TECHNICAL EVALUATION

AND

PRELIMINARY DETERMINATION

Florida Power and Light Company

FPL Turkey Point Fossil Plant

1,150-Megawatt Combined Cycle Unit 5
Minor Conditions Revisions to Permits PSD-FL-338 (025003-006-AC) and PSD-FL-338A (0250003-007-AC)

Miami-Dade County

DEP File No. 0250003-024-AC (PSD-FL-338B)

Florida Department of Environmental Protection
Division of Air Resource Management
Office of Permitting and Compliance
New Source Review Section

August XX, 2013

1. GENERAL PROJECT INFORMATION

1.A. Air Pollution Regulations

Projects at stationary sources with the potential to emit air pollution are subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.). The statutes authorize the Department of Environmental Protection (Department) to establish regulations regarding air quality as part of the Florida Administrative Code (F.A.C.), which includes the following applicable chapters: 62-4 (Permits); 62-204 (Air Pollution Control – General Provisions); 62-210 (Stationary Sources – General Requirements); 62-212 (Stationary Sources – Preconstruction Review); 62-213 (Operation Permits for Major Sources of Air Pollution); 62-296 (Stationary Sources - Emission Standards); and 62-297 (Stationary Sources – Emissions Monitoring). Specifically, air construction permits are required pursuant to Rules 62-4, 62-210 and 62-212, F.A.C.

In addition, the U. S. Environmental Protection Agency (EPA) establishes air quality regulations in Title 40 of the Code of Federal Regulations (CFR). Part 60 specifies New Source Performance Standards (NSPS) for numerous industrial categories. Part 61 specifies National Emission Standards for Hazardous Air Pollutants (NESHAP) based on specific pollutants. Part 63 specifies NESHAP based on the Maximum Achievable Control Technology (MACT) for numerous industrial categories. The Department adopts these federal regulations on a quarterly basis in Rule 62-204.800, F.A.C.

1.B. Glossary of Common Terms

Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of this permit

1.C. Facility Description and Location

The Florida Power and Light (FP&L) Company operates the Turkey Point Fossil Plant (TPFP), which is located south of Miami, east of Homestead and Florida City and adjacent to Biscayne Bay, in Miami-Dade County. The existing Turkey Point Fossil Plant consists of one 440 MW fossil fuel-fired steam electrical generating (FFSG) unit, a “4-on 1” combined cycle combustion unit system (CC Unit 5) and its ancillary equipment. FFSG Unit1 began operation in 1967. CC Unit 5 commenced operation in 2007. The TPFP facility also includes a diesel engine-driven emergency fire pump, two propane emergency hurricane shelter engine generators, two emergency generators; a cooling tower, a storage tank; and, miscellaneous emissions units and/or activities.

The location of the Turkey Point Fossil Plant is shown in Figures 1 and 2.

Figure 1. Location of Turkey Point

Figure 2. Turkey Point Fossil Plant

The Turkey Point Fossil Plant site is located generally east of the Class I Everglades National Park and is approximately 20 kilometers northeast of the nearest boundary to the park. Biscayne National Park encompasses the general area to the east of the plant.

1.D. Facility Regulatory Categories

Title III: The facility is a "Major Source" of hazardous air pollutants (HAPs). Based on the available information, the project is potentially subject to at least one National Emission Standard for Hazardous Air Pollutants (NESHAP) and the applicable Maximum Achievable Control Technology (MACT).

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

Title V: The facility is a Title V or "Major Source" of air pollution because the potential emissions of at least one regulated pollutant exceed 100 tons per year or because it is a Major Source of HAPs. 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).

PSD: The facility is located in an area that is in attainment with, or designated as unclassifiable for, each pollutant subject to a National Ambient Air Quality Standard. It is classified as a fossil fuel-fired steam electric plant, which is one of the 28 PSD Major Facility Categories identified in Table 62-212.400-1, F.A.C. Emissions from the facility are greater than 100 tons per year for at least one regulated pollutant. Therefore, the facility is a Major Facility with respect to Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD) of Air Quality.

Siting: The facility is a steam electrical generating plant. The project will result in more than 75 MW of steam-generated electrical power and is subject to the power plant siting provisions of Chapter 62-17, F.A.C.

1.E. Project Description

This project allows the installation of the GE 7FA.04 components to improve the performance of Unit 5 by increasing power output approximately by 4%. This permitting action also revises several specific conditions in the underlying air construction permits affecting this unit (PSD-FL-338/0250003-006-AC and PSD-FL-338/ 0250003-007-AC).

Unit 5 Description

Emissions Unit 5 consists of four ("4-on-1") General Electric Model PG7241 (FA) gas turbine-electrical generator set (Units 5A-5D) with a design gross generating capacity of 176.2 MW for gas firing (188.5 MW oil firing) each. After the installation of the GE 7FA.04 components, the power output would be 184.6 MW for gas firing (196.9 MW oil firing) each.

The total generating capacity of the "4 on 1" combined cycle unit would increase from approximately 1,150 to 1,209 MW.

Exhaust from each gas turbine passes through a separate supplementary 495 MMBtu/hr gas fired heat recovery steam generator (HRSG). Steam from each HRSG is delivered to the 470 MW single steam turbine-electrical generator. Each gas turbine has a single stack that is equipped with continuous emissions monitoring systems (CEMS) to measure and record CO and NO_X emissions as well as flue gas oxygen or carbon dioxide content.

Unit 5 also comprises an automated gas turbine control system, an inlet air filtration system, an evaporative inlet air-cooling system and associated support equipment. Additional equipment includes: a 22 cell cooling tower; two 3,210 HP emergency generators used to safely shutdown Unit 5 in the event of a blackout situation; and, a 4.2 million gallon fuel storage tank.

Each gas turbine fires natural gas as the primary fuel and distillate fuel oil as a restricted alternate fuel. Emissions of CO, PM/PM_{10}, SAM, SO_2 and VOC are controlled by the efficient combustion of natural gas and restricted firing of ultra low sulfur distillate fuel oil. NO_X emissions are controlled by Dry Low-NO_X (DLN)

combustion technology for gas firing and water injection for oil firing. A selective catalytic reduction (SCR) system further reduces NO_X emissions.

New GE Components 7FA.04 Description

The left hand side of Figure 3 is a factory picture of an earlier version of the GE CT similar to the prime movers located within Unit 5. The right hand side of the figure is a cutaway diagram of a more recent version showing the 14-stage compressor, the 14 combustors cans oriented along the circumference of the mid-section and the three-stage rotor (expansion) section.

Figure 3. Factory Photo of an earlier GE 7FA and Internal View of a more recent GE 7FA.

FPL proposes to upgrade the four CT during an otherwise routine maintenance outage. The changes will increase the efficiency and power output of each CT by replacing new hot gas path components with those characteristic of the more recent GE Model 7FA.04 CT to increase firing temperature. The components include combustion liners and flow sleeves. New control software will be installed.

Below are photos from a similar project of a CT undergoing similar modifications. The left hand side of Figure 4 is a photo of the combustion section and the three-stage rotor (expansion) section with the upper casings removed and combustors removed.

Figure 4. Internal Photo of GE 7FA with Combustors Removed. Details of Rotor Section.

The photo on the right hand side of the figure shows further details of the hot gas path. The hot combustion gases pass from left to right through the 1st stage nozzle and then the 1st stage blades and buckets, 2nd stage nozzle and blades and finally the 3rd stage nozzle and blades. The blades, seen as the three vertical rings in the

picture, are attached to the rotor and spin as the gas expands, thus providing thrust to drive the compressor section and an attached direct-drive electrical generator.

The nozzles, of which only one per stage is visible (others removed) are stationary and fixed to the casing. The proposed project will change the materials, internal cooling passages, and sealing of some of these components.

The photo on the left hand side of Figure 5 shows 14 liners (per CT), each of which is installed immediately downstream of the six fuel nozzles located within each combustor. These channel the hot gas to the rotor section. The photo on the right hand side of the figure shows 14 flow sleeves (one per liner). These direct compressor discharge air around the liners to keep them cool. The liner and flow sleeve combination will be modified to reduce resistance to air flow and improve efficiency.

Figure 5. Replacement Combustor Liners and Flow Sleeves (14 Sets/CT) Planned for Unit 5.

The project will result in an increase in permitted fuel heat input to each CT from 1,608 to 1,659 mmBtu/hr, lower heating value (LHV), at a compressor air inlet temperature of 59 degrees Fahrenheit (°F) when burning natural gas and from 1,830 to 1,908 mmBtu/hr (LHV, 59°F) when burning backup fuel oil.

As discussed further below, any increases in annual emissions will be less than the respective significant emission rates (SER) established in Rule 62-210.200(Definitions), Florida Administrative Code (F.A.C.). A review for the Prevention of Significant Deterioration (PSD) and a new Best Available Control Technology (BACT) determination were not required pursuant to Rule 62-212.400, F.A.C.

There will be no change in the previous BACT determinations conducted for Unit 5 in 2005. Unit 5 uses inherently clean fuels and is subject to NO_X concentration limits of 2.0 and 8 parts per million by volume, dry at 15 percent (%) oxygen (ppmvd) when firing natural gas and fuel oil, respectively. The NO_X emissions are controlled by an ammonia-based SCR system.

In summary, FPL is allowed to replace Unit 5 components of the Series 7FA.03 gas turbines with upgraded components of the Series 7FA.04 version including (but not limited to) the following:

- New hot gas path components;
- New combustion liners and flow sleeves; and
- New control software.

1.F. Processing Schedule

- Received concurrent AC and AV Application on May 8, 2013. Application later rescinded.
- Received revised concurrent AC and AV Application on June 26, 2013.
- Intent to Issue Permits distributed September XX, 2013.

2. RULE REQUIREMENTS

2. A. General PSD Applicability

For areas currently in attainment with the state and federal AAQS or areas otherwise designated as unclassifiable, the Department regulates major stationary sources of air pollution in accordance with Florida's PSD preconstruction review program as defined in Rule 62-212.400, F.A.C. Under preconstruction review, the Department first must determine if a project is subject to the PSD requirements ("PSD applicability review") and, if so, must conduct a PSD preconstruction review. A PSD applicability review is required for projects at new and existing major stationary sources. In addition, proposed projects at existing minor sources are subject to a PSD applicability review to determine whether potential emissions *from the proposed project itself* will exceed the PSD major stationary source thresholds. A facility is considered a "major stationary source" with respect to PSD if it emits or has the potential to emit:

- 250 TPY or more of any regulated air pollutant; or
- 100 TPY or more of any regulated air pollutant and the facility belongs to one of 28 PSD-major facility categories listed at Rule 62-210.200 (Definitions), F.A.C., including fossil fuel-fired steam electric plants of more than 250 million British thermal units per hour heat input.

The rules cited are available at the following links: Link to 62-210, F.A.C. and Link to 62-212, F.A.C.

PSD pollutants include: CO; NO_X; SO_2; PM; PM_{10}; VOC; lead (Pb); Fluorides (F); sulfuric acid mist (SAM); total reduced sulfur (TRS), including hydrogen sulfide (H_2S); and mercury (Hg).

For major stationary sources, PSD applicability is based on the previously mentioned SER as defined in Rule 62-210.200 (Definitions), F.A.C. Emissions of PSD pollutants from the project exceeding these SER are considered "significant" and BACT must be employed to minimize emissions of each PSD pollutant. Refer to Table 1.

Table 1. List of SER by PSD-Pollutant. [1,4,5]

Pollutant	SER (TPY)	Pollutant	SER (TPY)
CO	100	NO_X	40
PM/PM_{10} [2]	25/15	Ozone (VOC) [3]	40
Ozone (NO_X) [3]	40	SAM	7
SO_2	40	F	3
Pb	0.6	TRS	10
H_2S	10	Hg	0.1

1. Excluding those defined exclusively for municipal waste combustors and municipal solid waste landfills.
2. PM with a diameter less than 2.5 micrometers ($PM_{2.5}$) is also a PSD pollutant, but an SER has not yet been defined in the Department's rules.
3. Ozone (O_3) is regulated by its precursors (VOC and NO_X).
4. There is a federal SER of 75,000 TPY for Greenhouse Gases (GHG) as carbon dioxide (CO_2) equivalent (CO_2e) that has not been incorporated into Department rules.
5. SER also means any emissions rate or any net emissions increase associated with a major stationary source or major modification which would construct within 10 kilometers of a Class I area and have an impact on such area equal to or greater than 1 $\mu g/m^3$, 24-hour average.

Although a facility may be "major" for only one PSD pollutant, a project must include BACT controls for any PSD pollutant that exceeds the corresponding SER.

2. B. PSD Applicability for Project

The PSD requirements of Rule 62-212.400(4) through (12), F.A.C., apply to the construction of any new major stationary source or the major modification of any existing major stationary source. A significant emissions increase of a PSD pollutant (and thus a major modification) will occur if the difference (or the sum of the differences if more than one emissions unit is involved) between the **projected actual emissions** and the **baseline actual emissions** equals or exceeds the SER for that pollutant.
[Rule 62-212.400(2)(a)1., F.A.C.]

For any existing electric utility steam generating unit, "baseline actual emissions" means the average rate, in TPY, at which the unit actually emitted the pollutant during any consecutive 24-month period selected by the owner or operator within the 5-year period immediately preceding the date a complete permit application is received by the Department. [Rule 62-210.200 (Definitions), F.A.C.]

"Projected actual emissions" means the maximum annual rate, in TPY, at which an existing emissions unit is projected to emit a PSD pollutant in any one of the 5 years following the date the unit resumes regular operation after the project, or in any one of the 10 years following that date, if the project involves increasing the emissions unit's design capacity or its potential to emit that PSD pollutant and full utilization of the unit would result in a significant emissions increase or a significant net emissions increase at the major stationary source.
[Rule 62-210.200 (Definitions), F.A.C.]

There are a number of additional considerations within the cited rules when making the described comparison of projected actual emissions to baseline actual emissions. One of the key considerations is that in making the calculation of projected actual emissions, the Department shall exclude that portion of the unit's emissions following the project that an existing unit could have accommodated during the consecutive 24-month period used to establish the baseline actual emissions and that are also unrelated to the particular project including any increased utilization due to product demand growth.

The applicant conducted the described analysis, which is documented in the report attached to the application available at: Link to Turkey Point Application

Table 2 is a summary of the applicant's PSD applicability analysis. The full step-by-step procedure is shown in the application report in Tables 1 through 9 (Part II of the Application).

Table 2. Summary of the Applicant's PSD Applicability Analysis.

Pollutant [1]	Baseline Actual Emissions (TPY)	Projected Actual Emissions (TPY)	Projected Emissions Increase (TPY)	SER (TPY)	Subject to PSD?
CO	30.44	31.42	0.97	100	No
NO_X	183.15	188.13	4.98	40	No
$PM/PM_{10}//PM_{2.5}$	0.94	0.97	0.031	25/15/10	No
SO_2	13.91	14.27	0.35	40	No
VOC	14.13	14.49	0.36	40	No
SAM	2.13	2.18	0.054	7	No
CO_2	2,760,782.32	2,829,320.53	68,538.2	75,000 (EPA SER)	No
N_2O (CO_2e)	1,585.50	1,624.24	38.7		
CH_4 (CO_2e)	1,073.40	1,099.64	26.2		
Total GHG (CO_2e)	2,763,441.2	2,832.044.4	68,603.2		
1. N_2O is nitrous oxide – a GHG. CH_4 is methane – a GHG.					

As shown in the above table, total project emissions will not exceed the PSD SER; therefore, the project is not subject to PSD preconstruction review.

A quick cross-check for NO_X is conducted by assuming that the possible heat input increase at each compressor inlet temperature is 5% (a very high and unexpected result of the modification). At International Organization for Standardization (ISO) conditions, NO_X emissions are approximately 16.3 pounds per hour (lb/hr) per CT. In that case, the additional emissions would be an additional 3.6 lb/hr from the four CT combined or 15.6 TPY at continuous operation. Even at such a high emission increase (assuming there is any increase at all), the SER for NO_X would not be triggered. A similar analysis for CO, SO_2, VOC, PM/PM_{10} and SAM would yield the same conclusion; PSD is not triggered.

While a similar analysis would suggest that the SER for CO_2 could be triggered if conducting an extreme calculation, the applicant's calculation is more realistic. While there is a projected increase in GHG emissions, there is an overall reduction in heat rate (Btu/kilowatt-hour) that reduces the amount of emissions for each megawatt-hour (MWH) generated.

According to the applicant, there will be an approximate 1 % percent decrease in heat rate as a result of the project, which will reduce CO_2e emissions by roughly 28,000 TPY compared with the projected future actual emissions given in the table. Because of the efficiency improvements, the proposed project will reduce the output based emissions on the basis of lb CO_2e/MWH as well as lb NO_X/MWH. Similar conclusions apply for the other PSD pollutants, including CO, SO_2, PM/PM_{10} and VOC.

2. C. NSPS Applicability

Turkey Point Unit 5 is an affected facility and an existing facility as defined in 40 CFR 60, Subpart A – General Provisions. [40 CFR 60.2 (Definitions) adopted as Rule 62-204.800(8)(a), F.A.C.] Link to 40 CFR 60.2 .

Unit 5 was constructed pursuant to 40 CFR 60, Subpart GG - Standards of Performance for Stationary Gas Turbines. [40 CFR 60, Subpart GG adopted as Rule 62-204.800(8)(b)(40), F.A.C.]
Link to Subpart GG . The key minimum requirements of Subpart GG applicable to Unit 5 include standards for NO_X and SO_2. In summary these are:

- Limit of 75 ppmvd of NO_X plus an efficiency and fuel nitrogen correction that for the Unit 5 CT would result in a limit of approximately 110 ppmvd as measured by an annual NO_X compliance test and continuous water or steam to fuel monitoring (with continuous emissions monitoring system (CEMS) alternatives); and
- Limit of 0.8% by weight of sulfur in the fuel burned in the CT using one of several standard methods (with alternatives for contracts and representative sampling indicating sulfur less than 20 grains per 100 standard cubic feet – gr/100 SCF).

The requirements of Subpart GG are much less stringent than those imposed by the permit that was issued for Unit 5 in 2005. Those requirements are listed in Table 3 and include CEMS to demonstrate NO_X compliance. For reference, the CT rarely if ever burn fuel oil or operate in simple cycle mode due to the resulting energy inefficiency compared with combined cycle and the increased maintenance requirements and fuel costs of fuel oil compared with natural gas.

Table 3. Emission Limits Applicable to FPL Turkey Point Unit 5. Permit PSD-FL-338.

Pollutant	Fuel	Method of Operation	Stack Test, 3-Run Average		CEMS Block Average
			ppmvd @ 15% O_2	lb/hr [g]	ppmvd @ 15% O_2
CO	Oil	Combustion Turbine (CT)	8.0	37.8	8.0, 24-hr
	Gas	CT, Normal	4.1	16.3	
		CT & Duct Burner (DB)	7.6	38.3	
		CT & DB & PK	NA	NA	
		CT & DB & PA	NA	NA	14.0, 24-hr

Pollutant	Fuel	Method of Operation	Stack Test, 3-Run Average		CEMS Block Average
			ppmvd @ 15% O_2	lb/hr [g]	ppmvd @ 15% O_2
	Oil/Gas	All Modes	NA	NA	6, 12-month
NO_X	Oil	CT	8.0	62.1	8.0, 24-hr
	Gas	CT, Normal	2.0	13.0	2.0, 24-hr
		CT & DB	2.0	18.8	
		CT & DB & (PA or PK)	NA	NA	
PM/PM_{10}	Oil/Gas	All Modes	Fuel Specifications		
			Visible emissions shall not exceed 10% opacity for each 6-minute block average.		
SAM/SO_2	Oil/Gas	All Modes	2 gr S/100 SCF of gas, 0.0015% sulfur fuel oil		
VOC	Oil	CT	2.8	7.5	NA
	Gas	CT, normal	1.3	2.9	
		CT & DB	1.9	5.0	
Ammonia	Oil/Gas	CT, All Modes	5	NA	NA

For the purposes of NSPS applicability, the term "modification" means any physical change in, or change in the method of operation of, an existing facility which increases the amount of any pollutant (to which a standard applies) emitted into the atmosphere by that facility or which results in the emission of any air pollutant (to which a standard applies) into the atmosphere not previously emitted.
[40 CFR 60.2 (Definitions) adopted as Department Rule 62-204.800(8)(a), F.A.C.] Link to 40 CFR 60.2 .

Modifications are further addressed in Section 40 CFR 60.14. Link to 40 CFR 60.14 . This section requires that emission rates be expressed on a short-term mass per hour basis i.e. kilograms/hour (kg/hr). It includes a key exemption from the definition of modification for "maintenance, repair, and replacement which the Administrator determines to be routine for a source category …."

The applicant presumed that replacement of the hot gas paths components with upgraded versions to improve efficiency does constitute "routine replacement".

Reconstruction, which would make an existing facility also an affected facility, is addressed in Section 40 CFR 60.15. Link to 40 CFR 60.15 . Reconstruction means "replacement of components of an existing facility to such an extent that the fixed capital cost of the new components exceeds 50% of the fixed capital cost that would be required to construct a comparable entirely new facility".

Unit 5 was constructed at a cost close to $600 million.[1] The marginal cost of the improved hot path components compared with like-kind routine replacement of existing components is at most a few percent of the cost of constructing a comparable entirely new facility. The Department concludes that the project does not constitute reconstruction. Link to FPL Turkey Point Unit 5

The "normal scenario" is each CT burning natural gas, while operating in combined cycle mode and achieving 2.0 pmvd and 13.0 lb NO_X/hr when corrected to 59°F (at 1,608 mmBtu/hr heat input, LHV). According to the CEMS data, the hourly emissions at 1,608 mmBtu/hr, LHV are typically less than the13 lb/hr. FPL tends to operate the SCR systems with a good margin of safety to ensure compliance with the applicable 24-hour concentration limits.

[1] FPL News Release. PSC approves need determination request for FPL's Manatee and Martin expansion plans. November 19, 2002. It is assumed Unit 5 had a similar cost in 2005. www.fpl.com/news/2002/02126.shtml

There may or may not be a small increase in short-term mass emission rates of NO_X. According to the application, "since the hourly emission rates for these pollutants may potentially increase, the proposed project is a potential modification according to the rules for NSPS. As a result, the improved Unit 5 turbines may be subject to 40 CFR 60 Subpart KKKK …..". The applicant also points out that " Unit 5 was approved with several operating modes that could produce higher or equivalent emissions as the 7FA.04 project". For example, if operated in simple cycle mode, each unit may emit 15 and 42 ppmvd when burning natural gas and fuel oil, respectively.

40 CFR 60, Subpart KKKK - Standards of Performance for Stationary Combustion Turbines applies to stationary combustion turbines that commenced construction, modification or reconstruction after February 18, 2005. [40 CFR 60, Subpart KKKK adopted as Department Rule 62-204(8)(b)(81), F.A.C.]. Link to Subpart KKKK. Units subject to Subpart KKKK are not (no longer) subject to Subpart GG.

The key minimum requirements of Subpart KKKK applicable to Unit 5 include standards for NO_X and SO_2. In summary these are:

- Limits of 15 and 42 ppmvd of NO_X, respectively, on a 30-day basis when operating in combined cycle mode and on a 4-hour basis when operating in simple cycle mode; and
- Limit of 0.90 lb SO_2/MWH or 0.060 lb SO_2/mmBtu using one of several standard sulfur fuel test methods (with alternatives for contracts and representative sampling indicating sulfur less than 20 gr/100 SCF of natural gas and less than 0.05%, by weight, in the fuel oil).

These requirements are more stringent than those of Subpart GG, though much less stringent than the BACT determination with one key exception; the Subpart KKKK simple cycle NO_X limit when firing natural gas would be applicable on a 4-hour basis rather than a 24-hour basis. Simple cycle operation is atypical for Unit 5.

Overall there would be no meaningful difference in the future operation of Unit 5 or future emissions regardless of the applicability of Subpart KKKK. The Department will make a final determination based on future operation and will require the applicant to submit data comparing emissions before and after the project in accordance with 40 CFR 60, Appendix C – Determination of Emission Rate Change. Details of the methodology are provided in the following link: Link to Appendix C

According to the introduction in Appendix C, the "method shall be used to determine whether a physical or operational change to an existing facility *resulted* in an increase in the emission rate to the atmosphere. The method used is the Student's *t* test, commonly used to make inferences from small samples". Fortunately Unit 5 has CEMS for NO_X and it will be easy to review data from before and after the change and make the inference from a relatively large number of runs (n = 20-29).

If short-term mass emission rate increases occur, then Unit 5 will be subject to the requirements of Subpart KKKK. The primary changes would be in certain reporting requirements and regulation of the HRSG under Subpart KKKK instead of 40 CFR 60, Subpart Da – Standards of Performance for Electric Utility Steam Generating Units. Again, the HRSG is already regulated by BACT in a more stringent manner than required by Subpart Da or Subpart KKKK.

2. D. Miami-Dade County Code of Ordinances

Chapter	Description
24 - II	Air Quality
24.41.1	Prohibitions against Air Pollution (Ringleman)
24.41.3	Sulfur Dioxide (Liquid Fuel Sulfur Dioxide Emissions)
24.41.6	Storage and Handling of Petroleum Products (Reid Vapor Pressure)

3. DEPARMENT PROJECT REVIEW OF SPECIFIC CONDITIONS

The applicant requested the following revisions to Unit 5 of permit PSD-FL-338 (No. 0250003-006-AC). The proposed revisions to permit language do not affect concentration emissions rates, production rates or any other significant change. Descriptions of these requests are stated below, followed by the Department's position on the requested changes. This permit is being processed simultaneously with the Title V revision Permit No. 0250003-025-AV.

This permitting action affects the following emissions units:

EU ID No.	Emission Unit Description
009	Unit 5A gas turbine with supplementary-fired heat recovery steam generator
010	Unit 5B gas turbine with supplementary-fired heat recovery steam generator
011	Unit 5C gas turbine with supplementary-fired heat recovery steam generator
012	Unit 5D gas turbine with supplementary-fired heat recovery steam generator

3. A. Requested Changes to Specific Permit Conditions

Permits No: PSD-FL-338 (No. 0250003-006-AC) and PSD-FL-338A (No. 0250003-007-AC)

1. *FP&L Request – Upgrading GE A.3 with GE7A.04 Components – New Condition:* FP&L proposes to improve the performance of the PG7241General Electric turbine by replacing the 7FA.03 components with the 7FA.04.

   Department Response: The Department authorizes the installation of the new GE7A.04 components, therefore new conditions will be added to the permit to reflect this. The only permit conditions required are:

   - A description and authorization of the improvement project – replacement of hot gas path components with upgraded parts;
   - Increases in the CT maximum heat input limits while burning natural gas and distillate fuel oil;
   - A requirement that the permittee report emissions pursuant to Rule 62-212.300(1)(e), F.A.C. to determine in the future whether the project has triggered PSD; and
   - A requirement that the permittee conduct tests in accordance with 40 CFR 60, Appendix C (using CEMS) and submit the data with a preliminary inference whether the emission rates after the change are greater than before the change with 95% confidence and whether Subpart KKKK applies.

2. *FP&L Request - Condition B.6 (Title V – No. B.4) Permitted Capacity:* As a result of the installation of the new 7FA.04 components, FP&L proposes revisions to the heat input capacities of Unit 5 from 1,608 (LHV) to 1,659 MMBtu/hr while burning natural gas; and, from 1,830 (LHV) to 1,908 MMBtu/hr while burning fuel oil at the compressor inlet temperature of 59ºF.

   Department Response: The Department will revise this condition as proposed by FP&L.

3. *FP&L Request - Condition B.15 (Title V – No. B.13) Excess Emissions Allowed.* FP&L proposes changes to the language regarding excess emissions during periods of startup (both cold and warm), shutdown and malfunctions. FP&L believes that they have gained experience in operating and maintaining their GE 7 fleet and that the revised language would give them more flexibility in their operation.

   Department Response: The Department will add the new proposed language to this condition as proposed by FP&L. This flexible language has been approved for other facilities recently.

4. *FP&L Request - Condition B.16 (Title V No. B.14) DLN Tuning/FSNL Testing/Green Rotor Run-in:* FP&L requests to revise this condition to allow data collected during these special tests (manufacturer required Full Speed No Load (FSNL) trip tests or Green Rotor Run-in periods) to be excluded from the continuous emissions monitoring system (CEMS) compliance demonstration.

   Department Response: The Department agrees with FP&L and would revise the condition as requested. This flexible language has been approved for other FP&L facilities recently.

5. *FP&L Request - Condition B.21 (Title V No. B.18) CEMS System:* FP&L requests to add the reference to Part 75 requirements for CO monitors.

   Department Response: The Department agrees with FP&L and would revise the condition as requested. This language has been approved for other FP&L facilities recently.

6. *FP&L Request –Internal Combustion Engine Information, 40 CFR 60, Subparts IIII, JJJJ and 40 CFR 63, Subpart ZZZZ*: FP&L requests to update information about the engines at their facility.

   Department Response: The Department evaluates the information and sets conditions and applicable requirements for the fire pump and the hurricane shelter engines. New emissions unit numbers (E.U 025 and 026) are created for these engines and new subsections (E and F) are added in the Title V permit. In addition, the existing two 3,210 HP engines (E.U 015) are reclassified as an unregulated emissions unit in the Title V permit.

3. B. Previously Authorized Construction Project Related to the Current Request

The following link shows the relevant original PSD Permits, the original Technical Evaluations and Preliminary Determinations (TEPD) and all permits/projects modifications affected by this review.

http://appprod.dep.state.fl.us/air/emission/apds/listpermits.asp

3. C. Changes to Permits

This project is being processed as line-item changes to applicable specific conditions of the previously issued air construction (AC) permits. Through the conditions of this permit, where changes are made to the original conditions, additions are shown with underlined formatting and deletions are shown as ~~strikethrough~~. For ease of location, all changes are highlighted in yellow in the draft permit and are not repeated in this document.

In general, the Department finds the requested changes acceptable based on the applicant's assurance that these Units are in compliance with all the emissions limits. Where helpful, clarifications will be made to better define the language of the specific conditions. See draft permit for detailed changes.

4. PRELIMINARY DETERMINATION

The Department makes a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations as conditioned by the draft permit. This determination is based on a technical review of the complete application, reasonable assurances provided by the applicant, and the conditions specified in the draft permit. No air quality modeling analysis is required because the project does not result in a significant increase in emissions. Teresa Heron is the project engineer responsible for reviewing the application and drafting the permit. Additional details of this analysis may be obtained by contacting the project engineer at the Department's Office of Permitting and Compliance at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.