documents related to applications for permits to construct, operate or modify an emissions unit should be submitted to the Bureau of Air Regulation, Florida Department of Environmental Protection, at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, and phone number (850) 488-0114. All documents related to reports, tests, and notifications should be submitted to the Environmental Protection Commission of Hillsborough County, and copies of those submittals shall be sent to the Department of Environmental Protection, Southwest District Office.

Addresses and telephone numbers are:

Environmental Protection Commission of Hillsborough County
1410 North 21 Street
Tampa, Florida 33605
Telephone: 813/272-5530; Fax: 813/272-5605

Department of Environmental Protection
Southwest District Office, Air Resources Section
3804 Coconut Palm Drive
Tampa, Florida 33619-1352
Telephone: 813/744-6100; Fax: 813/744-6084

A.2. General Conditions. The owner and operator is subject to, and shall operate under the attached General Permit Conditions **G.1.** through **G.15.** listed in Appendix GC of this permit. General Permit Conditions are binding and enforceable pursuant to Chapter 403 of the Florida Statutes.
[Rule 62-4.160, F.A.C.]

A.3. Terminology. The terms used in this permit have specific meanings as defined in the corresponding chapters of the Florida Administrative Code (F.A.C.).

A.4. Forms and Application Procedures. The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C., and follow the application procedures in Chapter 62-4, F.A.C.
[Rule 62-210.900, F.A.C.]

A.5. Modifications. The permittee shall give written notification to the Department when there is any modification to this facility. This notice shall be submitted sufficiently in advance of any critical date involved to allow sufficient time for review, discussion, and revision of plans, if necessary. Such notice shall include, but not be limited to, information describing the precise nature of the change; modifications to any emission control system; production capacity of the facility before and after the change; and the anticipated completion date of the change. [Chapters 62-210 and 62-212, F.A.C.]

A.6. 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.]

A.7. Permit Extension. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Bureau of Air Regulation prior to 60 days before the expiration of the permit. [Rule 62-4.080, F.A.C.]

APPLICABLE STANDARDS AND REGULATIONS

A.8. Unless otherwise indicated in this permit, the construction and operation of the subject emission unit(s) 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 Florida Administrative Code Chapters 62-4, 62-103, 62-204, 62-210, 62-212, 62-213, 62-214, 62-296, and 62-297.

A.9. 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.]

A.10. The facility is subject to all of the requirements specified in Title V Air Operation Permit Renewal No. 0570039-017-AV.

A.10.1. An application for a Title V Air Operation Permit Revision, pursuant to Chapter 62-213, F.A.C., must be submitted to the Department's Bureau of Air Regulation to incorporate the specific conditions of this Air Construction Permit. [Chapter 62-213, F.A.C.]

GENERAL OPERATION REQUIREMENTS

A.11. 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)(c)., F.A.C.]

A.12. 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 Environmental Protection Commission of Hillsborough County 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.]

A.13. 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.]

A.14. Circumvention. The owner or operator shall not circumvent the air pollution control equipment or allow the emission of air pollutants without this equipment operating properly. [Rules 62-210.650, F.A.C.]

CONTROL TECHNOLOGY

A.15. The permittee shall install a selective catalytic reduction (SCR) system for nitrogen oxides (NO_X) control on the facility's Unit No. 3 solid fuel-fired boiler.
[Applicant Request and EPA Consent Decree (U.S. vs. TEC) dated February 29, 2000, amended October 4, 2000, and FDEP Consent Final Judgment (DEP vs. TEC) dated December 6, 1999.]

SCR OPERATION

A.15.1. The permitee shall operate the SCR system in accordance with the catalyst manufacturer's recommendations, including operating the SCR between minimum and maximum operating temperatures.

A.15.2. The partial SCR maintenance bypass duct is normally closed except during maintenance periods.

EMISSION LIMITS AND STANDARDS

A.16. After April 30, 2008, NO_X emissions (reported as NO_2) from Unit No. 3 when combusting bituminous or anthracite coal, or a coal/petroleum coke blend, shall not exceed 0.12 lb/million Btu heat input. Based upon a heat input limit of 4115 million Btu/hour, NO_X emissions shall not exceed 494 lb/hr. These emission limits are based on the definition of "emission rate" so that an equation is used that divides total pounds of NO_x by total heat input in each 30-day period to reach a 30-day rolling average. [Applicant Request and EPA Consent Decree (U.S. vs. TEC) dated February 29, 2000, amended October 4, 2000, and FDEP Consent Final Judgment (DEP vs. TEC) dated December 6, 1999; and E-mail memorandum from EPA received on September 15, 2005.]

{Permitting Note: Limits in this condition are sufficient to also comply with requirements of: Rule 62-204.800(7)(b)2., F.A.C.; 40 CFR 60.44a(a); 40 CFR 60.4a(c); and PSD-FL-040]

A.17. Ammonia slip, measured at the stack downstream of all emissions control systems, shall not exceed 10 parts per million by volume (ppmv). Annual testing of ammonia slip shall be conducted, and corrective measures taken if measured values exceed 5 ppmv.
[Applicant request; and Rule 62-4.070(3), F.A.C.]

COMPLIANCE DETERMINATION

A.18. Nitrogen oxides emissions shall be continuously monitored to confirm compliance, using the Unit's existing continuous emissions monitoring system (CEMS). Compliance is determined by calculating the arithmetic average of all hourly emission rates for NO_X for the 30 successive boiler operating days, except for data obtained during startup, shutdown, or malfunction.
[Rule 62-204.800(7)(b)2., F.A.C.; 40 CFR 60.46a(g), 0570039-017-AV]

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

A.20. Compliance with the allowable emission limiting standards specified in this Air Construction Permit shall be determined by April 30, 2008, and annually thereafter, using the appropriate specific conditions of the facility's existing Title V Air Operations Permit No. 0570039-017-AV, by using the appropriate EPA reference test methods, or Department test methods.
[0570039-017-AV; and Rules 62-204.220 and 62-4.070(3), F.A.C.]

A.21. Compliance with the additional 30-day NO_X limit of 0.12 lb/mmBtu shall be demonstrated using CEMS data beginning May 31, 2008 (or 30 boiler operating days after May 1, 2008), and every 30 boiler operating days thereafter.

A.22. Test Results. Compliance test results shall be submitted to the Environmental Protection Commission of Hillsborough County and the Department no later than 45 days after completion of the last test run. [Rule 62-297.310(8), F.A.C.]

NOTIFICATION, REPORTING, AND RECORDKEEPING

A.23. Emission Compliance Stack Test Reports. A test report indicating the results of the required compliance tests shall be filed as per Specific Condition **A.22.** 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.]

COMPLIANCE ASSURANCE

A.24. Compliance Assurance Monitoring (CAM). The permittee shall evaluate the applicability of CAM to Unit No. 3 and, if applicable, submit a CAM plan as a revision to the facility's current Title V air operation permit.
[40 CFR 64; and Rule 62-204.800, F.A.C.]

Department of Environmental Protection

Jeb Bush
Governor

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

David B. Struhs
Secretary

March 6, 2002

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Ms. Beverly Spagg, Chief
Air and EPCRA Enforcement Branch
U.S. EPA – Region 4
61 Forsyth Street, S.W.
Atlanta, Georgia 30303-8960

Re: Big Bend Generating Station BACT/BOP for Particulate Matter

Dear Ms. Spagg:

Per your request, the Department reviewed the letter dated September 18, 2001 from Tampa Electric Company (TEC) to EPA Region 4 together with the accompanying documents entitled:

- Big Bend Generating Station Best Available Control Technology For Particulate Matter (BACT), and
- Big Bend Generating Station Best Operating Practices For Particulate Matter (BOP).

The documents were submitted pursuant to the Consent Decree between EPA and TEC. EPA is responsible for all matters related to that Consent Decree. Our comments, provided at your request, do not constitute formal recommendations regarding decisions to ultimately be made by EPA.

Big Bend Generating Station Best Operating Practices For Particulate Matter (BOP).
This report was prepared by the Electric Power Research Institute (EPRI) and Southern Research Institute (SRI). The report may best be described as detailing "reasonable measures" that can be taken to effect low cost reductions at an existing facility such as Big Bend.

Section 4, "Operations and Maintenance Guidelines," refers to an SO_3 Conditioning System for the purpose of improving particulate collection efficiency. A review of the present Title V Permit does not indicate that such a system is installed. It is not clear whether the EPRI/SRI submitted BOP guidelines are generic in nature (i.e., not specific to TEC Big Bend), or whether such a system is installed. In any case, such systems have been demonstrated to improve ESP performance by reducing resistivity, and they should be reviewed for the Big Bend units. The systems should be reflected in the Title V permit and their use required during operation (if such systems actually exist at the facility).

Big Bend Generating Station Best Available Control Technology For Particulate Matter (BACT).
This report was prepared by TEC and Environmental Consulting and Technology (ECT). We offer the following comments:

1) It does not appear that the BACT analysis was completed using traditional EPA methodology. The analysis uses as "baseline emissions," test data from tests that were (indicated to have been) conducted during 1999-2000. This has the effect of increasing (by approximately a factor of 2) the cost per ton of particulate matter removed. EPA guidelines require a BACT analysis to be conducted by comparing past actual emissions to the "potential to emit" (PTE) of each BACT alternative.

   Normally, the Department considers CEMS data when available or data reported to the Department in the Annual Operating Report (AOR) as more representative of baseline emissions rather than a

special purpose test. The rationale for this is that AOR data has been previously reported to the Department by the applicant with the only intention of providing an accurate representation of actual emissions.

A similar issue arose during TEC's repowering of the Bayside/Gannon Station. TEC wished to utilize CO emission test data (which they contended was more accurate than previously submitted data on AOR's) and thus avoid a PSD Review for CO. In that case, the Department applied the AOR data in lieu of the TEC submittal of test data, determined that PSD was triggered, and made a BACT determination.

We note that a report is due on March 1 detailing the feasibility of CEMS for particulate matter (PM).

Enclosed is an Excel spreadsheet that we prepared, which shows the results of revising the BACT submittal using the AOR-submitted PM emission levels for years 1999-2000.

2) There appear to be some inconsistencies regarding the cost-effectiveness thresholds used for selecting BACT. For example, Option 1 was selected as BACT for Unit 1 at a submitted cost effectiveness of $1035 per ton of PM removed, yet Option 2 on Units 2 and 3 were rejected at submitted cost-effectiveness values of $731 and $971 per ton of PM removed (respectively). These options were rejected by TEC because of submitted incremental cost effectiveness values, which were higher than the straight-run cost effectiveness. As indicated below, cost effectiveness thresholds are not standardized, let alone incremental thresholds.

3) The Department did not find any published EPA (bright line) lower threshold for the cost-effectiveness of PM reduction options. However an Interagency Group in the previous Administration provided an indication on the upper threshold of "reasonable" cost-effectiveness in the "Implementation Plan for Revised Air Quality Standards," that was approved by former President Clinton.[1] Excerpts are enclosed.

   According to the Interagency Plan, "It was agreed that $10,000 per ton of emission reduction is the high end of the range of reasonable cost to impose on sources . . . . the EPA will encourage the States to design strategies for attaining PM and ozone standards that focus on getting low cost reductions and limiting the cost of control to under $10,000 per ton for all sources".

4) The Bay Area AQMD and the San Joaquin Valley UAPCD in California have established $5300 and $5700 per ton as the upper limits of cost-effectiveness for PM controls. A recent study (excerpts attached) on small wood-fired boilers was prepared by a consultant for Vermont, New Hampshire and Massachusetts.[2] This study was completed for the evaluation of PM controls as they relate to the biomass energy industry. It is instructive nevertheless as the author's opinion is that $1000 per ton is "within the range of control cost acceptability" and "$3500 are at the high end for control costs".

5) The Department has no published bright line upper or lower thresholds for the cost-effectiveness of PM reductions. The Department conducts more PSD and BACT reviews than practically any other state and has a number of individuals who prepare and seal such determinations. The unanimous opinion of these experts was that none would reject PM controls where cost-effectiveness (as calculated by the standard EPA methodology) was determined to be in the range of $2000 per ton or less for a new source. The same holds for an existing source particularly when implementation would result in achievement of the New Source Performance Standard such as 40 CFR 60, Subpart Da.

---

1 Memorandum. William Clinton, President, to Administrator of the Environmental Protection Agency. "Implementation of Revised Air Quality Standards for Ozone and Particulate Matter". The White House, Washington D.C., July 16, 1997.

2 Report. Resources Systems Group, Inc. "Air Pollution Control Technologies For Small Wood-Fired Boilers". July 2001.

Note that this value does not set a bright line for the Department. For example, we did not inquire whether the same experts would reject a strategy having a cost-effectiveness of $3,000 per ton of PM removed. The Department reserves the right to make such determinations on a case-by-case basis and to consider the type of industry and the purpose of the strategy (e.g. SIP compliance versus PSD/BACT) when making such decisions.

6) Depending on EPA's application of cost-effectiveness ranges for BACT at an existing source it is possible that Options 2, 4 (see below) and 3 might be acceptable for Units 1, 2 and 3 respectively, based upon the BACT evaluation submitted by TEC and ECT.

7) We reviewed an article co-authored by Dr. Ralph Altman, who is the leader of EPRI's ESP research program and a lead member of TEC's review team.[3] The enclosed article highlights the following three technologies:

   - Performance monitoring software,
   - Compact hybrid particulate collector (COHPAC) and
   - Separator technology that illustrate a range of particulate control technologies.

   It appears that these technologies were indeed included as options within the evaluation, but some discrepancies may exist. Partial text from the referenced article follows:

   > *Field tests conducted in 1997 on an exhaust gas slipstream from Alabama Power Co.'s Miller Unit 3, Birmingham, Ala. These tests confirmed the system could capture between 95 percent and 98 percent of particulate matter left after gases exit the ESP.*
   >
   > *A comparative economic and engineering analysis of various ESP upgrade options showed that the capital and levelized costs of an ESP upgraded with the system were less than half the costs of a wet ESP with the same collection efficiency. The economic assessment projected that a 250-MW unit could be retrofitted with a separation and recirculation process for approximately $6.25 million, a capital cost of $25/kW. O&M costs also promised to be reasonable. The system operates at a pressure drop of less than 1.0 inch of water. This is significant because the existing draft fan can be used without modification. In addition to low capital and operating costs, the system has other advantages, including a high capacity for removing PM2.5 particles, fuel flexibility and no re-entrainment losses from rapping.*

   As indicated, the COHPAC system option was included in the submitted Appendix of the BACT analysis, but rejected for all units as being overly expensive, with installed cost stated as ranging from $35 to $40 per kilowatt. Within the attached Excel spreadsheet, the Department provides EPA with an estimate of the cost-effectiveness of this system (Option 4), using the submitted numbers as well as numbers which are consistent with the above referenced article. Of interest, it appears that the combined installation of COHPAC on all three units would yield an estimated cost effectiveness of just under $1000 per ton, when applying the values from the article within the framework of the standard EPA cost effectiveness methodology.

8) The Department is aware of an additional option, which does not appear to have been included in the analysis. This is an "Advanced Hybrid Particulate Collector" (AHPC) with technical support provided by the US DOE.[4] A summary from DOE's website is enclosed. It appears to be a variation of COHPAC. Although the Department is not clear as to whether this option qualifies within the terms of the EPA Consent Decree, it may provide an additional option for BACT review purposes.

---

[3] Article. Easom, B.H.; Burlatsk, S.F; Altman, Ralph F.; and Chang, R. "Particulate Control Technologies For Power Generation". Pollution Engineering. July 1999.

[4] Website. http://www.netl.doe.gov/coalpower/environment/pm/con_tech/hybrid.html. Accessed 3/1/2002.

Of interest, AHPC is also claimed to remove 90% Hg and should complete full scale testing in 2002-2003.

9) For informational purposes, the Department recently permitted the JEA Northside coal plant with a 0.011 lb/mmBtu-emission limit for particulate matter. Our review of the BACT Clearinghouse indicates that currently established emission limits for coal-burning power plants typically vary from 0.01 to 0.02 lb/mmBtu. This compares to the NSPS limit of 0.03 lb/mmBtu promulgated in 1978 (40CFR60, Subpart Da). For reference, TEC is proposing approximately 0.04 lb/mmBtu. Given that the COHPAC system is touted as being capable of reducing 95% of the existing (ESP outlet) PM emissions, the application of this technology to the Big Bend Units would seem to allow for PM emission levels in the 0.01 to 0.02 lb/mmBtu range to be attained.

If you have any questions regarding this matter, please call me at 850/921-9503 or Al Linero at 850/921-9523.

Sincerely,

for C. H. Fancy, P.E., Chief
Bureau of Air Quality

Enclosures:

cc: Jerry Kissel, DEP SWD
Jerry Campbell, Hillsborough County EPC

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1. Article Addressed to:

Ms. Beverly Spagg, Chief
Air & EPCRA Enforcement Branch
U.S. EPA - Region 4
61 Forsyth Street, S. W.
Atlanta, GA 30303-8960

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BUREAU OF AIR REGULATION

Unit 1 with Heat Input:	Option 1	Option 2	Option 3	Option 4	*Option 4 notes*
4037					
AOR Past Actual TPY 1371					
TEC Expected Emission lb/MMBtu	0.045	0.031	0.021	0.027	
MMBtu/yr @ 100% C.F.	35364120	35364120	35364120	35364120	
TEC TPY emitted at target lb/MMBtu	796	548	371	477	
lb/MMBtu red from tested 0.055 lb/MMBtu	0.01	0.024	0.034	0.028	
TEC TPY Red from tested 0.055 lb/MMBtu	177	424	601	495	
TEC Annualized Cost - $/year	$183,051	$777,471	$1,371,892	$2,279,082	
TEC Cost Effectiveness - $/ton	$1,035	$1,832	$2,282	$4,603	
FDEP TPY red. from AOR past actual	575	823	1000	1302	*(<- 95% reduct)*
FDEP Cost Effectiveness - $/ton	$318	$945	$1,372	$1,250	*(ratio of 25/35)*

Unit 2 with Heat Input	Option 1	Option 2	Option 3	Option 4	
3996					
Past Actual TPY 2360					
TEC Expected Emission lb/MMBtu	0.042	0.032	0.022	0.025	
MMBtu/yr @ 100% C.F.	35004960	35004960	35004960	35004960	
TEC TPY emitted at target lb/MMBtu	735	560	385	438	
lb/MMBtu red from tested 0.088 lb/MMBtu	0.046	0.056	0.066	0.063	
TEC TPY Red from tested 0.088	805	980	1155	1103	
TEC Annualized Cost - $/year	$122,424	$716,845	$1,311,265	$2,279,082	
TEC Cost Effectiveness - $/ton	$152	$731	$1,135	$2,067	
FDEP TPY red. from past actual	1625	1800	1975	2242	*(<- 95% reduct)*
FDEP Cost Effectiveness - $/ton	$75	$398	$664	$726	*(ratio of 25/35)*

Unit 3 with Heat Input	Option 1	Option 2	Option 3	Option 4	
4115					
Past Actual TPY 1611					
TEC Expected Emission lb/MMBtu	0.036	0.03	0.02	0.021	
MMBtu/yr @ 100% C.F.	36047400	36047400	36047400	36047400	
TEC TPY emitted at target lb/MMBtu	649	541	360	378	
lb/MMBtu red from tested 0.070 lb/MMBtu	0.034	0.04	0.05	0.049	
TEC TPY Red from tested 0.070 lb/MMBtu	613	721	901	883	
TEC Annualized Cost - $/year	$105,358	$699,779	$1,294,200	$2,331,714	
TEC Cost Effectiveness - $/ton	$172	$971	$1,436	$2,640	
FDEP TPY red. from past actual	962	1070	1251	1530	*(<- 95% reduct)*
FDEP Cost Effectiveness - $/ton	$110	$654	$1,035	$1,088	*(ratio of 25/35)*

TECO Proposal Cumulative Summary				
TEC Submitted Annual Costs	$410,833	$2,194,095	$3,977,357	$6,889,878
TEC Submitted TPY reduction	1595	2125	2658	2481
TEC Submitted Cost Effectiveness	$258	$1,032	$1,497	$2,777
FDEP TPY reduction	3162	3693	4225	5075
FDEP Cost Effectiveness	$130	$594	$941	$970

THE WHITE HOUSE

WASHINGTON

July 16, 1997

MEMORANDUM FOR THE ADMINISTRATOR OF THE ENVIRONMENTAL PROTECTION AGENCY

SUBJECT: Implementation of Revised Air Quality Standards for Ozone and Particulate Matter

I have approved the issuance of new air quality standards to provide important new health protection for all Americans by further controlling pollution from ozone and particulate matter. These new standards promise to improve the lives of millions of Americans in coming years.

Consistent with my Administration's approach to regulatory decision making, I also want to ensure that these new standards are implemented in a common sense, cost-effective manner. It is critically important that these standards be implemented in the most flexible, reasonable, and least burdensome manner, and that the Federal Government work with State and local governments and other interested parties to this end.

I have determined that there are certain essential elements of an approach to implementation that will accomplish these goals. I direct you to use the following elements when implementing the new air quality standards:

1. Implementation of the air quality standards is to be carried out to maximize common sense, flexibility, and cost effectiveness;

2. Implementation shall ensure that the Nation continues its progress toward cleaner air by respecting the agreements already made by States, communities, and businesses to clean up the air, and by avoiding additional burdens with respect to the beneficial measures already underway in many areas. Implementation also shall be structured to reward State and local governments that take early action to provide clean air to their residents; and to respond to the fact that pollution travels hundreds of miles and crosses many State lines;

3. Implementation shall ensure that the Environmental Protection Agency ("Agency") completes its next periodic review of particulate matter, including review by the Clean Air Scientific Advisory Committee, within 5 years of issuance of the new standards, as contemplated by the Clean Air Act. Thus, by July 2002, the Agency will have determined, based on data available from its review, whether to revise or maintain the standards. This determination will have been made before any areas have been designated as "nonattainment" under the $PM_{2.5}$ standards and before imposition of any new controls related to the $PM_{2.5}$ standards; and

4. Implementation is to be accomplished with the minimum amount of paperwork and shall seek to reduce current paperwork requirements wherever possible.

Excellent preliminary work on the strategy for carrying out these implementation principles has been accomplished by an interagency Administration group and I commend that group for these important efforts. The group's work is set out in the attached plan, which is hereby incorporated by reference.

In order for the implementation of these standards to proceed in accordance with the goals I have established, I hereby direct you, in consultation with all affected agencies and parties, to undertake the steps appropriate under law to carry out the attached plan and to complete all necessary guidance and rulemaking no later than December 31, 1998.

This memorandum is for the purposes of internal Administration management only, and is not judicially reviewable.

You are authorized and directed to publish this determination and plan in the Federal Register.

William J. Clinton

Implementation Plan for Revised Air Quality Standards

An interagency Administration group has discussed and evaluated approaches for the common sense, flexible, and cost effective implementation of the revised National Ambient Air Quality Standards (NAAQS) for ozone and particulate matter (PM). This document reflects the preliminary work by that group on a strategy for implementing these health-based standards consistent with the principles discussed by President Clinton in his announcement of the standards. The Environmental Protection Agency (EPA) will continue to work with other Federal agencies, State and local governments, small businesses, industry, and environmental and public health groups to fully develop and implement this strategy.

This implementation plan provides a road map for areas to attain the standards and protect public health without sacrificing economic growth. The goals of the plan are to: 1) maintain the progress currently being made toward cleaner air and respect the agreements and technological progress already made by communities and businesses to pursue clean air; 2) reward State and local governments and businesses that take early action to reduce air pollution levels through cost-effective approaches; 3) respond to the fact that pollution can travel hundreds of miles and cross many State lines; 4) work with the States to develop control programs which employ regulatory flexibility to minimize economic impacts on businesses large and small to the greatest possible degree consistent with public health protection; 5) minimize planning and regulatory burdens for State and local governments and businesses where air quality problems are regional, not local, in nature; 6) ensure that air quality planning and related Federal, State, and local planning are coordinated; and 7) recognize the substantial lead time necessary for State and local governments and businesses to plan for and meet standards for a new indicator of PM.

The Clean Air Act (CAA) requires the EPA to set air quality standards to protect the public health and the environment without consideration of costs. The 1997 revisions to the NAAQS for ground level ozone and PM fulfill this requirement. However, the Act recognizes that the EPA and the States must work together to develop cost-effective, flexible, and fair implementation plans if the standards are to be met as expeditiously as practicable.

There are a number of important linkages between these pollutants. There is also a linkage between these pollutants and their precursors and regional haze problems. Promulgation of the two standards simultaneously provides a more complete description

States are required to submit within 3 years of a NAAQS revision. Once those areas have an approved SIP, the EPA will take action so the standard no longer applies. In addition, the EPA will take action within 3 years to designate areas for the revised PM_{10} standards.

Cost-Effective Implementation Strategies

There is a strong desire to drive the development of new technologies with the potential of greater emission reduction at less cost. It was agreed that $10,000 per ton of emission reduction is the high end of the range of reasonable cost to impose on sources. Consistent with the State's ultimate responsibility to attain the standards, the EPA will encourage the States to design strategies for attaining the PM and ozone standards that focus on getting low cost reductions and limiting the cost of control to under $10,000 per ton for all sources. Market-based strategies can be used to reduce compliance costs. The EPA will encourage the use of concepts such as a Clean Air Investment Fund, which would allow sources facing control costs higher than $10,000 a ton for any of these pollutants to pay a set annual amount per ton to fund cost-effective emissions reductions from non-traditional and small sources. Compliance strategies like this will likely lower the costs of attaining the standards through more efficient allocation, minimize the regulatory burden for small and large pollution sources, and serve to stimulate technology innovation as well.

Additional Future Activities and Coordination with Other Federal Departments and Agencies

The approaches outlined above for implementation of the current and new ozone standards will be developed in the future in much greater detail. In order to ensure that the final details are practical, incorporate common sense, and provide the appropriate steps toward cleaning the air, input is needed from many stakeholders such as representatives of State and local governments, industry, environmental groups, and Federal agencies. The EPA will continue seeking such advice from a range of stakeholders and, after evaluating their input, propose the necessary guidance to make these approaches work. Moreover, the EPA will continue to work with a number of Federal agencies to ensure that those agencies comply with these new standards in cost-effective, common sense ways. The guidance and rules (e.g., revisions to NSR and conformity) will be completed by the end of 1998.

The EPA will continue to work with the Small Business Administration (SBA) because small businesses are particularly concerned about the potential impact resulting from future control measures to meet the revised PM and ozone standards. The EPA, in partnership with SBA, will work with the States

RESOURCE
SYSTEMS GROUP
INCORPORATED

AN EVALUATION OF AIR POLLUTION CONTROL TECHNOLOGIES FOR SMALL WOOD-FIRED BOILERS

Prepared for:

Vermont Department of Public Service

Vermont Department of Environmental Conservation, Air Pollution Control Division

New Hampshire Governor's Office of Energy Resources and Community Services

Massachusetts Division of Energy Resources

July 2001

331 Olcott Drive, White River Junction, Vermont 05001

EXECUTIVE SUMMARY

Resource Systems Group, Inc, has undertaken An Evaluation of Air Pollution Control Technologies for Small Wood-Fired Boilers. This is focused on boilers in the size range of approximately 3 to 10 MM Btu/ hour heat output although reference is made to boilers slightly smaller and considerably larger in obtaining data for the analysis. The analysis is generic in that it is applicable to any manufacturer or type of wood-fired boiler in this size range for any location. Attention has been given to boilers in this size range manufactured by the companies that are active in marketing boilers in the northeastern states.

The conclusions of the study are that small wood-fired boilers using staged combustion or gasifier designs are able to achieve lower emission rates for particulate matter when compared to many larger wood-fired boilers and small units with older designs. However, the analysis has demonstrated that lower PM10 emissions can be achieved with appropriate add on control systems at reasonable cost. The best available control for PM10 is an LSR Core Separator with an emission rate of less than 0.1 lb/MM Btu. This technology will also bring about some reduction in particulate toxic emissions.

A review of control technologies for other criteria pollutants concluded that there was no economically practical control technology available that could bring about a reduction of emissions from wood-fired boilers in this size category especially when these boilers would be primarily used for space heating in institution or commercial situations.

A comparison of boiler emissions fired by wood, distillate oil, natural gas and propane shows that wood has lower sulfur dioxide and net greenhouse gas emissions than distillate oil. Nitrogen oxide emission rates from wood are close to the emission rates from distillate oil. Particulate matter, carbon monoxide and total organic compound emissions are higher than oil.

INTRODUCTION

Resource Systems Group, Inc. under contract to the Vermont Department of Public Service, the Vermont Department of Environmental Conservation, Air Pollution Control Division, the Massachusetts Division of Energy Resources and the New Hampshire Governor's Office of Energy Resources and Community Services, has undertaken "An Evaluation of Air Pollution Control Technologies for Small Wood-Fired Boilers." The study is intended for research and informational purposes by state agencies in Vermont, Massachusetts, New Hampshire and elsewhere and by energy planners and others with an interest in biomass energy systems. The conclusions and the opinions are those of the principal author Dr. Colin J. High and do not necessarily reflect the opinion of the sponsoring agencies. Although the study has been guided by the methods used in the EPA Best Available Control Technology (BACT) analysis process, it is not intended to define BACT for regulatory purposes or to imply that any of the sponsoring states intends to establish a BACT requirement for wood-fired boilers of this class. Reference to manufacturers names and the performance characteristics of specific equipment is for informational purposes. Neither the author nor the sponsoring agencies endorse these products or performance claims.

This study is focused on boilers in the size range of approximately 3 to 10 MM Btu/hour heat output, although reference is made to boilers slightly smaller and considerably larger in obtaining data for the analysis. The analysis is generic in that it is applicable to any manufacturer or type of wood-fired boiler in this size range for any location. Attention has been given to boilers in this size range manufactured by companies that are active in marketing boilers in the northeastern states. The analysis is also guided by the regulatory requirements in the states of Massachusetts, New Hampshire and Vermont. The results are however, relevant beyond these specific terms of reference.

Formal BACT analysis for wood-fired boilers in this size range is somewhat uncharted territory because typically, smaller wood-fired boilers have not needed to demonstrate BACT, and they rarely use state-of-the-art control technologies. In consequence, the control engineering and costs for this size range are not well demonstrated. Therefore in some cases it has been necessary to use technology and cost information for somewhat larger systems and then use general engineering principles to scale the appropriate control systems to this size of boiler.

The second component of this study is to make a comparison between wood-fired systems and comparably sized systems burning fuel oil, natural gas or propane in terms of emissions and control technology for relevant pollutants. This comparison will provide the basis for making overall comparisons that may provide input to public policy decisions. It should be recognized that the second part of the analysis is inherently more difficult because it involves comparisons among pollutants that the existing regulatory frameworks do not consider.

The Core Separator[1]

The Core Separator is a relatively new mechanical collector system produced by LSR Technologies. It works on the same general principles as a cyclone but the processes of separation and collection are accomplished separately by two different components: a core separator and a cyclone collector. The Core Separator consists of multiple cylindrical units each with a single inlet and two outlets. One outlet is for the cleaned gas stream and the other contains a concentrated recirculation stream. The recirculation stream is cleaned by being passed through a cyclone, after which it is returned to the separator unit. The core separator has very high collection efficiency, comparable to an ESP, for particles above about 2.5 micrometers but collection efficiency falls to below 50% for particles below 1 micrometer. Its overall performance falls between an ESP or fabric filter and a cyclone. There are several units installed on wood and coal fired boilers and field test results are available for wood-fired applications. In tests on a boiler fired by a wood gasifier with uncontrolled total particulate emission rates that averaged 0.17 lb/MM Btu, the core separator reduced the emissions to an average of 0.07 lb/MM Btu[2]. The overall average collection efficiency was 56%. This collection efficiency reflects the low initial emission rate and resultant particle size distribution. The collection efficiency over the whole range of uncontrolled wood-fired boiler emissions may be as high as 90%

Based on the test results the core separator working on a boiler that is well controlled through good combustion practices can probably achieve controlled emission rates for total particulates of 0.07 lb/MM Btu over a wide range of load conditions. The capital cost and annual operating costs of a core separator are given in Tables 2 through 5. The unit cost for PM10 removed ranges from approximately $1,000 per ton to $3,500 per ton at 30% capacity factor. The cost for a 7.5 MM Btu boiler operating at 75% of annual capacity is about a $1,000 per ton which is within the range of control cost acceptability. At 30% of capacity the control cost of about $3,500 are at the high end for control costs. If this same technology were to be applied to a 3 MM Btu size boiler then capital cost per ton controlled would further increase by at least 12%.

The core separator when operating either on a well controlled or poorly controlled wood-fired boiler can be expected to control PM10 to below 0.1 lb/MM Btu. This would constitute BACT for at least boilers of 7.5 MM Btu and up. For smaller boilers at about 3 MM Btu being used for space heating and operating at an annual capacity factor of 30% or less the control costs rise. An argument could be made that a less expensive cyclone would be acceptable.

Venturi and Wet Scrubbers.

Venturi and other wet scrubbers are more efficient than multicyclones especially in size fractions below 1 micrometer. The AP-42 indicates a control efficiency for wet scrubbers of 93% for PM10. Overall performance across the particle size range is comparable to the LSR Core Separator. No wet scrubbers

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[1] The Core Separator is a registered trademark of LSR Technologies of Acton MA.

[2] Particulate Emission Evaluation Boiler and Core Separator System Exhaust: Report of Tests at Allard Lumber Company Brattleboro Vermont, December 1996 and January 1997. LSR Technologies Inc. 898 Mains St, Acton MA 01720. 1997.

July 1999

Pollution Engineering Online

Particulate Control Technologies for Power Generation

State-of-the-art upgrades can help utilities keep pace with increasingly stringent regulations.

by Bruce H. Easom, S. F. Burlatsky, Ralph F. Altman and Ramsay Chang

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The high-resistivity ash produced by burning most low-sulfur coals generally reduces the particulate collection efficiency of electrostatic precipitators (ESPs) — the devices used most often in electric utilities. Consequently, utilities are looking for relatively inexpensive ways to overcome this problem and increase fuel flexibility. Several technologies under evaluation can improve ESP performance in a cost-effective manner, increase fuel flexibility and help plants prepare for regulatory changes.

Given near-term uncertainties about the regulation of airborne trace substances (air toxics), many utilities planning ESP upgrades are considering improvements that also could facilitate compliance with stricter future emissions limits at a moderate additional cost. In addition, to cope with uncertainties about the future ownership of power plants in an increasingly competitive environment, utility managers are placing a premium on low-cost options for extending the life of ESPs, or enhancing their performance.

This article highlights three technologies — a performance monitoring software, the compact hybrid particulate collector (COHPAC) and a separator technology — that illustrate a range of particulate control technologies.

These products are designed to provide:

- Enhanced ESP performance at a low capital cost.
- Lower operation and maintenance (O&M) costs.
- Increased fuel flexibility.
- Compliance with more stringent emissions standards.
- Integrated multipollutant control.

Optimizing electrical operation

New digital controls for ESPs can help restore or increase ESP effectiveness by continuously optimizing the electrical operation of a precipitator. For some marginal ESPs, the improved performance is sufficient to meet emissions requirements. A new ESP performance monitoring and troubleshooting software program can further enhance the capabilities of a new digital control system. The software monitors ESP operation online, evaluates performance and recommends corrective actions when performance problems arise. Its ability to continuously predict performance, including opacity, helps plant personnel interpret and im-prove ESP performance, reduce ESP-related operation and maintenance (O&M) costs, troubleshoot problems when experienced ESP specialists are not available, continue to meet applicable emissions and opacity standards and avoid expensive derating imposed by regulators. See Figure 1.

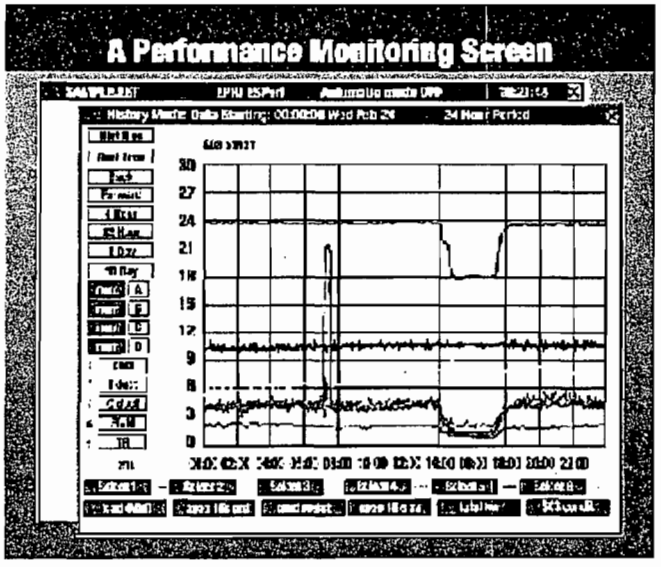

Figure 1. This screen was generated offsite. Off-site capability allows engineers to monitor ESP operations from remote locations. Note the red spike between 6 a.m. and 8 a.m. The continuous emissions monitoring system was being calibrated, resulting in incorrect measured opacity readings for this period.

The performance calculation ability helps plant owners decide how to upgrade ESPs. For an individual unit, operators can model ESP performance over a range of operating conditions and fly ash properties. Using this model, they then can make refined, site-specific predictions concerning how ESP upgrades would affect performance. In addition, because the software can help define the range of coal and fly ash properties that ESPs can handle effectively, utilities can use it to screen low-sulfur coals. This reduces to a manageable number the pool of candidate coal sources without costly and time-consuming test burns.

Improved baghouse technology

Particulate control options that provide high collection efficiencies include large ESPs and reverse-gas (RG) or pulse-jet (PJ) baghouses. In addition, smaller, less-expensive and easier-to-retrofit technologies are in the early stages of development. Over the past 10 years, domestic utilities have equipped 20,000 megawatts (MW) of capacity with RG baghouses. A survey of recent user experience and measurements at various pilot- and full-scale plants show that baghouses readily keep outlet emissions below the New Source Performance Standard of 0.03 pound/million Btu. Well-maintained baghouses generally achieve good bag life — averaging more than four years, with many lasting more than eight years in RG applications. However, although PJ baghouses are used widely abroad, they have seen only limited, utility-scale applications in this country.

A novel and less expensive method of obtaining the very low emissions levels achieved with baghouses is COHPAC. The basic concept of this process is simple: Install a filtering system — typically, a PJ baghouse operated at a higher air-to-cloth ratio than is used in conventional PJ baghouses — downstream of an existing ESP. This removes any uncollected particles. COHPAC enables utilities to improve ESP performance and meet present and possibly more stringent future regulatory requirements in a cost-effective manner.

An extension of the basic concept involves retrofitting a baghouse into the last field of an ESP, forming an even more compact, high-efficiency particulate collector. Texas Utilities Electric uses an 1100-MW COHPAC unit downstream of small coldside ESPs to improve performance at its Big Brown Station in Athens, Texas. Alabama Power has installed a 275-MW COHPAC unit to improve hotside ESP performance at its Gaston Station in Willsonville, Ala., and is installing a second unit that will operate in confined spaces.

Refining the technology

The potential for injecting sorbents between the ESP and a COHPAC baghouse to capture acid gases, sulfur oxides, mercury and/or other gas/vapor phase contaminants is being evaluated. In this configuration,

the fly ash and sorbents are collected separately, permitting separate disposal, sale or recovery of fly ash and sorbents. A current project is looking at the impact of additional sorbent loading and of sorbent size distribution on COHPAC baghouse performance.

Advanced barrier filters can provide very high collection efficiencies. All are suited for stand-alone applications and are being considered for use in COHPAC applications, especially in cases where space is at a premium. The devices include high-surface-area pleated bags made from commercial polymers, and membrane-coated and layered ceramic filters. The ceramic filters are capable of withstanding temperatures as high as 1600°F. In some instances, they could be coated with NOX-reduction catalysts. To assess their potential for long-term performance, pilot-scale testing is being performed at utility sites.

Joining forces

A new technology combines electrical and mechanical forces to separate a flue gas into one clean stream and one containing a high concentration of particles. Flue gas enters the separation and recirculation process' cylindrical separators through a tangential slot. See Figure 2. The tangential flow creates a circular motion, which forces larger particles toward the outside of the cylinder. A "bleed flow," with a high concentration of particulate matter, is withdrawn from the system through a second slot in the cylinder wall opposite the entering flow. Clean gas is withdrawn through short cylinders, called "vortex finders," located at the system's center.

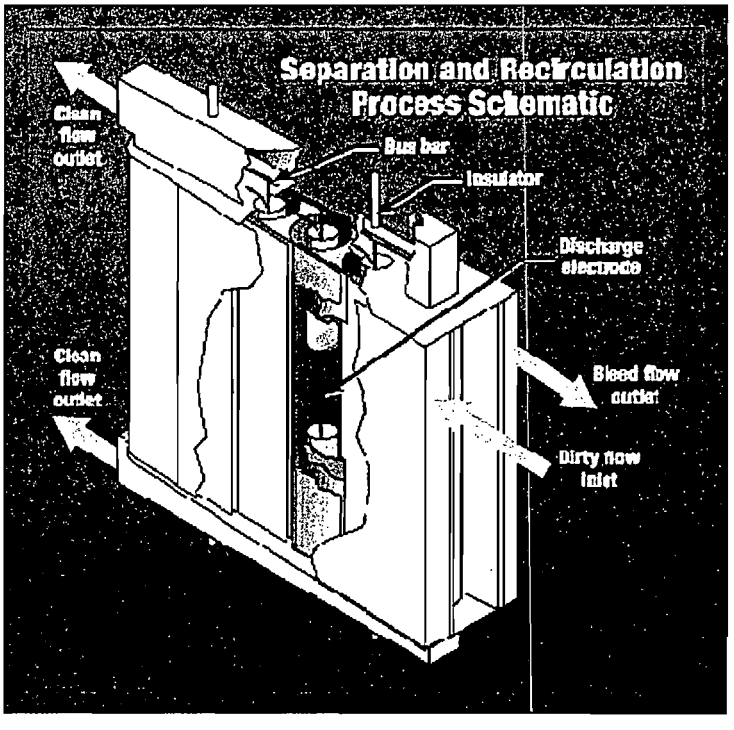

Figure 2. The system achieves gas/solids separation through the synergistic action of centrifugal and electrostatic forces.

The system's mechanical separation mechanism is augmented electrostatically by placing a high charge on particulate matter entering the separator. Forces induced by the electric field created by a high-voltage electrode prevent charged particles from penetrating the clean flow outlet. Gas/solids separation is achieved through the synergistic action of centrifugal and electrostatic forces.

Particles enter the unit tangentially along the wall, while the bleed flow containing the dust particles exits tangentially. The system's aerodynamic design avoids the secondary flows that form in conventional cyclonic collectors. These secondary flows often are responsible for particle re-entrainment that ultimately limits separation efficiency. Because no particulate collection occurs, the separation and recirculation process is not prone to reentrainment effects or to back corona limitations. As a result, it has high

separation efficiency and is unaffected by variations in dust resistivity or dust loading.
Because the technology requires a separate collector, it is well suited for retrofit applications where the existing ESP can be used as a collector. The system can be added using a variety of flow configurations. The basic configurations are illustrated in Figure 3.

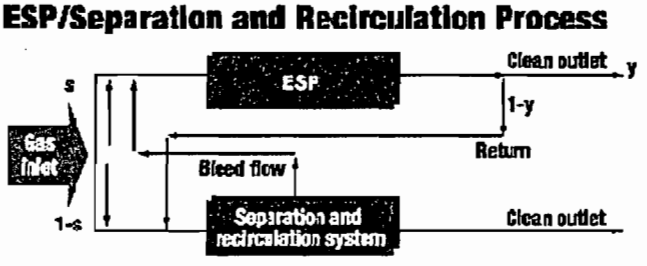

Figure 3. The basic ESP/separation and recirculation system is well suited for retrofit applications.

The particulate-laden inlet gas can be split with the ESP in any proportion defined by the inlet split ratio "s." The bleed stream is directed to the ESP inlet. The ESP outlet flow also can be split between the clean flow and return line by the outlet split ratio "y." Clean flow is extracted from the system outlet along with that portion of the ESP outlet flow that is not returned to the system. The separation and recirculation process' efficiency is calculated with the equation:

$$\eta_{SYS} = \eta_{ESP} \frac{s(1-\eta_{EC}) + \eta_{EC}}{1-\eta_{EC}\,(1-\eta_{ESP})\,(1-y)}$$

where ηSYS is the system collection efficiency, ηEC is the system separation efficiency and ηESP is the collection efficiency of the ESP.

Figure 4 shows the overall system collection efficiency vs. the efficiency an ESP would have if it were treating the total gas flow.[1] There are two reasons for the efficiency improvement. First, the ESP treats only a portion of the total gas. This increases its effective specific collection area. In the limiting case where s = 0, the ESP treats only the bleed flow directed from the system, or approximately 10 percent of the total flow. This significantly increases the efficiency of the ESP.

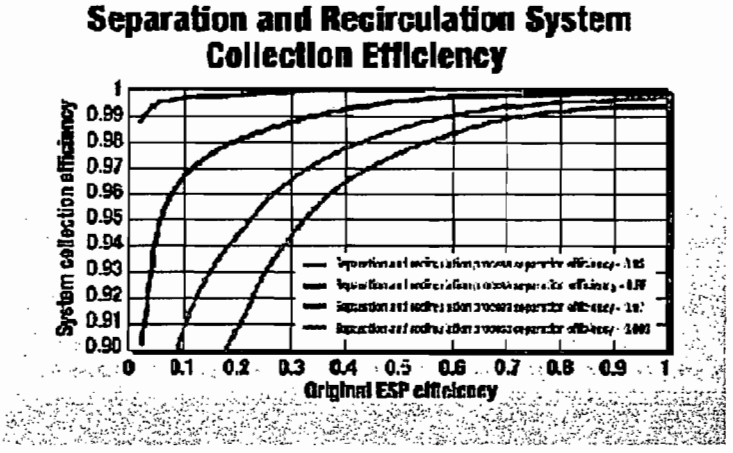

Figure 4. The figure shows the separation and recirculation system collection efficiency vs. the efficiency of an ESP treating the total gas flow.

Second, because of recirculation, the system continually directs a fraction of the particulates that escape from the ESP back to the system. In an ideal system with 100-percent system efficiency and y = 0, no particles could penetrate the exhaust gas, and the system efficiency would be 100 percent. In an actual separation and recirculation system, the efficiency is higher than either the separation and recirculation system efficiency or the ESP efficiency individually. It also is relatively independent of ESP performance. Thus, almost any ESP, regardless of its performance, can be retrofitted with a separation and recirculation system. In most cases, the sophisticated arrangement shown in Figure 3 is not necessary. It may be possible to remove the last section of the ESP and install the system inside the existing housing to achieve high system collection efficiency.

Initial laboratory testing of a system prototype used a simulated exhaust gas stream mixed with plant fly ash. The device demonstrated efficiencies higher than 99 percent. Field tests conducted in 1997 on an exhaust gas slipstream from Alabama Power Co.'s Miller Unit 3, Birmingham, Ala. These tests confirmed the system could capture between 95 percent and 98 percent of particulate matter left after gases exit the ESP.

A comparative economic and engineering analysis of various ESP upgrade options showed that the capital and levelized costs of an ESP upgraded with the system were less than half the costs of a wet ESP with the same collection efficiency. The economic assessment projected that a 250-MW unit could be retrofitted with a separation and recirculation process for approximately $6.25 million, a capital cost of $25/kW. O&M costs also promised to be reasonable. The system operates at a pressure drop of less than 1.0 inch of water. This is significant because the existing draft fan can be used without modification. In addition to low capital and operating costs, the system has other advantages, including a high capacity for removing PM2.5 particles, fuel flexibility and no re-entrainment losses from rapping.

References

1. The dependence of the ESP efficiency on the gas flow was estimated with a modified Andersen-Deutch model. Splitting parameters y and s were optimized for maximum system efficiency by a specially designed computer program.

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Return to July 1999 Table of Contents

Pollution Engineering- July 01, 1999

Control Technology
Advanced Hybrid Particulate Collector

Under DOE-NETL sponsorship, the University of North Dakota, Energy and Environmental Research Center (UND-EERC) has developed a new concept in particulate control, called an advanced hybrid particulate collector (AHPC). In addition to DOE and the EERC, the project team includes W.L. Gore & Associates, Inc., Allied Environmental Technologies, Inc., and the Otter Tail Power Company. The AHPC utilizes both electrostatic collection and filtration in a unique geometric configuration that achieves ultrahigh particle collection with much less collection area than conventional particulate control devices.

The primary technologies for state-of-the-art particulate control are fabric filters (baghouses) and electrostatic precipitators (ESPs). A major limitation of ESPs is that the fractional penetration of 0.1- to 1.0-μm particles is typically at least an order of magnitude greater than for 10-μm particles, so a situation exists where the particles that are of greatest health concern are collected with the lowest efficiency. Fabric filters are currently considered to be the best available control technology for fine particles, but emissions are dependent on ash properties and typically increase if the air-to-cloth (A/C) ratio is increased. In addition, many fabrics cannot withstand the rigors of high-SO_2 flue gases, which are typical for bituminous fuels. Fabric filters may also have problems with bag cleanability and high pressure drop, which has resulted in conservatively designed, large, costly baghouses.

The design configuration of the AHPC is unique because, instead of placing the ESP and fabric filter sections in series (as is done with other dual-mode particulate collection devices), the filter bags are placed directly between the ESP collection plates. The collection plates are perforated (45% open area) to allow dust to reach the bags; however, because the particles become charged before they pass through the plates, over 90% of the particulate mass is collected on the plates before it ever reaches the bags. When pulses of air are used to clean the filter bag surfaces, the dislodged particles are thrown back into the ESP fields where they have another opportunity to be collected on the plates. Operating experience suggests that since the bags will not need to be cleaned as often as in typical baghouses, they will provide excellent performance over a long operating life. This leads to low operating costs since filter bag replacement is a key cost component.

A demonstration unit has been operational since July 1999, filtering 15,000 m^3/hour of flue gas from the Otter Tail Power's Big Stone (South Dakota) coal-fired power plant. The cyclone-fired boiler at Big Stone burns Powder River Basin Coal, whose fly ash has traditionally been found to be difficult to collect with ESP's because of its high resistivity. The pilot AHPC unit has exhibited very stable operating levels while maintaining low energy consumption during continuous operation, with on-line bag cleaning. Tests to date show that the AHPC provides over 99.99% particulate collection efficiency for all particle sizes, at a cost that is competitive with or lower than existing technologies.

Photo Gallery:

- Otter Tail Power Company Big Stone Power Plant in Big Stone City, SD

Related Papers and Publications:

- Advanced Hybrid Particulate Collector [PDF-1334KB] (Project Factsheet) *U.S. DOE Supports New Clean Air Technology for Coal-Fired Power Plants*
- Quarterly Progress Report, January 1 - March 31, 2001 [PDF-370KB]
- **Patent Awarded to University of North Dakota Energy and**

Environmental Research Center for PM Control Technology
A U.S. Patent (US5938818) was issued to the Energy and Environmental Research Center Foundation at the University of North Dakota on August 22, 1999, for the "Advanced Hybrid Particulate Collector (AHPC) and Method of Operation." The AHPC is being developed under DOE Contract DE-AC22-95PC95258 as part of NETL's PM Control Technology program. The device is for controlling particulate air pollution and combines filtration and electrostatic collection. Specifically, the invention includes a chamber housing a plurality of rows of filter elements. Between each row of filter elements is a grounded plate. Between the grounded plates and the filter elements are electrode grids for creating electrostatic precipitation zones between each row of filter elements. In this way, when the filter elements are cleaned by pulsing air in a reverse direction, the dust removed from the bags will collect in the electrostatic precipitator zones rather than on adjacent filter elements.
A pilot-scale AHPC is currently being tested on a 9,000 acfm slipstream of the Otter Tail Power Company Big Stone power station in Milbank, South Dakota. The unit has shown excellent particulate capture, exceeding 99.99% removal of particles ranging in size from 0.01 to 10 microns. The device has also shown promise in capturing mercury and other gas-phase HAPs when used in conjunction with sorbent injection.
A copy of the patent can be found by visiting a patent search engine, such as at www.delphian.com and searching for U.S. Patent 5938818.

Contacts:

- For further information on this project, contact the NETL Project Manager, William Aljoe or Stanley J. Miller, EERC's Project Manager.

Return to top of page Last Updated: 02/28/02

Return to Environmental & Water Resources Web

Description | Control Technologies | Regulatory Drivers | In-House R&D
Links | Contacts | Site Index | Feedback | PM Home