Technical Review of Prevention of Significant Deterioration Permit Application
For Osprey Energy Center
Calpine Construction Finance Company
Polk County, Florida

by

Air Quality Branch, Fish and Wildlife Service – Denver
April 17, 2000

Calpine Construction Finance Company (Calpine) proposes to construct a 527 MW power production facility, composed of two new Siemens/Westinghouse 501FD combined cycle turbines fired solely with natural gas. The facility would be located in Auburndale, Polk County, Florida, 102 km southeast of Chassahowitzka Wilderness, a Class I area administered by the U.S. Fish and Wildlife Service (FWS).

This project will result in PSD-significant increases in emissions of nitrogen oxides (NO_X), sulfur dioxide (SO_2), sulfuric acid mist (SAM), particulate matter (PM-10), and volatile organic compounds (VOC). Emissions (in tons per year – TPY) are summarized below.

POLLUTANT	EMISSIONS INCREASE (TPY)
NO_X	258
SO_2	95
SAM	15
PM-10	194
VOC	70

Best Available Control Technology (BACT) Analysis

Calpine proposes to limit NO_x emissions to 4 parts per million by volume dry (ppmvd) by using dry low-NO_x burners and Selective Catalytic Reduction (SCR). Calpine notes that the 4 ppm level for NO_x is slightly higher than several recent BACT determinations in the southeastern U.S., but states that the limit reflects the highest proposed NO_x removal efficiency in the region. We agree that dry low-NO_x burners and SCR represent BACT; however, we disagree that 4 ppm represents a BACT emissions limit. There have been several Siemens/Westinghouse 501 combined cycle turbines with SCR permitted at 3.5 ppm, including two units at AES Red Oak in New Jersey. Additionally, in a November 8, 1999 letter (attached), EPA Region IV established that BACT for combined cycle turbines is 3.5 ppm NO_x. (Note: EPA wrote the letter after the Florida Department of Environmental Protection proposed a 6 ppm NO_X limit for a GE combined cycle Frame 7 turbine with SCR.) We believe that Osprey Energy should be permitted at a level of 3.5 ppm unless they can show why this installation is significantly different than the AES Red Oak facility in New Jersey.

Air Quality and Air Quality Related Values Modeling Analyses

Calpine's modeling predicted that the project would not contribute significantly to consumption of Class I increments. In addition, the project's contribution to haze at the Class I area was predicted to be 0.47 percent, well below the recommended threshold of 5 percent.

Contact: Ellen Porter, Air Quality Branch (303) 969-2617.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

NOV 8 1999

4APT-ARB

NOV 17 1999

Mr. Howard L. Rhodes, Director
Division of Air Resources Management
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

SUBJ: Notice of Potential Appeal to the Environmental Appeals Board of the U.S. Environmental Protection Agency - Duke Energy New Smyrna Beach Combustion Turbine Project

Dear Mr. Rhodes:

The prevention of significant deterioration (PSD) permits required for projects subject to the Florida Electrical Power Plant Siting Act (PPSA) are issued by the Florida Department of Environmental Protection (FDEP) under authority delegated by the U.S. Environmental Protection Agency (EPA). Since the authority to issue such permits is a federally delegated authority, EPA can appeal objectionable PPSA project PSD permits to the EPA Environmental Appeals Board pursuant to 40 C.F.R. Part 124. This letter serves notice that Region 4 intends to file an appropriate appeal to the Environmental Appeals Board if FDEP issues a final permit for a PPSA project as proposed in the draft permit for this project. The project at issue is the Duke Energy New Smyrna Beach Company combustion turbine project at New Smyrna Beach, Florida (permit number PSD-FL-257 and site certification number PA 98-39).

The Duke Energy New Smyrna Beach (Duke Energy) project consists of two combined cycle combustion turbines with unfired heat recovery steam generators. FDEP issued a draft PSD permit for this project on January 8, 1999. For control of nitrogen oxides (NO_x) emissions, the draft permit requires Duke Energy to install dry low NO_x (DLN) combustors on the two combustion turbines and further states that Duke Energy may design the heat recovery steam generators to accommodate installation of selective catalytic reduction (SCR) technology. The draft permit also requires that Duke Energy achieve a NO_x emissions rate of 9 ppm (dry basis at 15 percent oxygen) if DLN combustor control is used or 6 ppm if SCR control is used. The draft permit does not mandate that Duke Energy use SCR technology or achieve a NO_x emission rate less than 9 ppm.

Region 4 submitted a letter dated February 9, 1999, commenting on the draft permit (and the accompanying FDEP preliminary determination). In our letter we stated the following with regard to best available control technology (BACT): "The PSD application and preliminary determination do not present any unusual site-specific conditions associated with the Duke

Energy project to indicate that the use of SCR to achieve NO_x emissions of 3.5 ppm would create greater problems than experienced elsewhere at other similar facilities. We suggest that the State reconsider the BACT decision for NO_x for the proposed permit. We also request that the permit not be issued until we reach a consensus on the NO_x BACT analysis."

No information has been provided subsequent to our February 9, 1999, letter to convince us that BACT for this project is anything other than a NO_x emissions rate of 3.5 ppm to be achieved using SCR or some other control method. Consequently, if FDEP issues a final permit that does not require a NO_x emissions rate of 3.5 ppm or less, Region 4 intends to appeal the permit to the EPA Environmental Appeals Board.

If you have any questions concerning our comments, please contact Doug Neeley at (404) 562-9097 or Gregg Worley at (404) 562-9141.

Sincerely,

Winston A. Smith
Director
Air, Pesticides, and Toxics
Management Division

cc: Duke Energy

CC: T. Heron
CD
B Dunn
NPS

Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

April 3, 2000

Mr. John Bunyak, Chief
Policy, Planning & Permit Review Branch
NPS-Air Quality Division
Post Office Box 25287
Denver, CO 80225

Re: Calpine Construction Finance Company, L.P. PSD-FL-287

Dear Mr. Bunyak:

It is our understanding that you have been supplied with a copy of the subject application, under separate cover, directly from the applicant or the applicant's consultant (Golder Associates). We are commencing our review of this project as the applicant has specifically requested an expedited review. This project is subject to the Florida Electrical Power Plant Siting Act (PPSA).

The proposed facility consists of 527 MW (average ambient) of capacity and will be designated as Osprey Energy Center. It will incorporate two 170-MW Westinghouse Model 501F combustion turbines, two heat recovery steam generators equipped with duct burners and one nominal 200 MW steam turbine generator. The CT's and DB's will be fired exclusively with pipeline quality natural gas. The applicant proposes NO_X emissions to be controlled by SCR at 4 ppmvd with and without duct burner firing.

Your comments can be forwarded to my attention at the letterhead address or faxed to the Bureau at (850) 922-6979. If you have any questions, please contact Mike Halpin at (850) 921-9530.

Sincerely,

4/3

A. A. Linero, P.E.
Administrator
New Source Review Section

AAL/mph/kt

w/o enclosures

cc: Mike Halpin, BAR

Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

April 3, 2000

Mr. Gregg Worley, Chief
Air, Radiation Technology Branch
Preconstruction/HAP Section
U.S. EPA – Region IV
61 Forsyth Street
Atlanta, Georgia 30303

Re: Calpine Construction Finance Company, L.P. PSD-FL-287

Dear Mr. Worley:

It is our understanding that you have been supplied with a copy of the subject application, under separate cover, directly from the applicant or the applicant's consultant (Golder Associates). We are commencing our review of this project as the applicant has specifically requested an expedited review. This project is subject to the Florida Electrical Power Plant Siting Act (PPSA).

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In light of recent correspondence concerning Kissimmee Utility Authority (Cane Island Unit No. 3) we request your review and opinion of the proposal, particularly as it relates to the NO_X control and emissions. Your comments can be forwarded to my attention at the letterhead address or faxed to me at (850) 922-6979. If you have any questions, please contact Mike Halpin at (850) 921-9530.

Sincerely,

A. A. Linero, P.E. Administrator
New Source Review Section

AAL/mph/kt

w/o enclosures

cc: Mike Halpin, BAR

Golder Associates Inc.

6241 NW 23rd Street, Suite 500
Gainesville, FL 32653-1500
Telephone (352) 336-5600
Fax (352) 336-6603

February 9, 2000

Florida Department of Environmental Protection
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Attention: Mr. A.A. Linero, P.E.

RE: CALPINE CORPORATION, INC.
AIR DISPERSION MODELING PROTOCOL FOR PREVENTION OF SIGNIFICANT DETERIORATION APPLICATION
OSPREY ENERGY CENTER PROJECT, POLK COUNTY, FLORIDA

Dear Mr. Linero:

Calpine Corporation, Inc., is proposing to construct and operate an independent power production facility capable of generating a nominal net electrical output of 540 megawatts (MW) in Polk County, Florida. The facility is referred to as the Osprey Energy Center Project ("the Project"). The facility will be located within the City of Auburndale (after the City's approval of property annexation). The facility will be located on a 20-acre tract approximately 1.5 miles [2.5 kilometers (km)] from downtown Auburndale and about 12 miles (20 km) east of Lakeland, Florida. The Project will consist of two combustion turbines (CTs) (generating approximately 170 MW each), two heat recovery steam generators (HRSG) with duct firing, and one steam turbine (generating approximately 200 MW) operating in combined cycle mode. A cooling tower will be installed and operated to provide cool water to the condensing steam turbine. The tower will be a mechanical draft counter-flow design. The CTs and duct burners will be fired by natural gas only. The facility will be designed for providing baseload service and permitted at an annual capacity of 100 percent. In actual operation, the plant's annual capacity would be approximately 80 percent.

The Project is subject to the siting requirements under the Site Certification of Power Plants. In addition, the Project will also be subject to the new source review requirements under the Prevention of Significant Deterioration (PSD) regulations. Under these regulations, the proposed Project will be considered a major source for nitrogen oxides (NO_x), total particulate matter (PM), particulate matter with aerodynamic diameters less than 10 microns (PM_{10}), and carbon monoxide (CO). The Project will also have emissions above the EPA significant emission rates for sulfur dioxide (SO_2), volatile organic compounds (VOC), and sulfuric acid mist.

This protocol presents the air dispersion modeling methodology to be used for the Site Certification Application and PSD analysis, including a discussion of the site geography; air dispersion model to be used; meteorological data; emissions, stack, and building data; receptor locations; and additional impact analyses.

Air Dispersion Models

The air dispersion modeling analysis will be conducted in accordance with air modeling guidelines recommended by the Florida Department of Environmental Protection (DEP). Based on the types of sources for the Project, the Industrial Source Complex Short-term (ISCST3, Version 99155) will be used to predict maximum air quality impacts in areas that are beyond the Project's property boundary. This is latest version of the ISCST3 model available from EPA. All modeling analyses will use the EPA default regulatory options.

In addition, the California Puff model (CALPUFF, Version 5.0) will be used to predict impacts at the PSD Class I area of the Chassahowitzka Wilderness Area (NWA), located about 102 km from the Project site. The Chassahowitzka NWA is the nearest PSD Class I area to the Project; other PSD Class I areas are located more 200 km away. Since the Project is located more than 200 km away from other Class I areas, it is not expected that the Project's emissions will have a significant impact on those Class I areas. As a result, air quality impacts due to the Project's emissions will be assessed at the Chassahowitzka NWA.

The methods and assumptions used in the CALPUFF model will be based on the latest recommendations for modeling analysis as presented in the *Interagency Workgroup on Air Quality Models (IWAQM), Phase 2 Summary Report and Recommendations for Modeling Long Range Transport Impacts* (EPA, 1998). Based on discussions with DEP, the ISCST3 model will be used to determine the "worst-case" operating load and ambient temperature that produces the Project's maximum impact at the Class I area. Based on that analysis, air quality impacts will be predicted with the CALPUFF model using the "worst-case" operating scenario to compare the Project's impacts to Class I significant impact levels (see discussion below).

Emission Inventory

Stack and operating parameters and emission rates of criteria pollutants for the CTs, duct burners, and cooling tower will be developed from design data supplied by equipment vendors for the Project. The design data will be developed for the turbines firing natural gas and operating at 60, 75, and 100 percent of maximum capacity in combined cycle mode. Because the inlet ambient air temperature directly affects turbine combustion and operation, design data will also be provided for three ambient air temperatures that cover the range of temperatures for the Project site location: 32, 59, and 95°F. Air dispersion modeling will be performed for the three operating loads and three ambient temperatures to provide a range of operating conditions that will produce maximum ground-level impacts. These modeling scenarios encompass the operating conditions that will produce the maximum emissions on a short-term basis (i.e., 100 percent load at 32°F) and the minimum plume rise (i.e., 60 percent load at 95°F).

Building Data Processing
Building dimensions for the Project's structures will be entered into the EPA's Building Profile Input Program (BPIP, Version 95086) for the purpose of obtaining direction-specific building heights and widths for all downwash-affected sources. The direction-specific building dimensions will be input to the ISCST3 and CALPUFF models for processing.

Site Geography
The site elevation is about 140 ft above mean sea level (msl). Around the immediate vicinity of the site, the terrain is flat to gently rolling with elevations that range within 10 to 20 ft of the site elevation.

Since the proposed stack heights for the HRSG and cooling tower stacks will be 135 and 43 ft, respectively, the surrounding terrain is below the proposed stack top heights. Therefore, the surrounding terrain can be considered as simple (i.e., less than stack top); the simple terrain option will be assumed for the air modeling analysis.

Based on topographical maps of the Project site, the land use within a 3-km radius of the site can be classified as rural. As a result, the rural option will be selected in the model.

Meteorological Data
Meteorological data will consist of a 5-year record of hourly surface data from the National Weather Service (NWS) station at Tampa International Airport and upper air observations from the NWS station in Ruskin for the years 1987 to 1991. These data are assumed to be representative of the Project site because both the Project site and the weather stations are situated in central Florida to experience similar weather conditions, such as frontal passages. These data have been accepted for use by the DEP in other PSD permit applications to address air quality impacts for other sources locating in this county and adjacent counties.

Significant Impact Analysis
Based on air modeling results for similar projects, the Project's impacts are expected to be below the EPA Class II significant impact levels (SIL) for all pollutants. Therefore, PSD Class II increment and NAAQS analyses with background air emission sources would not be required. The Project's impacts are also expected to be below the EPA Class I SILs for all pollutants at the PSD Class I area of the Chassahowitzka NWA. As a result, cumulative air quality impact analyses with background air emission sources are not expected to be required to assess compliance with PSD Class II increments.

If more detailed modeling indicates that the proposed Project's emissions result in predicted ambient air quality impacts above the EPA Class II or I SILs, discussions will be held with the DEP and emission inventory data of background sources will be obtained as needed.

In addition, pre-construction ambient air quality monitoring is not anticipated to be required for this Project since the air quality impacts are expected to be less than the *de minimis* monitoring thresholds.

Additional Impact Analysis

Additional analyses will evaluate impairment to visibility and the impact of the proposed Project on soils and vegetation in the Project's immediate vicinity. Impacts as a result of general commercial, residential, industrial, and other growth associated with the proposed Project will also be addressed. An air quality related values (AQRV) analysis will also be performed for the PSD Class I area. This analysis will address the effects of the Project's impacts on soils, vegetation, wildlife, and visibility (regional haze) at the Class I area.

Please call me at (352) 336-5600 if you have any questions or comments on the protocol. Calpine greatly appreciates the assistance of the DEP on this important Project.

Very truly yours,

GOLDER ASSOCIATES INC.

Robert C. McCann, Jr.

RCM/arz

cc: Kennard F. Kosky, GAI
Richard A. Zwolak, GAI
Paul Barnett, Calpine Corporation
David S. Dee, Landers & Parsons
Hamilton S. Oven, Florida DEP

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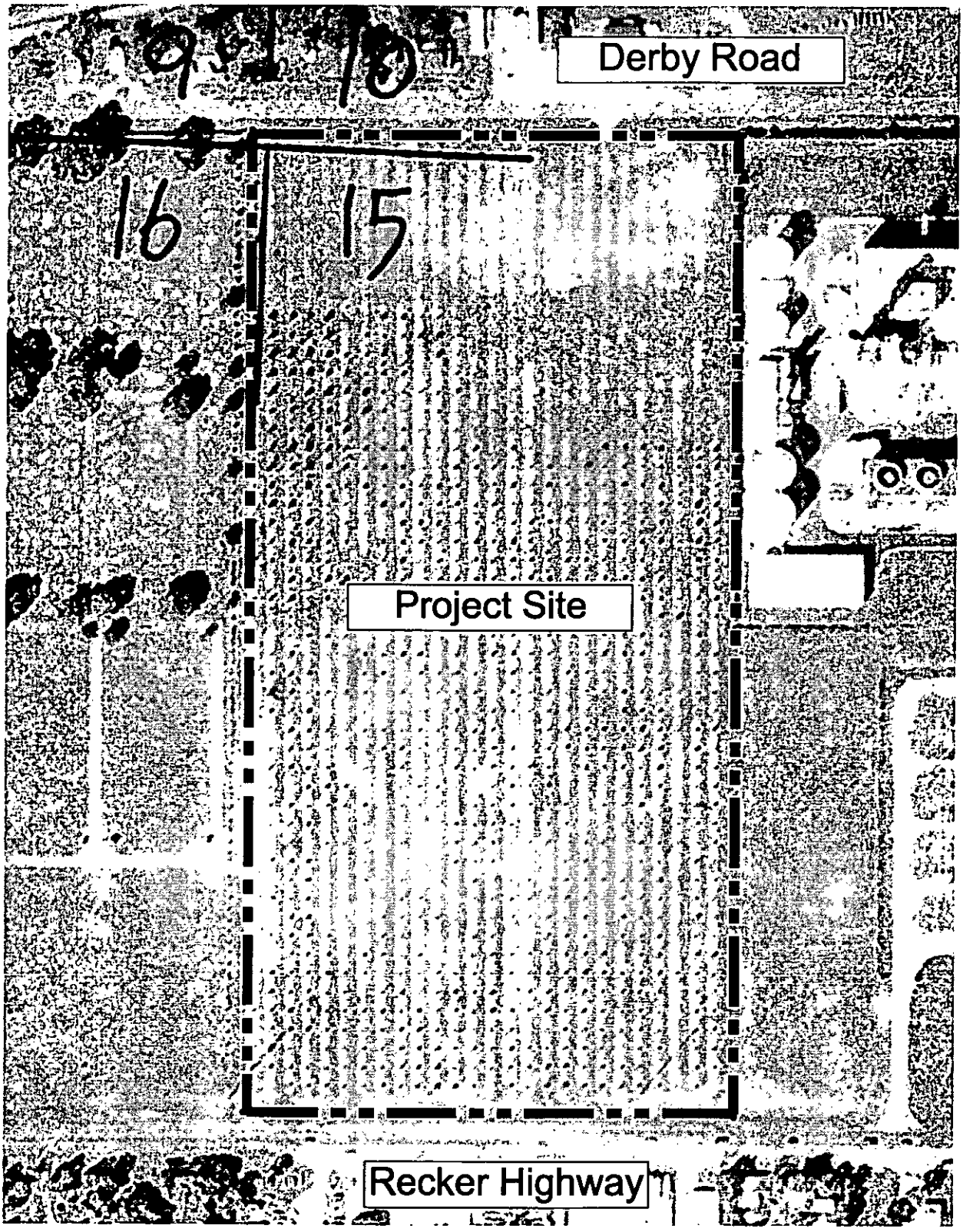
CALPINE
OSPREY
ENERGY CENTER



Golder Associates

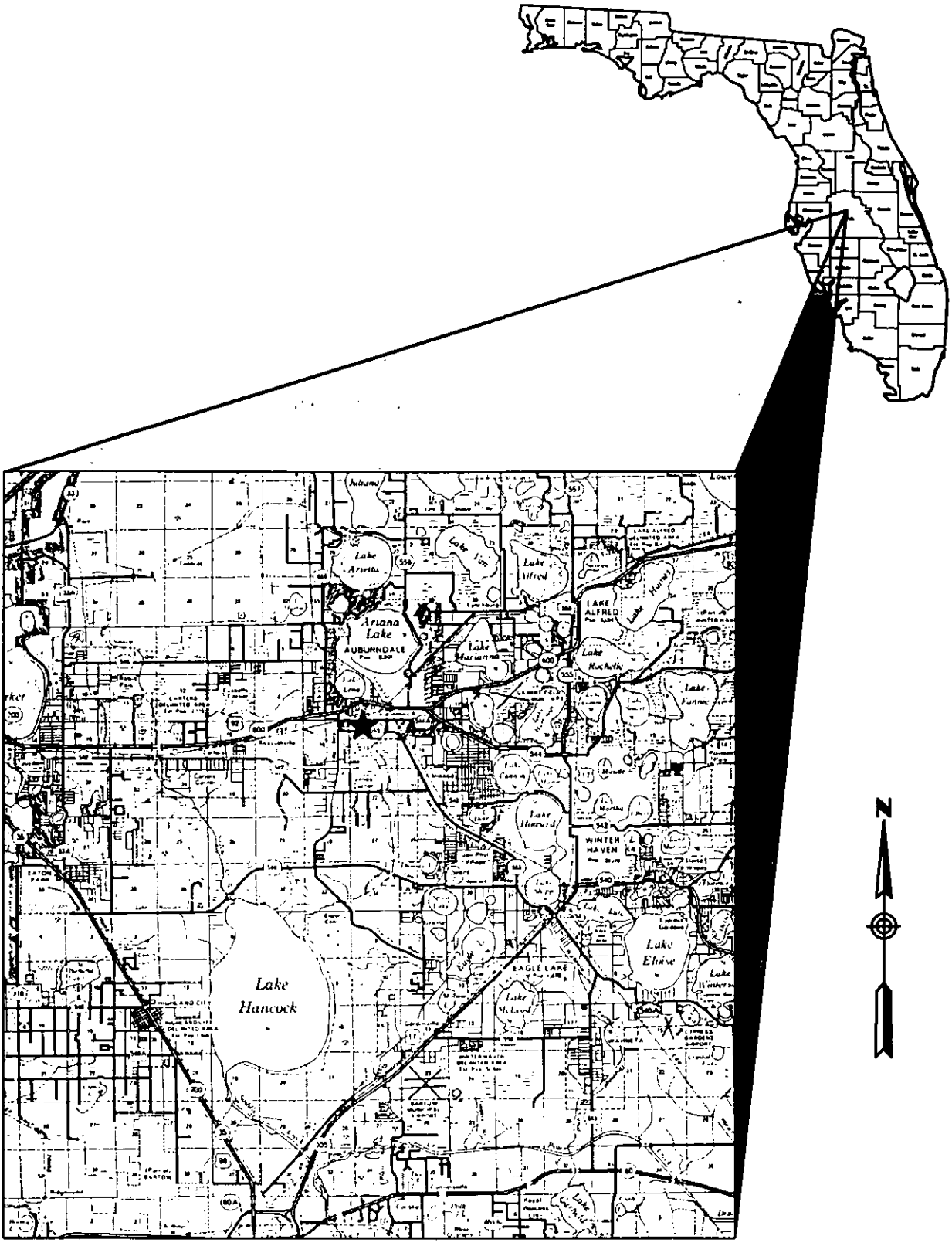
Tampa, Florida

Aerial Photograph of Site

Client / Project

Calpine Construction Finance Copany, L.P.
Osprey Energy Center

CAD BY:	CDT	SCALE:	1"=200'	Job No.	993-9570
CHK BY:	RAZ	DATE:	02/04/00	FIGURE	1.3.2-3
REV BY:	–	FILE No.:	fig1_3_2-3.dwg		



★ Project Site

Golder Associates

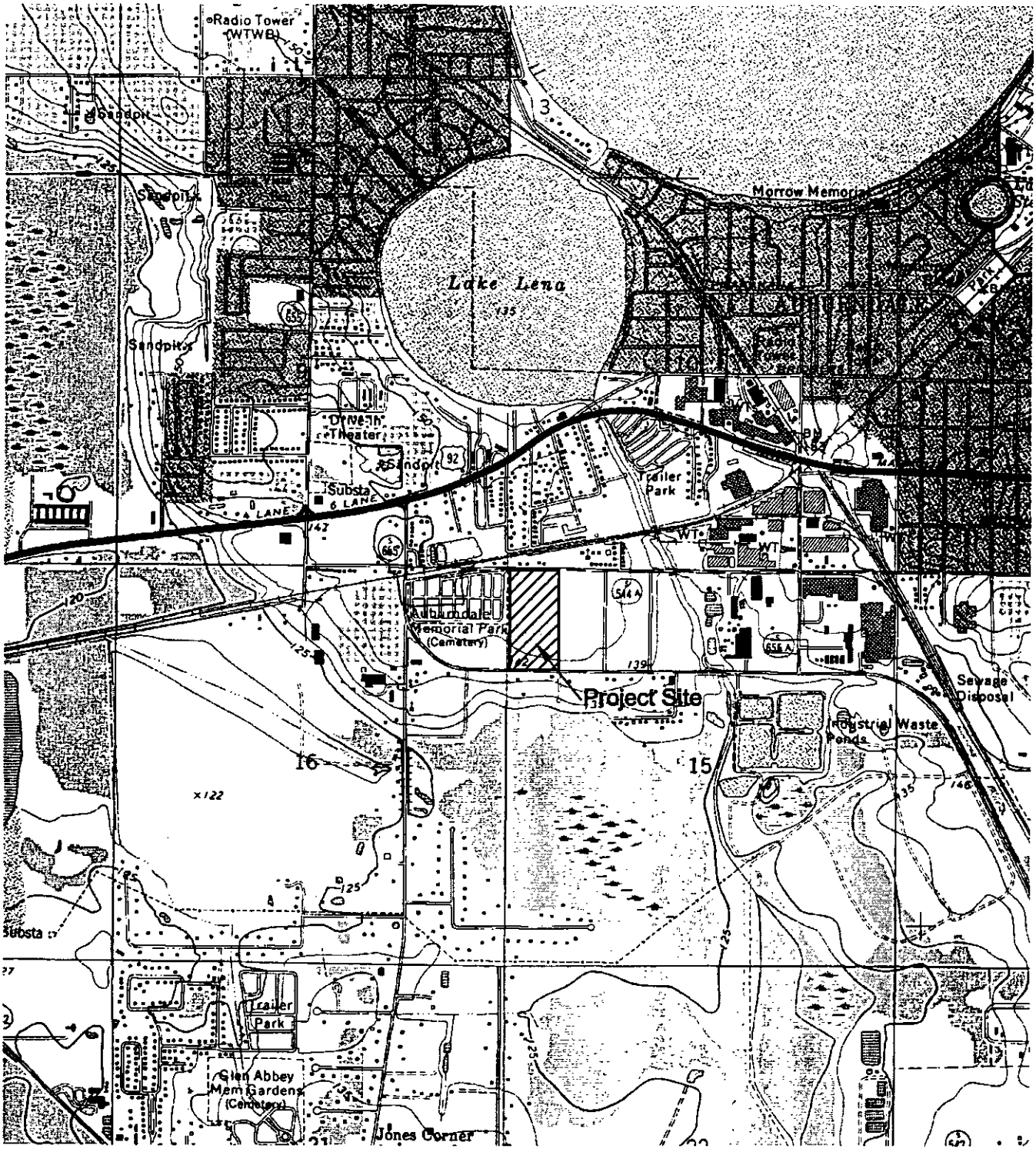
Tampa, Florida

Project Site Area

Client / Project

Calpine Construction Finance Company, L.P.
Osprey Energy Center

CAD BY: CDT	SCALE: NTS	Job No. 993-9570
CHK BY: CA	DATE: 02/04/00	FIGURE 1.3.2-1
REV BY: –	FILE No.: fig1_3_2-1.dwg	



LEGEND

PROJECT SITE

N

0 1000' 2000'

1"=2000'

REFERENCE

USGS 7.5 Minute Topographical Quadrangle, Auburndale, Florida

Golder Associates

Tampa, Florida

Project Site Location

Client / Project

Calpine Construction Finance Company, L.P.
Osprey Energy Center

CAD BY: CDT	SCALE: 1"=2000'	Job No. 993-9570	
CHK BY: RAZ	DATE: 02/04/00	FIGURE 1.3.2-2	
REV BY: –	FILE No.: fig1_3_2-2.dwg		

Golder Associates

Tampa, Florida

Aerial Photograph of Site

Client / Project
Calpine Construction Finance Copany, L.P.
Osprey Energy Center

CAD BY: CDT	SCALE: 1"=200'	Job No. 993-8570	
CHK BY: RAZ	DATE: 02/04/00	FIGURE 1.3.2-3	
REV BY: –	FILE No.: fig1_3_2-3.dwg		

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

CALPINE CONSTRUCTION FINANCE COMPANY, L.P.,

Petitioner,

vs.

DEP Draft Permit No. PA 00-41(PSD-FL-287)

DEPARTMENT OF ENVIRONMENTAL PROTECTION,

Respondent.
_____/

CALPINE'S REQUEST FOR EXTENSION OF TIME TO FILE PETITION

Petitioner, Calpine Construction Finance Company, L.P. ("Calpine"), pursuant to Rule 28-106.111(3), Florida Administrative Code, respectfully requests the Department of Environmental Protection ("Department") to grant Calpine an extension of time to file a petition for a formal administrative hearing concerning the Department's draft permit for Calpine's Osprey Energy Center (DEP Draft Permit No. PA 00-41(PSD-FL-287)) (the "Draft Permit"). In support of this request, Calpine says:

1. On March 16, 2000 Calpine filed an application with the Department for a prevention of significant deterioration ("PSD") permit for Calpine's Osprey Energy Center, a 527 MW electrical power plant to be located at 1501 Derby Avenue, Auburndale, Florida.

2. On May 11, 2000, the Department distributed its "Public Notice of Intent to Issue PSD Permit", Draft Permit, Technical

Evaluation and Preliminary Determination, and Draft BACT Determination for the Osprey Energy Center. As the applicant for the Draft Permit, Calpine is affected by the Department's proposed action.

3. The Draft Permit is lengthy and complex. Calpine's preliminary review of the Draft Permit indicates that some provisions of the Draft Permit are not consistent with Calpine's application. Given these inconsistencies, Calpine needs additional time to carefully review the Draft Permit with its staff and its consultants. After completing its review, Calpine also wants to meet with the Department to discuss the Draft Permit.

4. Although Calpine does not expect to file a petition for a formal administrative hearing concerning the Draft Permit, Calpine requests a 45-day extension of time to evaluate the provisions in the Draft Permit, and meet with the Department, before Calpine waives its right to a hearing.

5. Petitioner's counsel has discussed this request with Department's counsel, Mr. Scott Goorland. Mr. Goorland indicated that the Department has not yet formulated a position concerning this request.

WHEREFORE, Calpine requests the Department to grant a 45-day extension of time to file a petition for a formal administrative hearing concerning the Draft Permit.

Respectfully submitted this 23rd day of May, 2000.

LANDERS & PARSONS

DAVID S. DEE
Fla. Bar No. 281999
JOHN T. LaVIA, III
Fla. Bar No. 853666
310 West College Avenue (32301)
P.O. Box 271
Tallahassee, Florida 32302
850/681-0311
850/224-5595 (fax)

COUNSEL FOR CALPINE CONSTRUCTION
FINANCE COMPANY, L.P.

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that an original and one copy of the foregoing was furnished by hand-delivery to the CLERK'S OFFICE, Department of Environmental Protection, Office of General Counsel, 3900 Commonwealth Blvd., Room 633B, Tallahassee, Florida 32399; and a copy by U.S. Mail to Scott Goorland, Department of Environmental Protection, Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, on this 23rd day of May, 2000.

ATTORNEY

INTEROFFICE MEMORANDUM

Sensitivity: COMPANY CONFIDENTIAL

Date: 27-Apr-2000 02:54pm
From: Scott Goorland TAL GOORLAND_S
Dept: Office General Counsel
Tel No: 850/921-9687

Subject: Re: Calpine

There is no need to hold it back. The intent can be issued, just not the final until 30 days after the certification hearing.

We have an intent to issue ready to go out on the project. The company wishes to receive the intent. In light of the Duke Power case, Is there a rule, statute, or legal reason not to issue this. Please advise ASAP. Clair

U.S.FISH&WILDLIFE SERVICE
AIR QUALITY BRANCH
P.O. BOX 25287, Denver, CO 80225-0287

FACSIMILE COVER SHEET

Date: April 17, 2000

Telephone: (303) 969-2617
Fax: (303) 969-2822

To: Mike Halpin/Cleve Holladay

From: Ellen Porter

Subject: Calpine – Osprey Energy

Number of Pages: 5
(Including this cover sheet)

Office Location: 7333 West Jefferson Ave, Suite 450, Lakewood, CO 80235

Technical Review of Prevention of Significant Deterioration Permit Application
For Osprey Energy Center
Calpine Construction Finance Company
Polk County, Florida

by

Air Quality Branch, Fish and Wildlife Service – Denver
April 17, 2000

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Contact: Ellen Porter, Air Quality Branch (303) 969-2617.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

NOV 5 1999

4APT-ARB

NOV 17 1999

Mr. Howard L. Rhodes, Director
Division of Air Resources Management
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

SUBJ: Notice of Potential Appeal to the Environmental Appeals Board of the U.S. Environmental Protection Agency - Duke Energy New Smyrna Beach Combustion Turbine Project

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No information has been provided subsequent to our February 9, 1999, letter to convince us that BACT for this project is anything other than a NO_x emissions rate of 3.5 ppm to be achieved using SCR or some other control method. Consequently, if FDEP issues a final permit that does not require a NO_x emissions rate of 3.5 ppm or less, Region 4 intends to appeal the permit to the EPA Environmental Appeals Board.

If you have any questions concerning our comments, please contact Doug Neeley at (404) 562-9097 or Gregg Worley at (404) 562-9141.

Sincerely,

Winston A. Smith
Director
Air, Pesticides, and Toxics
Management Division

cc: Duke Energy

CC: T. Heron
CD
B Olen
NPS

CC: K. Kosky, Golder
D. Dee, CAP
P. Barrett, Calpine

LANDERS & PARSONS, P.A.
ATTORNEYS AT LAW

DAVID S. DEE
JOSEPH W. LANDERS, JR.
JOHN T. LAVIA, III
FRED A. McCORMACK
PHILIP S. PARSONS
LESLIE J. PAUGH
ROBERT SCHEFFEL WRIGHT

VICTORIA J. TSCHINKEL
SENIOR CONSULTANT
(NOT A MEMBER OF THE FLORIDA BAR)

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MEMORANDUM

To: Distribution List (attached)

From: David S. Dee D. Dee

Re: PPSA Review of Calpine's Osprey Energy Center

Date: April 14, 2000

This law firm is assisting Calpine Construction Finance Company, L. P. (Calpine), with its efforts to obtain the necessary permits and approvals for the construction and operation of a new natural gas-fired electrical power plant in the City of Auburndale, Florida. The new facility will be known as the Osprey Energy Center. On behalf of Calpine, I am sending you this memorandum to help ensure that the regulatory review process for the Osprey Energy Center is conducted in a timely and efficient manner.

On March 20, 2000, Calpine filed an application with the Florida Department of Environmental Protection (DEP) for site certification of the Osprey Energy Center, in accordance with the requirements of the Florida Electrical Power Plant Siting Act (PPSA), Sections 403.501 - .518, Florida Statutes (F.S.). Copies of Calpine's application were delivered to you and everyone else identified in the attached Distribution List.

Section 403.5067, F.S., provides that the agencies reviewing a PPSA application "shall submit to [DEP] recommendations on the sufficiency of the application within 30 days after distribution of the complete application." In this case, Calpine's application was delivered to all of the agencies on or before March 30, 2000. Thus, if you or the other members of your agency have any questions regarding Calpine's application, **you should provide your request for additional information to the DEP Office of Siting Coordination on or before Monday, April 30, 2000.**

Calpine wants to work with all of the agencies to ensure that their questions are addressed as quickly as possible. Accordingly, **Calpine would greatly appreciate it if you would send copies of your questions directly to Calpine's consultants at Golder & Associates**, in care of Mr. Richard Zwolak. His phone number is (813) 287-1717, his fax number is (813) 287-1716, and his e-mail address is richard_zwolak@golder.com.

If you have any questions, please feel free to call me at (850) 681-0311 or contact me at ddee@landersandparsons.com. You also may wish to contact Mr. Scott Goorland, the DEP attorney who will be handling this case, at (850) 488-9314.

Thank you for your cooperation and assistance with this matter.

DISTRIBUTION LIST

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David B. Struhs
Secretary

April 3, 2000

Mr. John Bunyak, Chief
Policy, Planning & Permit Review Branch
NPS-Air Quality Division
Post Office Box 25287
Denver, CO 80225

Re: Calpine Construction Finance Company, L.P. PSD-FL-287

Dear Mr. Bunyak:

It is our understanding that you have been supplied with a copy of the subject application, under separate cover, directly from the applicant or the applicant's consultant (Golder Associates). We are commencing our review of this project as the applicant has specifically requested an expedited review. This project is subject to the Florida Electrical Power Plant Siting Act (PPSA).

The proposed facility consists of 527 MW (average ambient) of capacity and will be designated as Osprey Energy Center. It will incorporate two 170-MW Westinghouse Model 501F combustion turbines, two heat recovery steam generators equipped with duct burners and one nominal 200 MW steam turbine generator. The CT's and DB's will be fired exclusively with pipeline quality natural gas. The applicant proposes NO_X emissions to be controlled by SCR at 4 ppmvd with and without duct burner firing.

Your comments can be forwarded to my attention at the letterhead address or faxed to the Bureau at (850) 922-6979. If you have any questions, please contact Mike Halpin at (850) 921-9530.

Sincerely,

A. A. Linero, P.E.
Administrator
New Source Review Section

AAL/mph/kt

w/o enclosures

cc: Mike Halpin, BAR

Golder Associates Inc.

6241 NW 23rd Street, Suite 500
Gainesville, FL 32653-1500
Telephone (352) 336-5600
Fax (352) 336-6603

Golder Associates

February 9, 2000

Florida Department of Environmental Protection
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Attention: Mr. A.A. Linero, P.E.

RE: CALPINE CORPORATION, INC.
AIR DISPERSION MODELING PROTOCOL FOR PREVENTION OF SIGNIFICANT DETERIORATION APPLICATION
OSPREY ENERGY CENTER PROJECT, POLK COUNTY, FLORIDA

Dear Mr. Linero:

Calpine Corporation, Inc., is proposing to construct and operate an independent power production facility capable of generating a nominal net electrical output of 540 megawatts (MW) in Polk County, Florida. The facility is referred to as the Osprey Energy Center Project ("the Project"). The facility will be located within the City of Auburndale (after the City's approval of property annexation). The facility will be located on a 20-acre tract approximately 1.5 miles [2.5 kilometers (km)] from downtown Auburndale and about 12 miles (20 km) east of Lakeland, Florida. The Project will consist of two combustion turbines (CTs) (generating approximately 170 MW each), two heat recovery steam generators (HRSG) with duct firing, and one steam turbine (generating approximately 200 MW) operating in combined cycle mode. A cooling tower will be installed and operated to provide cool water to the condensing steam turbine. The tower will be a mechanical draft counter-flow design. The CTs and duct burners will be fired by natural gas only. The facility will be designed for providing baseload service and permitted at an annual capacity of 100 percent. In actual operation, the plant's annual capacity would be approximately 80 percent.

The Project is subject to the siting requirements under the Site Certification of Power Plants. In addition, the Project will also be subject to the new source review requirements under the Prevention of Significant Deterioration (PSD) regulations. Under these regulations, the proposed Project will be considered a major source for nitrogen oxides (NO_x), total particulate matter (PM), particulate matter with aerodynamic diameters less than 10 microns (PM_{10}), and carbon monoxide (CO). The Project will also have emissions above the EPA significant emission rates for sulfur dioxide (SO_2), volatile organic compounds (VOC), and sulfuric acid mist.

This protocol presents the air dispersion modeling methodology to be used for the Site Certification Application and PSD analysis, including a discussion of the site geography; air dispersion model to be used; meteorological data; emissions, stack, and building data; receptor locations; and additional impact analyses.

Air Dispersion Models

The air dispersion modeling analysis will be conducted in accordance with air modeling guidelines recommended by the Florida Department of Environmental Protection (DEP). Based on the types of sources for the Project, the Industrial Source Complex Short-term (ISCST3, Version 99155) will be used to predict maximum air quality impacts in areas that are beyond the Project's property boundary. This is latest version of the ISCST3 model available from EPA. All modeling analyses will use the EPA default regulatory options.

In addition, the California Puff model (CALPUFF, Version 5.0) will be used to predict impacts at the PSD Class I area of the Chassahowitzka Wilderness Area (NWA), located about 102 km from the Project site. The Chassahowitzka NWA is the nearest PSD Class I area to the Project; other PSD Class I areas are located more 200 km away. Since the Project is located more than 200 km away from other Class I areas, it is not expected that the Project's emissions will have a significant impact on those Class I areas. As a result, air quality impacts due to the Project's emissions will be assessed at the Chassahowitzka NWA.

The methods and assumptions used in the CALPUFF model will be based on the latest recommendations for modeling analysis as presented in the *Interagency Workgroup on Air Quality Models (IWAQM), Phase 2 Summary Report and Recommendations for Modeling Long Range Transport Impacts* (EPA, 1998). Based on discussions with DEP, the ISCST3 model will be used to determine the "worst-case" operating load and ambient temperature that produces the Project's maximum impact at the Class I area. Based on that analysis, air quality impacts will be predicted with the CALPUFF model using the "worst-case" operating scenario to compare the Project's impacts to Class I significant impact levels (see discussion below).

Emission Inventory

Stack and operating parameters and emission rates of criteria pollutants for the CTs, duct burners, and cooling tower will be developed from design data supplied by equipment vendors for the Project. The design data will be developed for the turbines firing natural gas and operating at 60, 75, and 100 percent of maximum capacity in combined cycle mode. Because the inlet ambient air temperature directly affects turbine combustion and operation, design data will also be provided for three ambient air temperatures that cover the range of temperatures for the Project site location: 32, 59, and 95°F. Air dispersion modeling will be performed for the three operating loads and three ambient temperatures to provide a range of operating conditions that will produce maximum ground-level impacts. These modeling scenarios encompass the operating conditions that will produce the maximum emissions on a short-term basis (i.e., 100 percent load at 32°F) and the minimum plume rise (i.e., 60 percent load at 95°F).

Building Data Processing

Building dimensions for the Project's structures will be entered into the EPA's Building Profile Input Program (BPIP, Version 95086) for the purpose of obtaining direction-specific building heights and widths for all downwash-affected sources. The direction-specific building dimensions will be input to the ISCST3 and CALPUFF models for processing.

Site Geography

The site elevation is about 140 ft above mean sea level (msl). Around the immediate vicinity of the site, the terrain is flat to gently rolling with elevations that range within 10 to 20 ft of the site elevation.

Since the proposed stack heights for the HRSG and cooling tower stacks will be 135 and 43 ft, respectively, the surrounding terrain is below the proposed stack top heights. Therefore, the surrounding terrain can be considered as simple (i.e., less than stack top); the simple terrain option will be assumed for the air modeling analysis.

Based on topographical maps of the Project site, the land use within a 3-km radius of the site can be classified as rural. As a result, the rural option will be selected in the model.

Meteorological Data

Meteorological data will consist of a 5-year record of hourly surface data from the National Weather Service (NWS) station at Tampa International Airport and upper air observations from the NWS station in Ruskin for the years 1987 to 1991. These data are assumed to be representative of the Project site because both the Project site and the weather stations are situated in central Florida to experience similar weather conditions, such as frontal passages. These data have been accepted for use by the DEP in other PSD permit applications to address air quality impacts for other sources locating in this county and adjacent counties.

Significant Impact Analysis

Based on air modeling results for similar projects, the Project's impacts are expected to be below the EPA Class II significant impact levels (SIL) for all pollutants. Therefore, PSD Class II increment and NAAQS analyses with background air emission sources would not be required. The Project's impacts are also expected to be below the EPA Class I SILs for all pollutants at the PSD Class I area of the Chassahowitzka NWA. As a result, cumulative air quality impact analyses with background air emission sources are not expected to be required to assess compliance with PSD Class II increments.

If more detailed modeling indicates that the proposed Project's emissions result in predicted ambient air quality impacts above the EPA Class II or I SILs, discussions will be held with the DEP and emission inventory data of background sources will be obtained as needed.

In addition, pre-construction ambient air quality monitoring is not anticipated to be required for this Project since the air quality impacts are expected to be less than the *de minimis* monitoring thresholds.

Additional Impact Analysis

Additional analyses will evaluate impairment to visibility and the impact of the proposed Project on soils and vegetation in the Project's immediate vicinity. Impacts as a result of general commercial, residential, industrial, and other growth associated with the proposed Project will also be addressed. An air quality related values (AQRV) analysis will also be performed for the PSD Class I area. This analysis will address the effects of the Project's impacts on soils, vegetation, wildlife, and visibility (regional haze) at the Class I area.

Please call me at (352) 336-5600 if you have any questions or comments on the protocol. Calpine greatly appreciates the assistance of the DEP on this important Project.

Very truly yours,

GOLDER ASSOCIATES INC.

Robert C. McCann, Jr.

RCM/arz

cc: Kennard F. Kosky, GAI
Richard A. Zwolak, GAI
Paul Barnett, Calpine Corporation
David S. Dee, Landers & Parsons
Hamilton S. Oven, Florida DEP

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