TECHNICAL EVALUATION
&
PRELIMINARY DETERMINATION

APPLICANT

Florida Power and Light Company
700 Universe Blvd.
Juno Beach, Florida 33408

Martin Power Plant

PROJECT

Project No. 0850001-026-AC (PSD-FL-327E)
Application for Minor Source Air Construction Permit

Unit 8 Combustion Turbine Improvements

Martin County, Florida

PERMITTING AUTHORITY

Florida Department of Environmental Protection
Division of Air Resource Management
Office of Permitting and Compliance
2600 Blair Stone Road, MS#5505
Tallahassee, Florida 32399-2400

August 23, 2011

1. GENERAL PROJECT INFORMATION

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.

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.

Facility Description and Location

The Florida Power & Light Company (FPL) Martin Power Plant is an existing stationary source, which is categorized under Standard Industrial Classification Code No. 4911. The Martin Power Plant is located in Martin County at 21900 Southwest Warfield Boulevard in Indiantown, Florida. The UTM coordinates of the existing facility are Zone 17, 542.68 km East, and 2992.65 km North.

The facility consists of: two conventional residual fuel oil and natural gas-fired fossil fuel steam generators (Units 1 and 2); three natural gas and distillate fuel oil-fired combined cycle units (Units 3, 4 and 8); a solar thermal facility and ancillary equipment including an auxiliary boiler, two diesel generators, two distillate storage tanks, and a mechanical draft cooling tower.

The left side of Figure 1 is an aerial photograph of the combined cycle units and the solar thermal facility. The older Units 1 and 2 are immediately to the north but not visible in the photograph. The right side of Figure 1 indicates the location of the Martin Power Plant near the eastern shore of Lake Okeechobee.

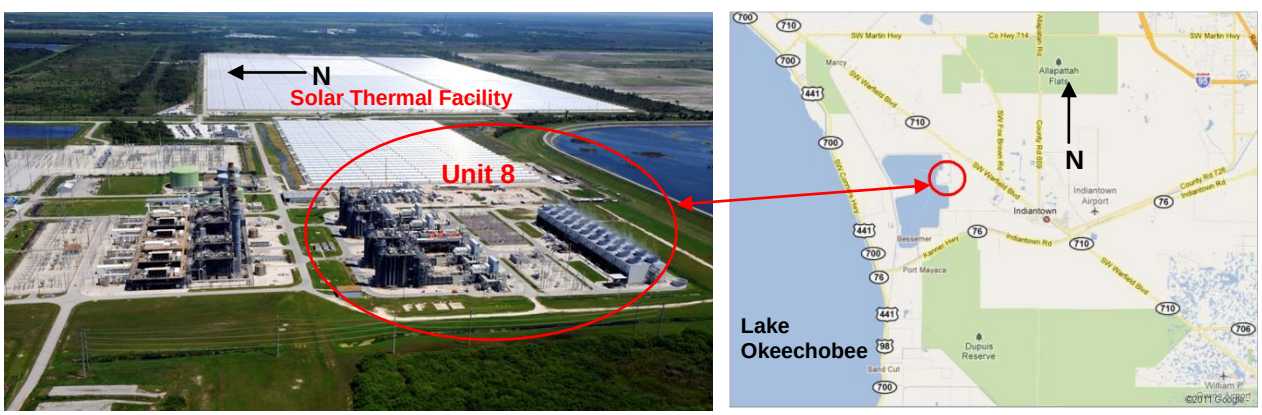

Figure 1. Aerial View of the FPL Martin Plant, Location near Indiantown and Lake Okeechobee.

This site is in an area that is in attainment (or designated as unclassifiable) for all air pollutants subject to state and federal Ambient Air Quality Standards (AAQS).

Facility (i.e. Entire Martin Power Plant) Regulatory Categories

- The facility is a major source of Hazardous Air Pollutants (HAPs).
- The facility operates units subject to the acid rain provisions of the Clean Air Act.
- The facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.
- The facility is a major stationary source in accordance with Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.

Description of Unit 8

The project involves Unit 8, which is a nominal 1,150 megawatts (MW) combined cycle unit consisting of: four General Electric (GE) Model 7FA.03[1] combustion turbine-electric generators (CT) turbines, each nominally rated at 170 MW; four supplementary fired heat recovery steam generators (HRSG), each with a duct burner rated at 495 million British thermal units per hour (mmBtu/hr) on a lower heating value (LHV) basis; and a single nominal 470 MW steam turbine-electric generator (STG). Unit 8 was permitted in 2003 in accordance with the PSD rule and a best available control technology (BACT) determination was conducted. Unit 8 started up in 2005.

Unit 8 also includes an automated control system, inlet air filtration systems, evaporative inlet air cooling systems and associated support equipment. Unit 8 also receives steam from the solar thermal facility when adequate sunlight is available, thus reducing fossil fuel use (e.g. there is less need to operate duct burners). Figure 2 is a picture of Unit 8 (three of four stacks are visible) and part of the solar array.

Figure 2. Unit 8 Inlet Filters on far Left. CT in the Middle. HRSG and Stacks on Right.

[1] GE Model 7FA.03 was previously known as GE Model PG7241FA.

Emissions of carbon monoxide (CO), particulate matter (PM/PM_{10}), sulfur dioxide (SO_2), and volatile organic compounds (VOC) are minimized by the efficient combustion of these inherently clean fuels. Dry Low NO_X (DLN) combustion technology during gas-firing and water injection during oil-firing reduce NO_X emissions during simple cycle operation. Selective catalytic reduction (SCR) systems in combination with the DLN or water injection further reduce nitrogen oxide (NO_X) emissions during combined cycle operations.

Project 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 8. 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.

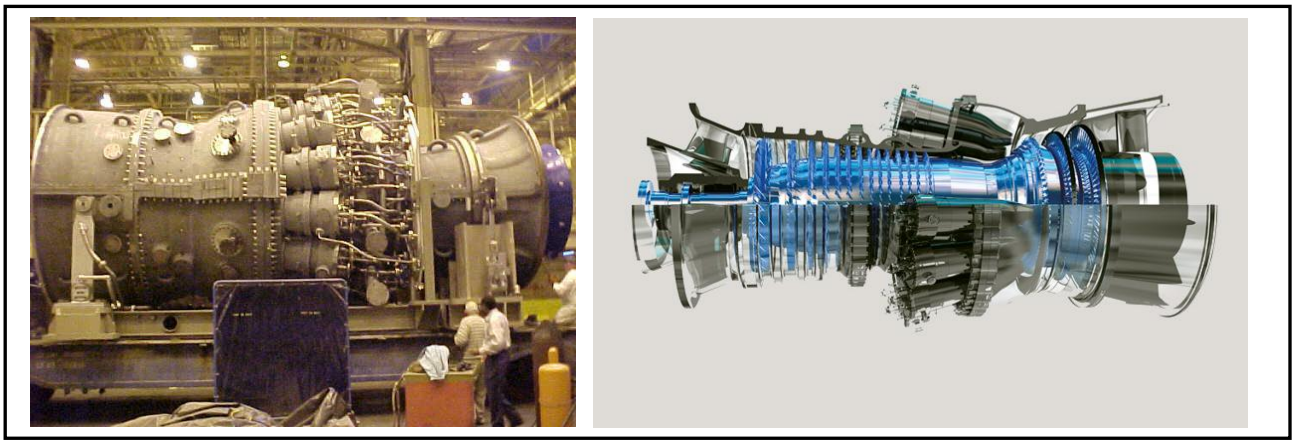

Figure 3. Factory Photo of an earlier GE 7FA and Internal View of a more recent GE 7FA.

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 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 8.

The project will result in an increase in permitted fuel heat input to each CT from 1,600 to 1,660 mmBtu/hr, lower heating value (LHV), at a compressor air inlet temperature of 59 degrees fahrenheit (°F) when burning natural gas and from 1,811 to 1,885 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 8 in 2003. Unit 8 uses inherently clean fuels and is subject to NO_X concentration limits of 2.5 and 10 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.

Processing Schedule

August 01, 2011 Received the application for a minor source air pollution construction permit.

August 23, 2011 Distributed Intent to Issue Air Permit

2. PSD APPLICABILITY

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:

- 5 tons per year (TPY) or more of lead;
- 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.

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 the report attached to the application available at: Link to FPL 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 (Pages 52 through 60 of the pdf document).

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	82.8	84.9	2.1	100	No
NO_X	195.3	200.6	5.4	40	No
PM/PM_{10}	40.3	41.3	0.9	25	No
SO_2	14.7	15.1	0.4	40	No
VOC	44.7	45.8	1.1	40	No
SAM	2.25	2.31	0.06	7	No
CO_2	2,915,796	2,982,773	66,977	75,000 (EPA SER)	No
N_2O (CO_2e)	1,675	1,713	38		
CH_4 (CO_2e)	1133	1,159	26		
Total GHG (CO_2e)	2,918,604	2,985,645	67,041		

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 29,000 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.

Although the applicant did not make the claim, the Department notes that when the solar thermal facility operates, it provides steam to the Martin Unit 8 HRSG and STG. This in turn reduces the need for supplementary duct firing in the HRSG. According to the company, the solar thermal facility, which entered service in 2010, will prevent emissions of 2.75 million tons of GHG over a period of 30 years or 91,667 TPY. In theory, this reduction would completely offset the possible increase from the present project. Further information, including a video, regarding the solar thermal facility is available at: Link to FPL Solar Facility .

For reference, for several years Martin Unit 8 together with Manatee Unit 3 comprised the most efficient units in the FPL peninsular Florida fleet. The recent construction of even more efficient units, including the 3,750 MW West County Plant and the 1,250 MW repowering projects at Cape Canaveral and Riviera will tend to move the dispatch order of Unit 8 downward despite the present efficiency improvements.

3. NSPS APPLICABILITY

Martin Unit 8 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 .

Martin Unit 8 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 Martin Unit 8 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 Martin Unit 8 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 8 in 2003. 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 Martin Unit 8. Permit PSD-FL-327A.

Pollutant	Fuel [3,4]	Method of Operation [1,5]	Stack Test, 3-Run Average [2]		CEMS Block Average
			ppmvd @ 15% O_2	lb/hour	ppmvd @ 15% O_2
CO	Oil	Simple or Combined Cycle	14.4	64.7	15.0, 24-hr
	Gas	Simple Cycle	7.4	27.5	8.0, 24-hr
		Simple Cycle w/PA	12.0	45.0	12.0, 24-hr
		Combined Cycle, Normal	7.4	27.5	10.0, 24-hr
		Combined Cycle, All Modes	NA	NA	
NO_X	Oil	Simple Cycle	42.0	319.2	42.0, 3-hr
		Combined Cycle w/SCR	10.0	76.0	10.0, 24-hr
	Gas	Simple Cycle	9.0	58.7	9.0, 24-hr
		Simple Cycle w/PA	12.0	76.2	12.0, 24-hr
		Simple Cycle w/Peaking	15.0	95.3	15.0, 24-hr
		Combined Cycle w/SCR, Normal	2.5	16.3	2.5, 24-hr
		Combined Cycle w/SCR and DB	2.5	23.6	
		Combined Cycle w/SCR, All Modes	NA	NA	
PM/PM_{10}	Oil/Gas	Simple or Combined Cycle	Fuel Specifications [3]		
		Simple or Combined Cycle	Visible emissions shall not exceed 10% opacity for each 6-minute block average.		
SAM/SO_2	Oil/Gas	Simple or Combined Cycle	Fuel Specifications [3]		
VOC	Oil	Simple or Combined Cycle	2.5	6.0	NA
	Gas	Simple or Normal Combined Cycle	1.3	2.8	NA
		Combined Cycle, w/DB and/or PA	4.0	10.5	NA
Ammonia	Oil/Gas	Combined Cycle w/SCR	5.0	NA	NA

1. DB means duct burning. PA means power augmentation.
2. Initial Test. Corrected to 59°F based on manufacturer performance curves.
3. Each gas turbine shall fire natural gas as the primary fuel, which shall contain no more than 2.0 grains of sulfur per 100 standard cubic feet of natural gas. As a restricted alternate fuel, each gas turbine may fire No. 2 distillate oil (or a superior grade) containing no more than 0.05% sulfur by weight.
4. As a restricted alternate fuel, each gas turbine may fire No. 2 distillate oil (or a superior grade) for no more than 500 hours during any consecutive 12-months.
5. After demonstrating initial compliance in combined cycle mode, the combined group of four gas turbines shall operate in simple cycle mode for no more than an average of 1000 hours per gas turbine during any consecutive 12 months.

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".

Martin Unit 8 was constructed at a cost close to $600 million.[2] 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.

The "normal scenario" is each CT burning natural gas, while operating in combined cycle mode and achieving 2.5 ppmvd and 16.3 lb NO_X/hr when corrected to 59°F (at 1,600 mmBtu/hr heat input, LHV). According to the CEMS data, the hourly emissions at 1,600 mmBtu/hr, LHV are typically less than 13 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.

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 8 turbines may be subject to 40 CFR 60 Subpart KKKK …..". The applicant also points out that "Martin Unit 8 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 Martin Unit 8 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 8.

Overall there would be no meaningful difference in the future operation of Unit 8 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 .

[2] FPL News Release. PSC approves need determination request for FPL's Manatee and Martin expansion plans. November 19, 2002. www.fpl.com/news/2002/02126.shtml

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 8 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 8 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.

4. PERMIT CHANGES

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.

5. PRELIMINARY DETERMINATION

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