

# Department of Environmental Protection

Jeb Bush  
Governor

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

Colleen M. Castille  
Secretary

April 7, 2005

Roger Zirkle  
Plant Manager  
Hines Energy Complex  
100 Central Avenue BB1A-HE44  
St. Petersburg, Florida 33701-5511

Re: PROPOSED Title V Permit No.: 1050234-012-AV  
Hines Energy Complex Power Block 2

Dear Mr. Zirkle:

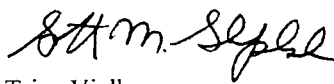
One copy of the "PROPOSED PERMIT DETERMINATION" for the Hines Energy Complex Power Block 2 located at County Road 555, 2.5 miles south of CR 640, Bartow, Polk County, is enclosed. This letter is only a courtesy to inform you that the DRAFT permit has become a PROPOSED permit.

An electronic version of this determination has been posted on the Division of Air Resources Management's world wide web site for the United States Environmental Protection Agency (USEPA) Region 4 office's review. The document may be reviewed by entering the seven-digit facility ID at the following web site address:  
<http://www.dep.state.fl.us/air/eproducts/airpermit/AirSearch.asp>

Pursuant to Section 403.0872(6), Florida Statutes, if no objection to the PROPOSED permit is made by the USEPA within 45 days, the PROPOSED permit will become a FINAL permit no later than 55 days after the date on which the PROPOSED permit was mailed (posted) to USEPA. If USEPA has an objection to the PROPOSED permit, the FINAL permit will not be issued until the permitting authority receives written notice that the objection is resolved or withdrawn.

If you should have any questions, please contact Michael P. Halpin, P.E. at 850/488-1344.

Sincerely,

  
for Trina Vielhauer  
Chief  
Bureau of Air Regulation

TV/JKP/mph

Enclosures

copy furnished to:  
Scott Osbourn, P.E. Golder  
Dave Meyer, P.E., Senior Environmental Specialist  
Hamilton Oven, DEP-Siting  
Gerald Kissel, SWD  
Polk County Public Works Dept.  
USEPA, Region 4 (INTERNET E-mail Memorandum)

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## **PROPOSED PERMIT DETERMINATION**

PROPOSED Permit No.: 1050234-012-AV

Page 1 of 1

### **I. Public Notice.**

An "INTENT TO ISSUE TITLE V AIR OPERATION PERMIT" to Progress Energy Corporation for the Hines Energy Complex, County Road 555, 2.5 miles south of CR 640, Bartow, Polk County was clerked on February 10, 2005. The "PUBLIC NOTICE OF INTENT TO ISSUE TITLE V AIR OPERATION PERMIT" was published in the Lakeland Ledger on February 14, 2005. The DRAFT Title V Air Operation Permit was available for public inspection at the Southeast District Office in Tampa.

### **II. Public Comment(s).**

No comments were received from the public during the 30 (thirty) day public comment period. The applicant made two minor comments:

- 1) Page 24 of the existing TV permit for PB 2, included as the last page of the draft, lists "LHV" with respect to the newly revised heat input limits; this should be "HHV".
- 2) In accordance with the Department's Technical Evaluation (issued with the Draft), new revised equivalent emission rates (lb/hr) were calculated which were commensurate with the higher heat input values. In order to make the revised permits consistent, the lb/hr values found for PB 2 under Title V Condition E.4(f) should be revised.

These comments were incorporated into the Proposed Title V Air Operation Permit.

### **III. Conclusion.**

Since there were only two minor comments received and incorporated, the permitting authority hereby issues the PROPOSED Permit No. 1050234-012-AV. The affected permit pages (page 24 and 27) are issued herein with changes made as follows: add and ~~delete~~. Additionally, attachment "Table 1.xls" is provided with the commensurate updates to EU-014 and EU-015 included. As stated within the document, the table "summarizes information for convenience purposes only" and "does not supersede any of the terms or conditions of this permit." Changes to the TPY column have been made in order to reflect the combination of both units (rather than on a per unit basis), in order to be consistent with other Emission Unit listings.

## STATEMENT OF BASIS

Progress Energy Florida  
Hines Energy Complex  
**Facility ID No.:** 1050234  
Polk County

Title V Air Operation Permit Revision  
**PROPOSED Permit No.:** 1050234-012-AV

This Title V air operation permit is issued under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, 62-213, and 62-214. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents, attached hereto or on file with the permitting authority, in accordance with the terms and conditions of this permit.

Based on the initial Title V permit application received January 19, 1999, and the Title V application for permit revision received February 16, 2004 this facility is a major source of hazardous air pollutants (HAPs).

This facility consists of two combined cycle combustion turbines with heat recovery steam generators (HRSGs) (Units 1 and 2), for a nominal total of 500 MWs, a 99 MMBtu/hr auxiliary boiler, a 1,300 kW diesel generator, a 97,570 barrel fuel oil storage tank, and relocatable diesel generators that can be located at various Florida Power Corporation power plants, as needed. Emissions from each CT and HRSG combination are vented through a single stack for each. The combustion turbines may fire fuel oil or natural gas.

This revision incorporates heat input increases for each fuel at Power Block 2, authorization of which was granted under air construction permit number 1050234-011-AC. Power Block 2 consists of two combined cycle combustion turbines with unfired heat recovery steam generators (HRSGs), and a single steam-turbine electrical generator. The entire facility (inclusive of both Power Blocks) has a total generating capacity of 1030 MW and Power Block 3 is currently under construction.

**Subsection E. This section addresses the following emissions unit(s).**

| E.U.<br>ID No. | Brief Description              |
|----------------|--------------------------------|
| -014           | 170 MW Westinghouse 501FD CT2A |
| -015           | 170 MW Westinghouse 501FD CT2B |

Emission units 014 and 015 each consist of a combined cycle Westinghouse 501FD Combustion Turbine, each with a nominal generator rating of 170 MW and each with a maximum heat input rating of ~~1,915~~ 2,048 MMBtu/hr (~~L~~HHV) while firing natural gas and ~~2,020~~ 2,155 MMBtu/hr (~~L~~HHV) while firing fuel oil. NO<sub>x</sub> emissions are controlled with dry low NO<sub>x</sub> burners (DLN) for natural gas firing and wet injection for fuel oil firing, complete with Selective Catalytic Reduction (SCR). Each combustion turbine incorporates an unfired heat recovery steam generator.

{Permitting notes: These emissions unit are regulated under Acid Rain, Phase II; NSPS - 40 CFR 60, Subpart GG, Standards of Performance for Stationary Gas Turbines, adopted and incorporated by reference in Rule 62-204.800(7), F.A.C.; Rule 212.400(5), F.A.C., Prevention of Significant Deterioration (PSD); PSD-FL-296A; Rule 62-212.400(6), F.A.C.}

The following specific conditions apply to the emissions unit(s) listed above:

**Essential Potential to Emit (PTE) Parameters**

**E.1. Permitted Capacity.** The maximum heat input rate to each gas turbine is ~~1,915~~ 2,048 MMBtu per hour when firing natural gas and ~~2,020~~ 2,155 MMBtu per hour when firing distillate oil (based on a compressor inlet air temperature of 59 °F, the HHV of each fuel, and 100% load). Heat input rates will vary depending upon gas turbine characteristics, ambient conditions, alternate fuels, and evaporative cooling. The permittee shall provide manufacturer's performance curves (or equations) that correct for site conditions to the Permitting and Compliance Authorities within 45 days of completing the initial compliance testing. Operating data may be adjusted for the appropriate site conditions in accordance with the performance curves and/or equations on file with the Department. [Rule 62-210.200(PTE), F.A.C. and PSD-FL-296A]

**E.2. Equipment and Controls - Gas Turbines:** The permittee is authorized to install, tune, operate, and maintain two Siemens Westinghouse Model 501 FD gas turbine-electrical generator sets each with a generating capacity of 170 MW. Each gas turbine shall include the Siemens TXP automated gas turbine control system and have dual-fuel capability. The gas turbines will utilize DLN combustors. [Application; Design]

a. Gas Turbine NO<sub>x</sub> Controls

1. *DLN Combustion:* The permittee shall operate and maintain the DLN combustion system to control NO<sub>x</sub> emissions from each gas turbine when firing natural gas. Prior to the initial emissions performance tests required for each gas turbine, the DLN combustors and automated gas turbine control system shall be tuned, in conjunction with any post-combustion emissions control equipment, to achieve the permitted levels for CO and NO<sub>x</sub> emissions. Thereafter, each system shall be maintained and tuned in accordance with the manufacturer's recommendations.

- d. Subject to the requirements of this permit, each SCR system shall be designed and operated for an initial ammonia slip target of less than 5 ppmvd corrected to 15% oxygen when firing natural gas based on the average of three test runs. Compliance with the ammonia slip standard shall be demonstrated by conducting tests in accordance with EPA Method CTC-027.
- e. The fuel specifications established in Specific Condition No. E.3. of this section combined with the efficient combustion design and operation of each gas turbine represents the BACT determination for PM/PM10 emissions. Compliance with the fuel specifications, CO standards, and visible emissions standards shall serve as indicators of good combustion. Compliance with the fuel specifications shall be demonstrated by keeping records of the fuel sulfur content. Compliance with the visible emissions standard shall be demonstrated by conducting tests in accordance with EPA Method 9.
- f. The fuel sulfur specifications in Condition No. E.3. of this section effectively limit the potential emissions of SAM and SO<sub>2</sub> from the gas turbines and represent the BACT determination for these pollutants. Compliance with the fuel sulfur specifications shall be determined by the requirements in Specific Condition No. E.18. of this section.

*{Permitting Note: The concentration limits and fuel specifications for the control of the above pollutants are equivalent to the following mass emission rates (at 20 °F):*

- *CO = ~~73.6~~ 78.7 lb/hr for natural gas firing and ~~112~~ 119.5 lb/hr for distillate fuel oil firing,*
- *NO<sub>x</sub> = ~~25.2~~ 27.0 lb/hr for natural gas firing and ~~93.5~~ 99.7 lb/hr for distillate fuel oil firing,*
- *VOC = ~~4.7~~ 5.0 lb/hr for natural gas firing and ~~22~~ 23.5 lb/hr for distillate fuel oil firing,*
- *PM<sub>10</sub> = 7.3 lb/hr for natural gas firing and 64.8 lb/hr for distillate fuel oil firing, and*
- *SO<sub>2</sub> = 5.6 lb/hr for natural gas firing and 105.6 lb/hr for distillate fuel oil firing.*

*SAM emissions are estimated to be less than 10% of the SO<sub>2</sub> emissions.} [Rule 62-212.400(BACT), F.A.C.]*

[Rules 62-210.200(PTE), 62-212.400(BACT), F.A.C. and PSD-FL-296A]

## Excess Emissions

**E.5.** Excess emissions caused entirely or in part by poor maintenance, poor operation or any other equipment or process failure that may reasonably be prevented during startup, shutdown or malfunction shall be prohibited. All such preventable emissions shall be included in any compliance determinations based on CEMS data. [Rule 62-210.700(4), F.A.C. and PSD-FL-296A]

*{Permitting note: The Excess Emissions Rule at Rule 62-210.700, F.A.C., cannot vary any requirement of a NSPS, NESHAP, or Acid Rain program provision.}*

**E.6.** Visible emissions due to startups, shutdowns, and malfunctions shall not exceed 10% opacity except for up to ten, 6-minute averaging periods during a calendar day, which shall not exceed 20% opacity. [Rule 62-212.400(BACT), F.A.C. and PSD-FL-296A]

**Table 1-1, Air Pollutant Emission Allowables and Terms**

This table summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

| Emission Unit & No. |         | Allowable Emissions <sup>2</sup> |       |        |     |             |                              |
|---------------------|---------|----------------------------------|-------|--------|-----|-------------|------------------------------|
| Pollutant           | Fuel(s) | Hrs/Yr <sup>1</sup>              | Basis | lbs/hr | TPY | Regulations | Permit specific condition(s) |

| CT-001 & 002        |     |  |                               |      |     |                            |      |
|---------------------|-----|--|-------------------------------|------|-----|----------------------------|------|
| NO <sub>x</sub>     | Gas |  | 12ppmvd @ 15% O <sub>2</sub>  | 73   | 639 | Rule 62-212.400(6), F.A.C. | A.5. |
|                     | Oil |  | 42 ppmvd @ 15% O <sub>2</sub> | 305  | 153 | Rule 62-212.400(6), F.A.C. | A.5. |
| VOC                 | Gas |  | 7 ppmvw                       | 10.4 | 91  | Rule 62-212.400(6), F.A.C. | A.5. |
|                     | Oil |  | 10 ppmvw                      | 19.0 | 5.6 | Rule 62-212.400(6), F.A.C. | A.5. |
| CO                  | Gas |  | 25 ppmvd                      | 77   | 675 | Rule 62-212.400(6), F.A.C. | A.5. |
|                     | Oil |  | 30 ppmvd                      | 93   | 47  | Rule 62-212.400(6), F.A.C. | A.5. |
| VE                  | Gas |  | 10 percent opacity            |      |     | Rule 62-212.400(6), F.A.C. | A.5. |
|                     | Oil |  | 20 percent opacity            |      |     | Rule 62-212.400(6), F.A.C. | A.5. |
| SO <sub>2</sub>     | Gas |  |                               | 4.7  | 44  | Rule 62-212.400(6), F.A.C. | A.5. |
|                     | Oil |  | 0.05% S by weight             | 94   | 47  | Rule 62-212.400(6), F.A.C. | A.5. |
| PM/PM <sub>10</sub> | Gas |  |                               | 15.6 | 79  | Rule 62-212.400(6), F.A.C. | A.5. |
|                     | Oil |  |                               | 44.8 | 21  | Rule 62-212.400(6), F.A.C. | A.5. |

| Aux. Boiler-003 |     |  |              |  |  |                            |      |
|-----------------|-----|--|--------------|--|--|----------------------------|------|
| NO <sub>x</sub> | Gas |  | 0.1 lb/MMBtu |  |  | Rule 62-212.400(6), F.A.C. | B.5. |
| VE              | Gas |  | 10% opacity  |  |  | Rule 62-212.400(6), F.A.C. | B.7. |

**Table 1-1, Air Pollutant Emission Allowables and Terms**

This table summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

| Emission Unit & No. |         | Allowable Emissions |       |        |     |             |                              |
|---------------------|---------|---------------------|-------|--------|-----|-------------|------------------------------|
| Pollutant           | Fuel(s) | Hrs/Yr <sup>1</sup> | Basis | lbs/hr | TPY | Regulations | Permit specific condition(s) |

| Diesel Generator -004 |     |  |                  |  |  |                                  |      |
|-----------------------|-----|--|------------------|--|--|----------------------------------|------|
| NO <sub>x</sub>       | Oil |  | 9.82 grams/hp-hr |  |  | Rule 62-212.400(6), F.A.C.       | C.6. |
| VE                    | Oil |  | 20% opacity      |  |  | Rule 62-296.320(4)(b)(1), F.A.C. | C.4. |
| SO <sub>2</sub>       | Oil |  | 0.5% S by weight |  |  | Rule 62-212.400(6), F.A.C.       | C.5. |

| Relocatable Diesel Generator 7775047, -001 |     |  |                  |  |  |                                  |      |
|--|-----|--|------------------|--|--|----------------------------------|------|
| VE   | Oil |  | 20% opacity      |  |  | Rule 62-296.320(4)(b)(1), F.A.C. | D.5. |
| SO <sub>2</sub>                            | Oil |  | 0.5% S by weight |  |  | Rule 62-213.410, F.A.C.          | D.3. |

| CT-014 & 015        |     |  |                                |       |      |                            |      |
|---------------------|-----|--|--------------------------------|-------|------|----------------------------|------|
| NO <sub>x</sub>     | Gas |  | 3.5 ppmvd @ 15% O <sub>2</sub> | 27    | 217  | Rule 62-212.400(6), F.A.C. | E.4. |
|                     | Oil |  | 12 ppmvd @ 15% O <sub>2</sub>  | 99.7  | 72   | Rule 62-212.400(6), F.A.C. | E.4. |
| VOC                 | Gas |  | 2 ppmvw                        | 5     | 40   | Rule 62-212.400(6), F.A.C. | E.4. |
|                     | Oil |  | 10 ppmvw                       | 23.5  | 16.9 | Rule 62-212.400(6), F.A.C. | E.4. |
| CO                  | Gas |  | 16 ppmvd                       | 78.7  | 633  | Rule 62-212.400(6), F.A.C. | E.4. |
|                     | Oil |  | 30 ppmvd                       | 119.5 | 86   | Rule 62-212.400(6), F.A.C. | E.4. |
| VE                  | Gas |  | 10 percent opacity             |       |      | Rule 62-212.400(6), F.A.C. | E.4. |
|                     | Oil |  | 20 percent opacity             |       |      | Rule 62-212.400(6), F.A.C. | E.4. |
| SO <sub>2</sub>     | Gas |  |                                | 5.6   | 23   | Rule 62-212.400(6), F.A.C. | E.4. |
|                     | Oil |  | 0.05% S by weight              | 105.6 | 38   | Rule 62-212.400(6), F.A.C. | E.4. |
| PM/PM <sub>10</sub> | Gas |  |                                | 7.3   | 29   | Rule 62-212.400(6), F.A.C. | E.4. |
|                     | Oil |  |                                | 64.8  | 23   | Rule 62-212.400(6), F.A.C. | E.4. |

**Friday, Barbara**

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**To:** roger.zirkle@pgnmail.com  
**Cc:** 'sosbourn@golder.com'; 'dave.meyer@pgnmail.com'; Oven, Hamilton; Waters, Jason; Halpin, Mike  
**Subject:** PROPOSED Title V Permit Revision No.: 1050234-012-AV - Progress Energy Florida - Hines Energy Complex

Attached for your records is a zip file that contains the PROPOSED Title V Permit Revision.

If I may be of further assistance, please feel free to contact me.

Barbara J. Friday  
Planner II  
Bureau of Air Regulation  
(850)921-9524  
[Barbara.Friday@dep.state.fl.us](mailto:Barbara.Friday@dep.state.fl.us)

4/7/2005