

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

March 17, 1998

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Ms. Deborah Shaw
Environmental Affairs Coordinator
91605 Overseas Highway
P.O. Box 700377
Tavernier, Florida 33070-0377

Re: Permit Amendment No. Permit No. 0870004-003-AC (PSD-FL-237A)
Marathon Generation Plant
Changes to NO_x Emission Limits for Unit 8

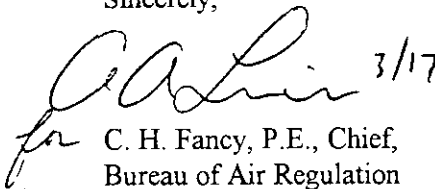
Dear Ms. Shaw:

Enclosed is one copy of the Draft Air Construction Permit Amendment for the Marathon Generation Plant's Unit 8 located at 3421 Overseas Highway, Marathon, Monroe County. The Department's Intent to Issue Air Construction Permit Amendment and the "PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT AMENDMENT" are also included.

The "PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT AMENDMENT" must be published within 30 (thirty) days of receipt of this letter. Proof of publication, i.e., newspaper affidavit, must be provided to the Department's Bureau of Air Regulation office within 7 (seven) 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 amendment.

Please submit any written comments you wish to have considered concerning the Department's proposed action to Syed Arif, P.E., New Source Review Section MS 5505 at the above letterhead address. If you have any other questions, please contact Cleve Holladay or Mr. Arif at 850/488-1344.

Sincerely,

 3/17
C. H. Fancy, P.E., Chief,
Bureau of Air Regulation

CHF/ch/t

Enclosures

In the Matter of an
Application for Permit Amendment by:

Florida Keys Electric Cooperative Association, Inc.
91605 Overseas Highway
P.O. Box 700377
Tavernier, Florida 33070-0377

DRAFT Permit No. 0870004-003-AC
PSD-FL-237A
Marathon Generation Plant Unit 8
Monroe County

INTENT TO ISSUE AIR CONSTRUCTION PERMIT AMENDMENT

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit amendment (copy of DRAFT Permit amendment attached) for the proposed project, as detailed in the application specified above, for the reasons stated below:

The applicant, Florida Keys Electric Cooperative Association, Inc, applied on January 28, 1998 to the Department for an air construction permit amendment for its 3.58 megawatt diesel generator (Unit 8) at its Marathon Generation Plant located at 3421 Overseas Highway, Marathon, Monroe County.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, and 62-212. The above actions are not exempt from permitting procedures. The Department has determined that an air construction permit amendment is required to raise the NO_x emission limits for Unit 8. The Department proposes to raise these limits from 62 lbs/hr and 271 tons per year (TPY) to 68 lbs/hr and 298 TPY.

The Department intends to issue this air construction permit amendment 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 62-103.150, 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 AMENDMENT". The notice shall be published one time only within 30 (thirty) days in the legal advertisement section of a newspaper of general circulation in the area affected. 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. Where there is more than one newspaper of general circulation in the county, the newspaper used must be one with significant circulation in the area that may be affected by the permit. 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: 850/488-1344; Fax 850/ 922-6979) within 7 (seven) 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 amendment pursuant to Rule 62-103.150 (6), F.A.C.

The Department will issue the FINAL Permit Amendment, in accordance with the conditions of the enclosed DRAFT Permit Amendment 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 DRAFT Permit Amendment issuance action for a period of 14 (fourteen) days from the date of publication of "PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT AMENDMENT." Any written comments should be provided to the Department's Bureau of Air Regulation, 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in this DRAFT Permit Amendment, the Department shall issue a Revised DRAFT Permit Amendment and require, if applicable, another Public Notice.

The Department will issue the permit amendment with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and 120.57 F.S. The procedures for petitioning for a hearing are set forth below. Mediation is not available for this action.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative hearing in accordance with Sections 120.569 and 120.57 F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000, telephone: 850/488-9730, fax: 850/487-4938. Petitions 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. A petitioner must 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 28-5.207 of the Florida Administrative Code.

A petition must contain the following information: (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Permit File Number and the county in which the project is proposed; (b) A statement of how and when each petitioner received notice of the Department's action or proposed action; (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action; (d) A statement of the material facts disputed by petitioner, if any; (e) A statement of the facts that the petitioner contends warrant reversal or modification of the Department's action or proposed action; (f) A statement identifying the rules or statutes that the petitioner contends require reversal or modification of the Department's action or proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wants the Department to take with respect to the action or proposed action addressed in this notice of intent.

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 of intent. 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.


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.

 3/17
for C. H. Fancy, P.E., 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 AMENDMENT (including the PUBLIC NOTICE, and DRAFT permit amendment) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 3-18-98 to the person(s) listed:

Ms. Deborah A. Shaw, FKEC *
Mr. Brian Beals, EPA
Mr. John Bunyak, NPS
Mr. David Knowles, DEP

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.

 3-18-98
(Clerk) (Date)

P 265 659 316

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provided.

Do not use for International Mail (See reverse)

PS Form 3800, April 1995

Sent to	Rebecca Shaw
Street & Number	Marathon Gen. Post
Post Office, State, & ZIP Code	Fla. Keys Ele. Corp
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	PSD-FI-237A 3-18-98 0670004-003-AC

Is your RETURN ADDRESS completed on the reverse side?

- Attach this form to the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

If you wish to receive the following services (for an extra fee):

- ☐ Addressee's Address
- ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. Charles W. Jenkins, Jr.
Environmental + Safety Ser.
Fairland Hydro, LP
P.O. Box 960
Bartow, FL 33831

4a. Article Number
P 265 659 323

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
3-31-98

5. Received By: (Print Name)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature: (Addressee or Agent)
X Jean Hicks

X 960

PS Form 3811, December 1994

Domestic Return Receipt

Thank you for using Return Receipt Service.

NOTICE TO BE PUBLISHED IN THE NEWSPAPER

PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT AMENDMENT

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

DRAFT Permit Amendment No. 0870004-003-AC, (PSD-FL-237A)
Marathon Generation Plant
Monroe County

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit amendment to Florida Keys Electric Cooperative Association, Inc. for higher NO_x emission limits for its recently constructed Unit 8 at its Marathon Generation Plant located at 3421 Overseas Highway Marathon, Monroe County. An updated Best Available Control Technology (BACT) determination was required for nitrogen oxides (NO_x), pursuant to Rule 62-212.400, F.A.C. and 40 CFR 52.21, Prevention of Significant Deterioration (PSD). The applicant's name and address are: Florida Keys Electric Cooperative Association, Inc., 91605 Overseas Highway, P.O. Box 700377, Tavernier, Florida 33070-0377.

This amendment raises the NO_x emission limits for Unit 8 from 62 lbs/hr and 271 tons per year (TPY) to 68 lbs/hr and 298 TPY. Unit 8 is a 3.58 megawatt diesel generator, which will burn No. 2 fuel oil with a sulfur content of 0.05 percent or less, by weight. Controls for NO_x emissions consist of timing retardation and turbocharger aftercoolers. An updated air quality impact analysis was conducted. Emissions from the facility will consume PSD increment, but will not significantly contribute to or cause a violation of any state or federal ambient air quality standards. The maximum predicted PSD Class II annual nitrogen dioxide (NO₂) increment consumed by all sources in the area, including this project, will be as follows:

<u>PSD Class II Increment Consumed</u>	<u>Allowable Increment</u>	<u>Percent Increment Consumed</u>
<u>($\mu\text{g}/\text{m}^3$)</u>	<u>($\mu\text{g}/\text{m}^3$)</u>	
21	25	84

The project has no significant impact on the Everglades National Park PSD Class I area.

The Department will issue the FINAL Permit Amendment, in accordance with the conditions of the DRAFT Permit Amendment 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 DRAFT Permit Amendment issuance action for a period of 14 (fourteen) days from the date of publication of this Notice. Any written comments should be provided to the Department's Bureau of Air Regulation, 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in this DRAFT Permit Amendment, the Department shall issue a Revised DRAFT Permit Amendment and require, if applicable, another Public Notice.

The Department will issue FINAL Permit Amendment with the conditions of the DRAFT Permit Amendment unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and

NOTICE TO BE PUBLISHED IN THE NEWSPAPER

Notice of Intent - 0870004-003-AC
Page 2 - PSD-FL-237(A)

120.57 F.S. The procedures for petitioning for a hearing are set forth below. Mediation is not available for this action.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative hearing in accordance with Sections 120.569 and 120.57 F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000, telephone: 850/488-9370, fax: 850/487-4938. Petitions 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. A petitioner must 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 28-5.207 of the Florida Administrative Code.

A petition must contain the following information: (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Permit File Number and the county in which the project is proposed; (b) A statement of how and when each petitioner received notice of the Department's action or proposed action; (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action; (d) A statement of the material facts disputed by petitioner, if any; (e) A statement of the facts that the petitioner contends warrant reversal or modification of the Department's action or proposed action; (f) A statement identifying the rules or statutes that the petitioner contends require reversal or modification of the Department's action or proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wants the Department to take with respect to the Department's action or proposed action addressed in this notice of intent.

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 of intent. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

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

Department of Environmental Protection
Bureau of Air Regulation
111 South Magnolia Drive, Suite 4
Tallahassee, Florida, 32301
Telephone: 850/488-1344
Fax: 850/922-6979

Department of Environmental Protection
South District
2295 Victoria Avenue, Suite 364
Fort Myers, Florida 33901
Telephone: (941) 332-6975
Fax: 941/332-6969

The complete project file includes the Draft Permit Amendment, the application, and the information submitted by the responsible official, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Administrator, New Resource Review Section at 111 South Magnolia Drive, Suite 4, Tallahassee, Florida 32301, or call 850/488-1344, for additional information.

DRAFT

DRAFT

April xx, 1998

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Ms. Deborah Shaw
Environmental Affairs Coordinator
91605 Overseas Highway
Post Office Box 700377
Tavernier, Florida 33070-0377

Re: Permit Amendment No. 0870004-003-AC (PSD-FL-237A)
Marathon Generation Plant, Changes to NO_x emission limits for Unit 8

Dear Ms. Shaw:

The Department has reviewed your January 26, 1998 letter requesting an amendment to the above referenced permit for the NO_x emission limits for Unit 8. This request is acceptable and the permit is hereby amended as follows:

Section III, Subsection B, Specific Condition B.1, Emission Limitations

FROM:

The maximum allowable emission rates for NO_x for Unit No. 008 shall not exceed 62 pounds per hour (lb/hr) and 271 tons per year (TPY) pursuant to the Best Available Control Technology (BACT) Determination. [Rule 62-212.410, F.A.C.]

TO:

The maximum allowable emission rates for NO_x for Unit No. 008 shall not exceed **68** pounds per hour (lb/hr) and **298** tons per year (TPY) pursuant to the updated Best Available Control Technology (BACT) Determination. [Rule 62-212.410, F.A.C.]

A copy of this letter shall be filed with the referenced permit and shall become part of the permit. This permit modification is issued pursuant to Chapter 403, Florida Statutes. Any party to this order (permit modification) has the right to seek judicial review of the permit pursuant to Section 120.68, F.S., by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Legal Office; 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 of Appeal must be filed within 30 (thirty) days from the date this Notice is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

DRAFT

DRAFT

Howard L. Rhodes, Director
Division of Air Resources
Management

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF FINAL PERMIT MODIFICATION (including the FINAL permit modification) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on _____ to the person(s) listed:

Ms. Deborah A. Shaw, FKEC *
Mr. Brian Beals, EPA Region 4
Mr. John Bunyak, NPS
Mr. David Knowles, DEP SD

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)

(Date)

APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

Revised BACT Determination
Marathon Generation Plant Unit No. 8
Florida Keys Electric Cooperative Association
PSD-FL-237A and 0870004-003-AC
Marathon, Monroe County

The Florida Keys Electric Cooperative Association (FKEC) installed a new Diesel Engine Generator at its existing Marathon Generation Plant (MGP) in Marathon, Monroe County. The unit is a General Motors Electro-Motive Diesel generator model 20-710G4B with a nominal base load rating of 3.58 megawatts (MW) at 32°C and 718 mm Hg. The facility currently consists of seven (7) diesel engine generators used for peaking power. Units 1 & 2 are each rated at 2.0 MW. Units 3, 4 and 5 are each rated at 3.0 MW, and Units 6 & 7 are 2.5 MW each. The existing Units 1-7 are allowed to burn No. 2 fuel oil with a sulfur content of 0.5 percent or less, by weight. The new Unit 8 will be fired with No. 2 low sulfur fuel oil with a sulfur content not to exceed 0.05 percent, by weight, and a fuel oil consumption limit of 2.015 million gallons per year. The facility also has four fuel oil storage tanks and other electrical generating support equipment.

FKEC had indicated that the maximum annual air pollutant emission rates in tons per year for the Unit 8 diesel generator, based on consumption of 2.015 million gallons of No. 2 fuel oil, with a maximum sulfur content of 0.05 percent, by weight, would be:

Pollutant	PSD Significance Levels ¹	Uncontrolled Emissions ²	Controlled Emissions ³	Expected Emissions ⁴	Subject to PSD Review?
NO _x	40	423	271/298 ⁵	24.2	Yes
CO	100	111	<100	6.4	No
PM	25	9.5	9.1	0.6	No
PM ₁₀	15	7.9		0.5	No
SO ₂	40	7.2		0.5	No

¹ Florida Administrative Code 212.400-2

² Based on firing No. 2 fuel oil (0.05% sulfur by weight) at a maximum of 2.015 million gals/yr at full load with no emission controls.

³ Based on firing No. 2 fuel oil (0.05% sulfur by weight) at a maximum of 2.015 million gals/yr at full load with emissions control of timing retardation.

⁴ Based on FKEC's historical and projected actual operating hours of 500 or less.

⁵ Revised NO_x annual limit

Following is the original BACT determination proposed by the applicant:

BACT DETERMINATION REQUESTED BY THE APPLICANT:

POLLUTANT	EMISSION LIMIT
Nitrogen Oxides	62 lbs/hr by timing retardation and aftercoolers

The Marathon Generation Power Plant is a major source of air pollution or Title V source. Because emissions of nitrogen oxides are greater than 250 tons per year, it is a major facility with

APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

respect to the Prevention of Significant Deterioration (Rule 62-212.400). Because the project will result in a significant increase in nitrogen oxides emissions per Table 62-212.400-2, F.A.C., "Regulated Air Pollutants - Significant Emissions Rates," a BACT determination is required pursuant to Rule 62-212.410, F.A.C.

DATE OF RECEIPT OF A BACT APPLICATION:

January 27, 1997

REVIEW GROUP MEMBERS:

Syed Arif and A. A. Linero, P.E.
New Source Review Section

DATE OF RECEIPT OF REVISED BACT APPLICATION

January 28, 1998

REVIEW GROUP MEMBERS FOR REVISED BACT DETERMINATION:

Cleve Holladay and Syed Arif, P.E.
New Source Review Section

REVISED BACT DETERMINATION REQUESTED BY THE APPLICANT:

POLLUTANT	EMISSION LIMIT
Nitrogen Oxides	68 lbs/hr (298 TPY) by timing retardation and aftercoolers

Based on the results of the initial NO_x emissions compliance test, the applicant has requested that the NO_x emission limit for Unit 8 be revised upward to 68 lbs/hr and 298 TPY. The unit tested at an average NO_x rate of 65.7 lbs/hr during the December 17, 1997 test. For NO_x emissions controls, the applicant used the combination of retarded injection timing and lowered combustion air temperature proposed in the original BACT determination. These measures did not result in emissions reductions as substantial as those originally expected by the applicant.

BACT DETERMINATION PROCEDURE:

In accordance with Chapter 62-212, F.A.C., this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department of Environmental Protection (Department), on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes

APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

and available methods, systems, and techniques. In addition, the regulations state that, in making the BACT determination, the Department shall give consideration to:

- Any Environmental Protection Agency determination of BACT pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 - Standards of Performance for New Stationary Sources or 40 CFR Part 61 - National Emission Standards for Hazardous Air Pollutants.
- All scientific, engineering, and technical material and other information available to the Department.
- The emission limiting standards or BACT determination of any other state.
- The social and economic impact of the application of such technology.

The EPA currently stresses that BACT should be determined using the "top-down" approach. The first step in this approach is to determine, for the emission unit in question, the most stringent control available for a similar or identical emission unit or emission unit category. If it is shown that this level of control is technically or economically unfeasible for the emission unit in question, then the next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental, or economic objections.

The air pollutant emissions from this facility can be grouped into categories based upon the control equipment and techniques that are available to control emissions from these emission units. Using this approach, the emissions can be classified as follows:

- **Combustion Products** (e.g., SO₂, NO_x, PM). Controlled generally by good combustion of clean fuels, removal in add-on control equipment.
- **Products of Incomplete Combustion** (e.g., CO, VOC). Control is largely achieved by proper combustion techniques.

Grouping the pollutants in this manner facilitates the BACT analysis because it enables the equipment available to control the type or group of pollutants emitted and the corresponding energy, economic, and environmental impacts to be examined on a common basis. Although all of the pollutants addressed in the BACT analysis may be subject to a specific emission limiting standard as a result of PSD review, the control of "non-regulated" air pollutants is considered in imposing a more stringent BACT limit on a "regulated" pollutant (i.e., PM, SO₂, H₂SO₄, fluorides, etc.), if a reduction in "non-regulated" air pollutants can be directly attributed to the control device selected as BACT for the abatement of the "regulated" pollutants.

APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

BACT POLLUTANT ANALYSIS**NITROGEN OXIDES (NO_x)**

Oxides of nitrogen (NO_x) are generated during fuel combustion by oxidation of chemically bound nitrogen in the fuel (fuel NO_x) and by thermal fixation of nitrogen in the combustion air (thermal NO_x). As flame temperature increases, the amount of thermally generated NO_x increases. Fuel type affects the quantity and type of NO_x generated. Generally, natural gas is low in nitrogen. However it causes higher flame temperatures and generates more thermal NO_x than oil or coal, which have higher fuel nitrogen content, but exhibit lower flame temperatures.

NO_x emissions represent a significant portion of the total emissions generated by this project, and must be minimized using BACT. A review of EPA BACT/LAER Clearinghouse (BACT Clearinghouse) information indicates that NO_x emissions at most small facilities are minimized by process control and good combustion practices.

The applicant has proposed modification of the combustion process through a combination of fuel injection timing retardation and cooling of combustion air resulting in exhaust temperature reduction. The design specific to FKEC's 20-710G4B includes a 4° injection timing retardation and a 4-pass aftercooler circuit with the addition of a separately cooled aftercooler circuit. The combination of retarded injection timing and lowered combustion air temperature results in less NO_x formation.

Vendors data indicate that retarding injection timing will reduce NO_x formation by about 20 percent, but will increase PM emissions by about 10 percent and fuel consumption by 1.5 percent. The 4-pass aftercooler will reduce both NO_x and PM emissions by about 10 percent while reducing fuel consumption by about 0.7 percent. The separately cooled aftercooling circuit will decrease both NO_x and PM by another 10 percent and fuel consumption by 0.5 percent. The net result will be a 40 percent reduction in NO_x, a 5 percent increase in PM and about 0.3 percent increase in fuel consumption. The use of low sulfur fuel oil will minimize PM emissions thus reducing or eliminating the increase in PM caused by NO_x controls. **This combination of NO_x controls, proper engine design, good combustion practices, and the use of low sulfur fuel should provide effective emissions control.**

BACT DETERMINATION BY DEP:

Based on the information provided by the applicant and the information searches conducted by the Department, lower emissions limits can be obtained employing the top-down BACT approach for NO_x.

APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

NO_x DETERMINATION

The top-down BACT approach for diesel fired internal combustion engines listed in order from most stringent control to least:

1. Selective Catalytic Reduction (SCR)
2. Combined technologies of injection timing retardation, turbocharger with aftercoolers
3. Good combustion design/practices

The following table summarizes the feasibility of using these control technologies with the EMD 20-710G4B as designed for installation in FKEC's Marathon Generation Plant.

Control Technology	Emission Reduction (%)	Technically Feasible	Cost Effective	Adverse Environ. Impacts	Adverse Energy Impacts
SCR with ammonia	60-90	No	N/A	N/A	N/A
SCR with urea	80	No	N/A	N/A	N/A
Timing retard; turbo charger aftercoolers	40	Yes	Yes	No	0.3%
Dry/Low NO _x	18	No	N/A	N/A	N/A

SCR is more widely used in Japan and Germany than it is in the United States and the technology is being improved such that the hazards and costs have been reduced. It remains, however, a costly technology for small applications and has hazards associated with the use and storage of ammonia. SCR is not generally used with diesel engines of this size. The BACT/LAER database lists only a single facility which uses SCR on diesel engines. SCR was selected in that instance because a local ordinance mandated strict limits on emissions without regards to cost. SCR is not technically feasible for this diesel engine because the exhaust back pressure maximum allowance for the EMD 20-710G4B is 5 inches H₂O. An SCR system will add 5 to 6 inches H₂O back pressure, exceeding the manufacturers specifications and recommendations.

For NO_x emissions, the Department accepts the applicants proposed use of injection timing retardation and cooling of combustion air as BACT for this project.

The BACT emission levels established by the Department are as follows:

POLLUTANT	EMISSION LIMIT
Nitrogen Oxides (NO _x)	62 lbs/hr (271 TPY)
Visible Emissions	20%

APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

REVISED BACT DETERMINATION

The applicant has requested a revised BACT limit of 68 lbs/hr and 298 TPY based on the results of the initial compliance test. The Department has done air quality dispersion modeling with the revised limits. This modeling predicts that the applicant will continue to meet all applicable NO_x air quality standards and increments as shown in the following table (all values in ug/m³).

Ambient Air Quality Standard (AAQS)=100	PSD Class II Increment =25	PSD ClassI Significant Impact Level=0.1
Modeled Concentration	Modeled Concentration	Modeled Concentration
97	21	0.04

The revised BACT emissions given below are within the acceptable range of emissions for diesel fired internal combustion engines according to information from the RACT/BACT/LAER Clearinghouse:

POLLUTANT	EMISSION LIMIT
Nitrogen Oxides (NO _x)	68 lbs/hr (298 TPY)

COMPLIANCE

Compliance with the visible emission limitations shall be in accordance with the EPA Reference Method 9 as contained in 40 CFR 60, Appendix A.

Compliance with the NO_x limitations shall be in accordance with the EPA Reference Method 7E as contained in 40 CFR 60, Appendix A.

DETAILS OF THE REVISED ANALYSIS MAY BE OBTAINED BY CONTACTING:

Cleve Holladay, Review Engineer (prepared revised BACT)
Syed Arif, P.E. (reviewed BACT)
Department of Environmental Protection
Bureau of Air Regulation
MS 5505
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

Recommended By:

Approved By:

Ref

C. H. Fancy, P.E., Chief
Bureau of Air Regulation

Howard L. Rhodes, Director
Division of Air Resources Management

Date:

Date:

Memorandum

Florida Department of Environmental Protection

TO: Clair Fancy *ccf for CH*
THRU: Al Linero *ccf 3/17*
Syed Arif *SA 3/17*
FROM: Cleve Holladay *CH*
DATE: March 17, 1998
SUBJECT: Permit Amendment
Florida Keys Electric Cooperative, Inc. (FKEC)
Revised NO_x Emission Limits for Unit 8

I have attached a letter and a revised BACT determination amending the construction permit for FKEC's recently installed 3.58 megawatt diesel generator (Unit 8). FKEC failed the initial compliance test on this unit in December, 1997. This amendment raises the NO_x emission limits on this unit from 62 lbs/hr and 271 TPY to 68 lbs/hr and 298 TPY. However, according to information from the RACT/BACT/LAER Clearinghouse, the new emission limits are within the acceptable range for BACT determinations.

The BACT emission limits for this unit were largely determined by the air quality dispersion modeling results and the need to keep total predicted facility impacts less than the NO₂ annual ambient air quality standard of 100 ug/m³. I have done air quality dispersion modeling which includes the proposed higher limit. The results show that this change meets all standards and increments. The original predicted annual impact was 96 ug/m³; the annual impact with the revised limits is 97 ug/m³.

I recommend your approval and signature.

Attachments

CH/kt