FINAL DETERMINATION

Air Construction (PSD) Permit
Florida Power and Light West County Energy Center

DEP File No. 0990646-002-AC (PSD-FL-396)

PERMITTEE

Florida Power and Light Company (FP&L)
700 Universe Boulevard
Juno Beach, Florida 33408

PERMITTING AUTHORITY

Florida Department of Environmental Protection (Department)
Division of Air Resource Management
Bureau of Air Regulation, Special Projects Section
2600 Blair Stone Road, MS #5505
Tallahassee, Florida 32399-2400

PROJECT

DEP File No. 0990646-002-AC
Permit No. PSD-FL-396
FP&L West County Energy Center (WCEC)
One 1,250 Megawatts (MW) Combined Cycle Unit
Palm Beach County

The project is to authorize the construction/installation an additional nominal 1,250 MW combined cycle unit (Unit 3) and auxiliary equipment at the FP&L WCEC where two such units (Units 1 and 2) are presently under construction at 20505 State Road 80, Loxahatchee, in unincorporated Palm Beach County.

Unit 3 will be comprised of: three 250 MW Mitsubishi 501G combustion turbine-electrical generators (CTG); three duct-fired heat recovery steam generators (HRSG) with exhaust stacks; a draft mechanical cooling tower; and a 500 MW steam turbine-electrical generator. Unit 3 will be fueled by natural gas and limited use of backup ultralow sulfur fuel oil. Each HRSG has a stack at least 149 feet tall with a nominal diameter of 22 feet. The project also includes auxiliary equipment consisting of two natural gas fired fuel heaters, two emergency diesel generators, and a mechanical cooling tower.

Air pollution control will be accomplished by selective catalytic reduction (SCR) for the control of nitrogen oxides (NO_X) and efficient combustion of inherently low polluting fuels to control emissions of particulate matter (PM/PM_{10}), sulfur oxides (SO_2 and sulfuric acid mist), carbon monoxide (CO) and volatile organic compounds (VOC).

NOTICE AND PUBLICATION

The Department distributed a Notice of Intent to Issue Air Permit package on April 25, 2008. The Public Notice of Intent to Issue PSD Permit was published on April 30, 2008 in The Palm Beach Post. The Notice included: the project location and a project summary; a brief description of the Department's determination of Best Available Control Technology (BACT); emission estimates; and the conclusions regarding the impacts upon ambient air quality. The Notice also

included the instructions on: submittal of written comments; how to request a public meeting; how to petition for an administrative hearing; and how to view the public files at the Department offices in Tallahassee and West Palm Beach.

Additionally the Notice provided the Department's webpage that includes the public notice package as well as the application, supplementary information and key correspondence. The described information is available at:

www.dep.state.fl.us/Air/permitting/construction/westcounty.htm

No requests for an administrative hearing were received. Several written comments (discussed below) regarding the Department's draft action were received from FP&L. No significant comments were received from the U.S. Environmental Protection Agency (EPA), the U.S. Fish and Wildlife Service (USFWS) or the National Park Service (NPS). No written comments were received from the public during the 30-day comment period except for a request for a public meeting submitted by the Palm Beach County Environmental Coalition (PBCEC).

The Department promptly scheduled a public meeting at the Village of Royal Palm Beach Community Center for June 27, 2008 from 6 to 8 p.m. Meeting Notices were published in the Florida Administrative Weekly on June 13 and in The Town Crier on June20. An electronic meeting notice was also sent on June 18 to certain citizens, groups, municipalities and agencies.

The public meeting was conducted as scheduled and included Department presentations and public comment opportunity. In addition, an informal open house preceded the official meeting to afford additional opportunity for one-on-one questions and answers. The Department's representatives and the moderator clarified that the purpose of the meeting was to take comments regarding the draft air permit and matters related to air pollution and not matters related to other media or zoning decisions. The comments were recorded on audio tape by the Department. Details regarding the public comment are given further below.

This Final Determination: recapitulates and responds to the comments with special emphasis on those related to the PSD Permit; describes the changes since the Public Notice of Intent to Issue Air Permit was distributed on April 25, 2008; and documents the Department's final action on the application.

COMMENTS

I. COMMENTS RECEIVED AT THE PUBLIC MEETING

The public meeting was held as noticed on June 27, 2008. Following is a list of participants:

Florida Department of Environmental Protection

Kevin Claridge, Assistant Director for the Southeast District and Chairperson for the meeting
Alvaro A. Linero, P.E., Program Administrator
Deborah Nelson, Meteorologist

Speakers from the Public

Patricia Curry, The Acreage
Lynne Purvis, Earth First!, Lake Worth
Alexandria Larson, Loxahatchee
Panagioti Tsolkas, Palm Beach County Environmental Coalition (PBCEC), Lake Worth

Nicolle Tolleson, Sierra Club, PBCEC, Lake Worth
Sharon Waite, Loxahatchee
Dr. William Louda, Florida Atlantic University professor, Loxahatchee Groves councilman
David Simms, PBCEC, Lake Worth

Following are the key issues and concerns raised by the speakers or through written comments received at the meeting. The Department's responses are included with special emphasis on those directly linked to the permitting process, the draft permit, air pollution emissions, and air pollutant impacts on other media.

A. Opposition to the Project and Requests for a Public Meeting

The eight speakers identified above were opposed to the project. During the meeting several requested a hearing before an administrative law judge. As stated at the meeting by Mr. Linero, the time to request an administrative hearing has passed. The process and deadline for requesting an administrative hearing was in the same public notice that led to the request from one of the speakers for the public meeting.

B. Acid Rain Related Emissions

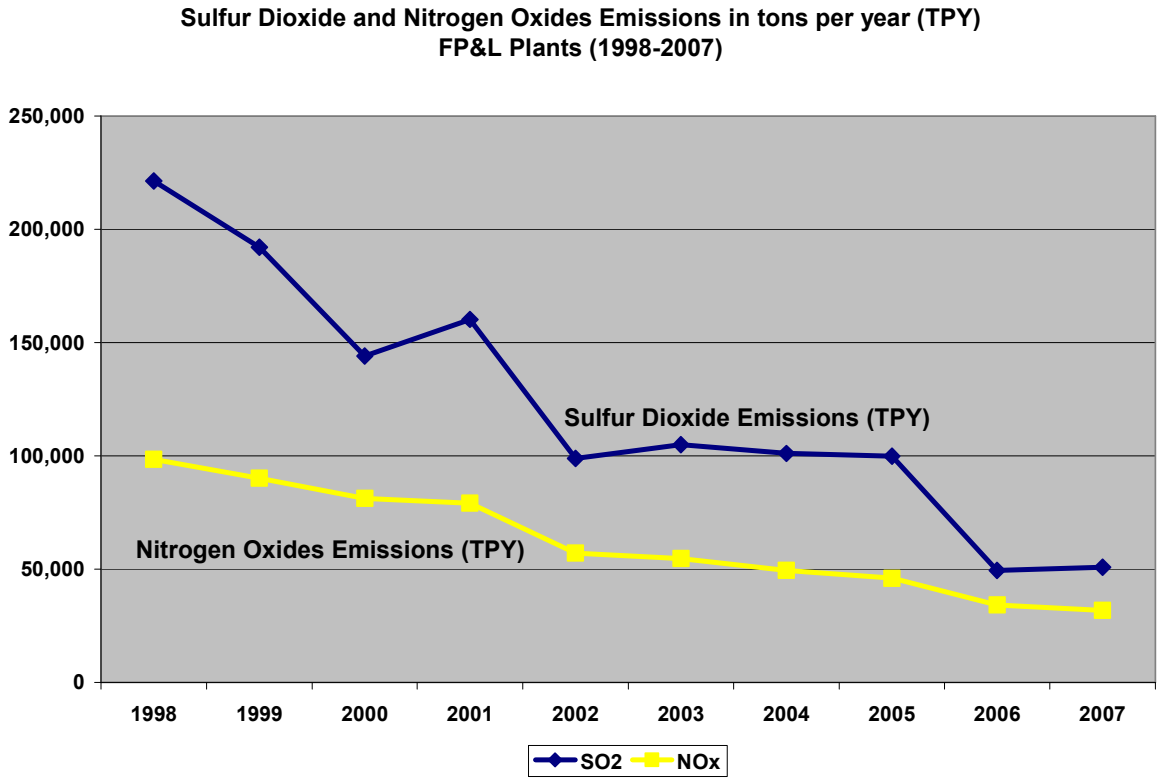
Several speakers expressed concern regarding the level of acid rain-related emissions from the entire WCEC development, including Units 1, 2 and 3. Acid rain related emissions include NO_X, SO_2, and sulfuric acid mist (SAM). Projected emissions from the full 3,750 MW WCEC are 1,072 tons per year (TPY) of NO_X, 598 TPY of SO_2 and 121 TPY of SAM.

The Technical Evaluation and Preliminary Determination (TEPD) document was distributed with the draft permit and provides the details of the draft BACT determination for Unit 3. It is essentially the same as the BACT for Units 1 and 2. As stated at the meeting, included in the technical evaluation and public notice, the BACT includes: Very low NO_X, less than 2.0 parts per million (ppmvd);

- Ammonia (NH_3) injection and selective catalytic reduction (SCR);
- CO less than 4.1 ppmvd by clean fuels and high temperature;
- Low PM and VOC by clean fuels and high temperature; and
- SO_2 (and SAM) controlled by natural gas and ultralow sulfur backup diesel.

The BACT insures that emission concentrations and mass emissions based on a unit of electrical energy produced will be very low. Several speakers indicated renewable sources such as solar, wind and wave energy would emit less of the pollutants listed. The Department acknowledges that certain renewable-fueled power options have near-zero emissions profiles, but notes that this project meets the Department's air permitting requirements and, specifically, constitutes BACT.

Since the meeting and to help put the emissions from WCEC into perspective, the Department graphed the SO_2 and NO_X emission trends during the period 1998-2007 from FP&L fossil-fueled plants located in the Florida peninsula. The data source is the EPA Clean Markets Acid Rain database. The results are summarized in the following chart.



During the period 1998-2007 there was a *decrease* from 221,400 to 50,900 TPY (77%) in SO_2 emissions from the FP&L fossil fleet in peninsular Florida. Similarly there was a *decrease* from 98,500 to 31,800 TPY (68%) in NO_X emissions. The decreases from FP&L plants located in or between Miami-Dade and Martin Counties were on the order of 60,000 and 20,000 TPY for SO_2 and NO_X respectively.

By comparison, the entire WCEC development will emit roughly 600 and 1,100 TPY of SO_2 and NO_X respectively. Emissions from the WCEC will be two or three orders of magnitude less than the reductions realized from existing FP&L operations over the past 10 years.

C. Ambient Monitoring and Degradation of Air Quality

Some speakers questioned the reliance by the Department of certain monitors within the county as background, whether they are still in use, and whether they will continue to be used. All speakers were concerned about the possible degradation of air quality due to the construction of the WCEC.

The TEPD document previously cited includes detailed analyses of the existing ambient air quality, the adequacy of the air monitoring network, a BACT determination, projected emissions from the WCEC, and their effects on ambient air quality. The TEPD is available at:

www.dep.state.fl.us/Air/permitting/construction/westcounty/TECH396.pdf .

The Department modeled emissions from the entire WCEC to insure that there will not be a significant deterioration of air quality. This conclusion is thoroughly documented in the TEPD document issued with the draft permit and made available at the meeting.

The Department listed the applicable standards in Table 17, page 26 of the TEPD. According to the available data, the monitors indicate that the area is in attainment with the national ambient air quality standards (NAAQS). The addition of the WCEC would not cause or contribute to a modeled violation of a NAAQS or a violation of an allowable Class I or Class II increment.

One speaker objected to the treatment of the Arthur R. Marshall Loxahatchee National Wildlife Refuge (the Loxahatchee Refuge) as a Class II area. As explained at the meeting, the Loxahatchee Refuge is a Class II area and is not subject to the more stringent requirements that apply to the Class I Everglades National Park (ENP). In addition, the Class I and Class II designations were made by Congress.

One speaker objected to the reliance on the NAAQS, which apply to the entire country regardless of air quality. Although the same NAAQS apply, less pollutant concentration increases within the NAAQS are allowed in Class I areas than Class II areas. Furthermore, greater consideration is given within the Class I areas to air quality related values (AQRV) such as regional haze, acid rain deposition and other such factors.

Based on the analysis presented in the previous section on acid rain-related emissions, the continuing marginalization of the older conventional residual oil-fueled plants will further reduce the background pollutant concentrations in the nearby Class II areas.

The Department and the local Palm Beach County air programs plan to continue monitoring of ambient air quality in the future. One speaker believed that the monitors do not pick up the effects of sugar cane burning that she believes affects local residents. Generally the timing of the daily burns during the sugar season is conducted in consultation with local air pollution officials to minimize the effects. Ms. Nelson explained that the NAAQS are tied to averaging times and that the concentrations from sugar burning are generally short-lived.

In conclusion, addition of the WCEC will not cause significant degradation of air quality. There should be an improvement in ambient air quality even with the WCEC if emissions from the older units in and between Miami-Dade and Martin Counties continue to decline.

D. Greenhouse Gas (GHG) Emissions

All of the speakers expressed concern regarding the level of GHG emissions from the WCEC. The key GHG species is carbon dioxide (CO_2). Projected emissions from the full 3,750 MW WCEC are approximately 12,300,000 TPY.

For reference the CO_2 intensity for WCEC is 750 pounds per MW-hour (lb/MWH) at 53% efficiency. The projected CO_2 emissions from the WCEC are the lowest of any fossil fuel alternative of equal capacity without carbon capture.

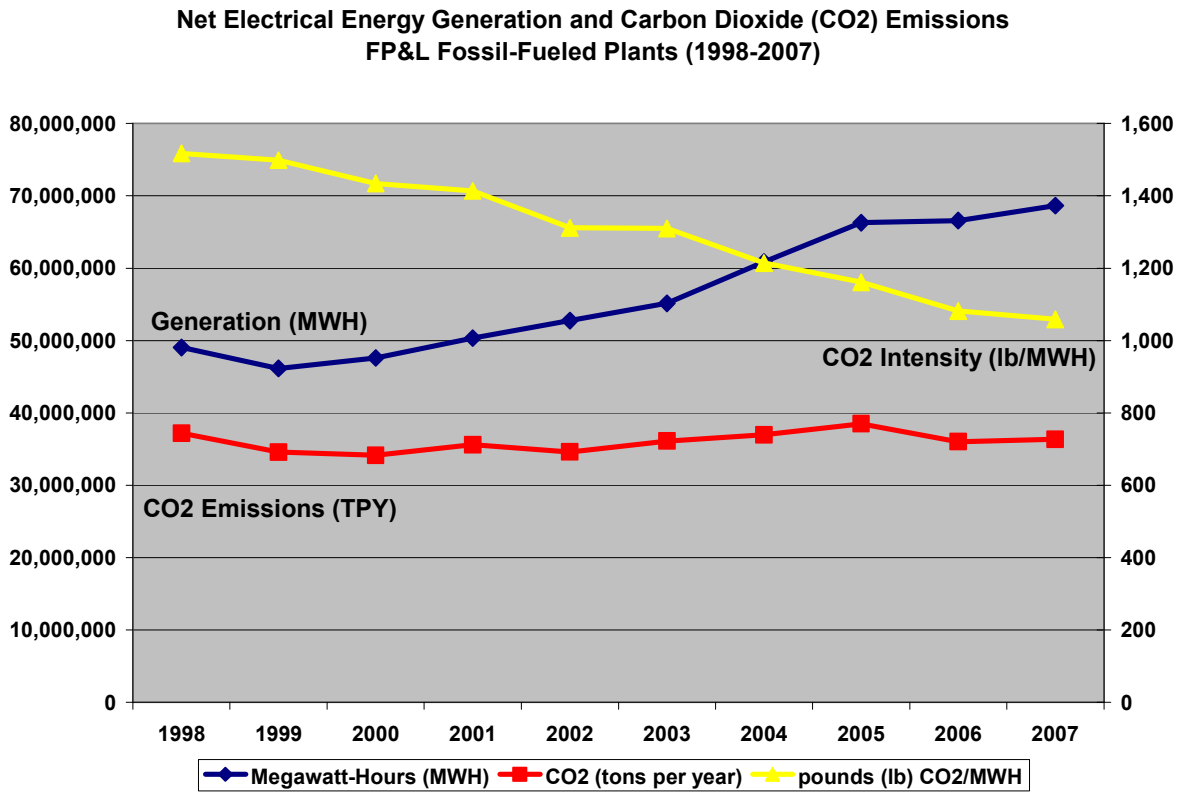
The Department also graphed the CO_2 emission trends during the period 1998-2007 from FP&L fossil-fueled plants. The data sources are the EPA Clean Markets database and the Department of Energy (DOE) databases that are regularly updated by the Energy Information Agency (EIA). The results are summarized in the chart shown on the following page.

During the period 1998-2007 there was a 40% increase in annual electrical energy production and a *decrease* of 2% in annual CO_2 emissions from the FP&L fossil fueled plants. There

was also a *decrease* in the system-wide carbon intensity from 1,517 to 1,059 lb CO_2/MWH (30%) from the fossil-based fleet.

During the period 1998-2007, FP&L converted the large residual fuel oil-fired units at the Fort Myers and Sanford power plants to natural gas-fueled combined cycle units while increasing their total capacity from approximately 1,360 to 3,800 MW. FP&L also added individual gas-fueled combined cycle units (each rated at more than 1,100 megawatts) at the Manatee, Martin and Turkey Point power plants.

Operation of the WCEC will continue the established downward system-wide trend in CO_2 intensity as measured in lb/MWH because it will emit 750 lb/MWH whereas the present system-wide intensity factor is greater than 1,000 lb/MWH.



E. <u>Acid Rain and Nutrient Related Impacts</u>

Most speakers expressed concern about the effects of acid rain emissions on local sensitive ecosystems such as the Loxahatchee Refuge and the larger Everglades system (i.e. beyond the Everglades National Park). Some expressed the opinion that deposition of the air pollutants will affect the acidity (as measured by lower pH) given limited buffering capacity of the Loxahatchee Refuge or add nitrogen nutrients reversing the benefits of Everglades restoration projects.

FP&L submitted projected nitrogen and sulfur deposition rates from the WCEC (all three units) into the Loxahatchee Refuge. According to information submitted by FP&L, the projected nitrogen deposition rate will be on the order of 0.07 kilograms per hectare per year (kg/ha/yr) and the sulfur deposition rate will be on the order of 0.2 kg/ha/yr.

The U.S. Fish and Wildlife Service (USFWS) manages the nearby Loxahatchee Refuge. Department staff contacted a biologist at the Loxahatchee Refuge who referred the caller to the USFWS South Florida Ecological Services office in Vero Beach. Department staff contacted USFWS experts to ascertain whether they had any concerns about the effects of the WCEC upon the ecosystem and endangered species. No concerns were expressed regarding air pollution.

The USFWS also has air quality experts in their offices in Denver, Colorado who were alerted about the project by the National Park Service even though the nearby refuge is a Class II area rather than a Class I area. No comments were received from their air quality experts. This was explained by the Department at the meeting.

One of the speakers at the meeting read a number of comments from a draft letter about the WCEC that was prepared by Florida Fish and Wildlife Conservation Commission (FWC). He subsequently provided the draft letter dated October 17, 2005 to the Department.

The chief concern read by the speaker from the letter he had in-hand states: "We are concerned that this plant (WCEC 1 and 2) combined with the build out third unit, other existing power plants and two power plants in St. Lucie County, cumulatively will have adverse effects to fish and wildlife and their habitats". He also read passages related to air impacts such as methyl mercury and acidification of streams.

The Department's Siting Office was contacted and they advised that no October 17, 2005 letter from the FWC regarding the WCEC had been received. The Siting Office provided a final letter dated October 4, 2005 about the Treasure Coast Energy Center (TCEC) that was similar to the draft WCEC letter.

The comments submitted for the TCEC (since constructed) and those drafted for the earlier WCEC Unit 1 and 2 project merit response.

As noted previously, there have been significant reductions on the order of 40% during the period 2005-2007. The foregoing discussion of emissions trends provides a better understanding of the improvements in the emissions profile during the past decade.

In conclusion air pollution emissions from the WCEC will not reverse the favorable trends of reduced impacts due to the decade-long regional and local power plant emissions reductions.

F. Renewable Energy

Most speakers expressed the preference that FP&L should rely more on renewable energy in lieu of building the WCEC or least Unit 3 of the WCEC. Among the options cited were solar energy, wind energy, wave energy and biomass projects. They generally expressed concern regarding reliance on fossil fuels including natural gas and whether the Governor's orders to reduce CO_2 emissions by 2017 to the level of 2000 can be met.

The speakers were generally aware of FP&L's petition of need before the Public Service Commission (PSC). Several attended and testified before the PSC at a hearing earlier the same week. Some have filed to intervene in the proceedings. Following is the link to a submittal to the PSC by the interveners:

www.psc.state.fl.us/library/filings/08/05609-08/05609-08.pdf

A copy of the filing was provided at the public meeting by the interveners.

The PSC is the proper forum for consideration of the renewable fuel alternatives in conjunction with need determination. The PSC is actively developing its Renewable Portfolio Standard (RPS) that is designed to reduce dependency on fossil fuels for power production while at the same time fostering achievement of the CO_2 emissions reductions.

The status, including the input from the power companies such as FP&L is available at the following link:

www.floridapsc.com/utilities/electricgas/RenewableEnergy/index.aspx

The renewable energy alternatives are encouraged by the Department but are not factors at this time in the evaluation of the PSD permit for the WCEC Unit 3.

G. Modernization of Cape Canaveral and FP&L Riviera Plants

Several speakers expressed concern regarding the manner by which FP&L tied the modernization of two older residual oil-fueled power plants to the approval by the PSC of the WCEC Unit 3. The need for the three projects has been submitted as a package.

From an air pollution point of view, the modernization of the Cape Canaveral and Riviera Plants would further reduce emissions and deposition and transport of acid rain and nutrient-related air pollutants into the Loxahatchee Refuge and into the Everglades system.

Several speakers want the modernizations (cleanups) of the Cape Canaveral and Riviera plants to be required independently of the construction of WCEC Unit 3.

The need determination by the PSC is the proper forum for this issue as discussed above. The matter of "need" and timing of such applications is not a consideration in the final decision on the PSD permit for the WCEC Unit 3.

H. Other Issues and Concerns

The following issues and concerns were stated and are outside of the purview of this PSD permitting decision:

- Proceedings of the Treasure Coast Regional Planning Council (TCRPC) and consistency or inconsistency with its goals;
- Natural gas supply and pipeline safety;
- Separate challenges described by more than one speaker with respect to water, pipeline and National Environmental Policy Act (NEPA) issues;
- Cradle-to-grave evaluation of CO_2 emissions from natural gas including liquefied natural gas (LNG) ports and storage;
- Discontinuance of some past small programs by FP&L and the proposal of only a small percentage of new programs;
- Dropping PSC reserve margin requirements to avoid need for Unit 3;
- Sufficiency or insufficiency of FP&L solar projects;
- Projected surficial aquifer drawdown when groundwater is needed by the WCEC; and

- Marsh and solar project alternatives and cooling and sequestration of CO_2 using cool ocean water.

II. FP&L COMMUNICATION

FP&L submitted written comments attached to a letter dated May 22, 2008. Their letter is available at:
www.dep.state.fl.us/Air/permitting/construction/westcounty/FPLCommentsonDraft.pdf

FP&L made several suggestions regarding the issued Technical Evaluation and Preliminary Determination document that accompanied the public notice package that was distributed on April 25. Those comments are noted, but the document will not be revised as it was a final document that described the rationale underlying the Department's draft action.

FP&L also requested that some changes to the draft permit be made when issuing the final action. These are as follows:

- Clarify in the final permit and in Appendix KKKK that the 15 parts per million nitrogen oxides (NO_X) emission limit application to the combustion turbines per the New Source Performance Standards is applicable on a 30-day rolling basis and not on a 4-hour basis;
- Allow excess emissions for a limited period of time when switching fuels from gas-to-oil in the same manner as allowed when switching fuels from oil-to-gas;
- Specify Method 25A to determine concentrations of volatile organic compounds during compliance testing; and
- Indicate model year 2007 to 2010 instead of model year 2007 for the two emergency generators.

Response to FP&L Comments

The Department agrees that the NOx averaging time is on a 30-day basis according to 40 Code of Federal Regulations Part 60, Subpart KKKK- Standards of Performance for Stationary Combustion Turbines that Commence Construction after February 18, 2005. The 4-hour basis applies to combustion turbines operating in simple cycle, whereas a 30-day basis applies to combustion turbines operating in combined cycle.

The Department notes that the much stricter numerical NO_X BACT standard and 24-hour averaging basis set by the Department for the project will also insure compliance with compliance with the Subpart KKKK limits.

The Department will correct the error in the NOx averaging time in Section III.A., Condition 12 of the permit and in Section IV, Appendix BD.

The Department will not change the Section III.A., Condition 17 of the permit to allow excess emissions when switching from gas-to-oil. The requirement in the draft permit is the same as the one included in the permits for Unit 1 and 2. Section III.A, Condition 26.b includes the following provision that already minimizes the possibility of an exceedance due to gas-to-oil switches: *"An hour in which any oil is fired is attributed towards compliance with the permit standards for oil firing."*

The Department will specify Method 25A in Section III.A., Condition 20 as requested and consistent with the previously issued permit for Units 1 and 2.

The Department will specify the model year range for the emergency generators as 2007 to 2010 (instead of 2007) as requested.

III. EPA COMMUNICATION

By electronic correspondence dated May 30, 2008 EPA staff advised that upon review of the additional information, the preliminary determination, and draft PSD permit they did not have any significant comments that were left unresolved.

IV. NPS AND USFWS COMMUNICATIONS

Prior to receipt of the application, NPS provided guidance regarding the ambient air modeling required to assess effects at national parks in South Florida. On January 16, 2008 (during the application completeness review period) NPS submitted the following comment:

"Supplemental modeling files show that FPL conducted an air quality increment analysis with emissions from all three units which showed no significant impact on Class I increments at Everglades National Park. However, FPL conducted an AQRV analysis which only included emission from Unit 3. We ask that FPL conduct an air quality related values (AQRV) modeling analysis and include emissions from Units 1, 2, and 3 in order for us to properly assess impacts at Everglades National Park, Big Cypress National Preserve and Biscayne National Park. We also ask that the AQRV modeling analysis follow the WCEC modeling protocol we reviewed in November 2007."

By electronic correspondence dated March 21, 2008 NPS advised:

"We reviewed the March 2008 FP&L response to Florida Bureau of Air Regulations regarding questions and comments on the WCEC Unit 3 PSD application. In our January 16, 2008, message to Florida Bureau of Air Regulations we asked that Florida Power & Light conduct an AQRV modeling analysis for emissions from Units 1, 2, and 3 in order for us to properly assess impacts at Everglades National Park. Based on the information provided in the March 2008 Florida Power & Light response to Florida Bureau of Air Regulations, we are not concerned about the level of impacts on resources at Everglades National Park. I will alert the USFWS Air Quality Branch about potential air quality concerns at Loxahatchee National Wildlife Refuge since the WCEC site is located adjacent to the refuge."

No further comments were received during the 30-day comment period from NPS and no comments were received from the USFWS regarding the application or public notice package.

V. CONCLUSION

The final action of the Department is to issue the permit with the revisions, corrections, and clarifications as described above.