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DIVISION OF AIR
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September 19, 2013

Mr. Syed Arif, Environmental Administrator
Office of Permitting and Compliance
Division of Air Resource Management
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399

Re: FPL Fort Myers Combustion Turbine (CT) Project
Request for Additional Information
DEP File No. ~~070002~~ 019-AC (PSD-FL-424)

Dear Mr. Arif: 0710002 -019-AC-424

Florida Power & Light Company (FPL) is pleased to submit this additional information to address the Request for Additional Information (RAI) issued by the Department on August 23, 2013 for the Fort Myers CT Project. In the RAI, the Department requested additional information on four subjects related to the Prevention of Significant Deterioration (PSD) and Best Available Control Technology (BACT) Determination and had one question on Air Quality Modeling. Please find below the responses to the RAI, which are presented in the same order as requested from the Department.

PSD and BACT Determination

1. Pollutant Emission Rate Averaging Time for Compliance: Additional Information - FPL acknowledges that the New Source Performance Standards Subpart KKKK is applicable to the Project. A 4-hour rolling average is the appropriate averaging time for the applicable Subpart KKKK limit of 15 parts per million volume dry (ppmvd) corrected to 15% oxygen. For the proposed BACT emission limits of 9 ppmvd corrected to 15% oxygen and 42 ppmvd corrected to 15% oxygen, a 24-hour block average with not less than three valid hours during normal operation is appropriate and proposed by FPL for the Project. The proposed limits are consistent with the recently permitted Shady Hill Generation Station, Site Expansion Project, that added two GE 7FA.05 CTs similar to that proposed for the Fort Myers CT Project [see DEP File No. 1010373-014-AC (PSD-FL-280B)].

   FPL offers the following justification regarding compliance with the 1-hour National Ambient Air Quality Standard (NAAQS) for nitrogen dioxide (NO_2) for which the Project is proposed to mitigate the current NO_2 impacts near the Fort Myers site. As described in the application, the Project will replace 12 first-generation gas turbines (GTs) with high emission rates and much lower stack heights. The existing GTs have nitrogen oxides (NO_x) emissions of 530 lb/hr/GT or 6,360 lb/hr in aggregate with stack heights of 45 feet (ft). In contrast, the proposed new CTs will have an emission rate of 79 lb/hr/CT or 237 lb/hr in aggregate when firing natural gas and will have an emission rate of 376 lb/hr/CT or 1,128 lb/hr in aggregate when firing ultra-low sulfur distillate (ULSD) oil. The new CTs will also have 100.5-ft stacks along with higher exhaust temperature to assist dispersion. The emissions reduction alone (without dispersion benefits) when firing natural gas is more than a 96% reduction, and 76% lower when firing ULSD oil. Modeling for the 12 retiring GTs shared previously with the Department and the maximum NO_2 impacts for the Project presented in the

PSD application document the result of a 90 percent reduction in maximum air quality impacts as a result of replacing the existing GTs with the new CTs. Moreover, when using natural gas the benefit is even greater.

The use of the NAAQS averaging time of 1-hour for NO_2 is not appropriate for several reasons. First, over the last two decades the low NO_x combustion technology when firing natural gas and water injection when firing ULSD oil has demonstrated consistent performance when in the compliance mode for the CTs. While there is some variability, compliance with the emission limits with as low as a 3-hour test requirement have been repeatedly demonstrated. More important is the nature and form of the 1-hour NO_2 standard and how air quality impacts are determined. The 1-hour NAAQS NO_2 standard is met when the 3-year average of the 98th percentile of the daily 1-hour maximum values is less than 188.1 $\mu g/m^3$. The air quality impacts for NO_2 by their nature are conservative due to the following:

- A higher proportion of NO_2 emission is included than actually occurs since nitric oxide (NO) is the primary component of NO_x emissions, not NO_2;
- Assumption that operation occurs during the same time period that produces the maximum impacts;
- Assumption that all units operate continuously at maximum emission rates even if the actual operation is only a fraction of the year; and
- Maximum background concentration is added to the maximum modeled concentration even though this may not occur during the same period when the maximum impact is predicted.

Together, these assumptions result in predicted impacts that would not likely occur simultaneously. Nonetheless, as demonstrated in Table 6-7 of the PSD application, the maximum predicted impacts of the Project along with all modeled sources and a background concentration was only 57 percent of the 1-hour NAAQS for NO_2. This information provides reasonable assurance that the 1-hour NO_2 NAAQS will not be exceeded at the proposed NO_x emission rates and averaging times.

2. Carbon Monoxide (CO) Emission Limits: Additional Information: The proposed CO emission limits for the Project are 9 ppmvd corrected to 15% oxygen when firing natural gas and 20 ppmvd when firing ULSD oil. Please note that the intent was to have these concentrations uncorrected for ULSD firing and not corrected to 15% oxygen. These CO limits for the Project were proposed to cover the operating range of the CTs being considered. Please note that the CO emission rate for the Siemens F5 emission rate at low load is 9 ppmvd corrected to 15% oxygen (see Table 2.1b). Similarly, when firing ULSD oil, the CO emission limit of 20 ppmvd is proposed to cover the range for the GE 7FA.05 CT and a portion of the range for the Siemens FT5 (see Tables GE-A-4 and S-B-4). These CO emission rates were proposed based on the commercially available manufacturer guarantees of these emission rates for the Project.

As provided by the Department, the test information on the GE 7FA.03 CT is similar to that obtained for FPL's GE 7FA.03 CTs in FPL's fleet. However, single tests are not representative of emissions over the life of the equipment. In order to construct the Project, FPL must rely on vendor guaranteed emission levels that represent the lowest practical emissions appropriate as permit limits. Moreover, as presented in BACT analysis for CO, the GE 7FA.05 and Siemens FT5 are fundamentally new CTs without the operating experience. As a result, the manufacturers have provided information for which FPL believes guaranteed CO emission limits can be obtained. The GE 7FA.05 and Siemens FT5 CTs are 20% larger in generating capacity than the GE 7FA.03. The data from a much smaller CT cannot be relied on to establish an emission limit for significantly larger CTs with limited operating history.

3. Startup, Shutdown and Low Load Emissions: Additional Information: The CTs under consideration have fast start options, which are critical to the Project's design criteria to achieve the grid response requirements. The startup emissions of NO_x are on the order of 1 to 2 lb/minute for the startup durations with total emissions only about 25% of the hourly baseload NO_x emission rates when firing natural gas. This is similar to the Department's characterization of the GE's OPFlex™. As expected, NO_x mass emissions when starting up on ULSD oil are about twice the mass emissions when firing gas. It should be noted that traditional starts result in NO_x emissions not significantly higher than fast starts with less mass emissions than hourly baseload NO_x emission rates. FPL plans the operation of CTs based on the energy demand requirements. This may include fast and traditional starts depending on the generation needed. It should be noted that fast startups result in significant stress on CT components. This requires, under contracts with CT vendors, sooner inspection and maintenance intervals than traditional starts. The insignificant difference in NO_x mass emissions during either fast or traditional startups do not warrant the use of fast starts simply to shorten the startup time as mass emissions are not significantly different. Fast starts are intended to be used only when grid responsiveness requirements demand the quicker startup.

4. Emergency Black Start Generators: Additional Information: As described in the application, two of the existing GTs may be retained to provide black start capability for the new CTs. The new CTs require up to 10 MW of electrical power for startup. Black start capability with either two existing GTs or four diesel generators allow system startup in the event electrical power is not available. The existing GTs currently serve as black start generators for FPL's electrical system, and FPL is not proposing any difference with this project with the exception that the retained GTs would no longer be used for peaking power demands. One of the existing GTs are needed for black start generation with the other GT retained as backup. As a result, there is no change in the primary purposes of the GTs currently authorized under Title V Permit No. 0710002-018-AV.

   There is limited data on the emissions for the existing GTs. The maximum NO_x emissions as limited in the Title V permit Condition A.7 is 530 lb/hr at a turbine inlet temperature of 59 °F. If two existing GTs are retained routine testing would occur to assure proper operation. Assuming two hours per month for each GT the estimated maximum emissions would be 12.7 TPY.

Air Quality Modeling

5. Based upon an August 30, 2013 telephone discussion between Steve Marks of Golder Associates and Tom Rogers of the FDEP, this question has been satisfactorily resolved.

If you have any comments or questions, please feel free to contact me at (561) 691-2808 or Ken Proctor at (561) 691-7068.

Sincerely,
Florida Power & Light Company

Mathew J. Raffenberg
Director of Environmental Licensing & Permitting

cc: Brian Accardo, FDEP
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