HOPPING BOYD GREEN & SAMS

ATTORNEYS AND COUNSELORS

123 SOUTH CALHOUN STREET

POST OFFICE BOX 6526

TALLAHASSEE FLORIDA 32314

(904) 222-7500

FAX (904) 224-8551

CARLOS ALVAREZ
JAMES S. ALVES
BRIAN H. BIBEAU
KATHLEEN BLIZZARD
ELIZABETH C. BOWMAN
WILLIAM L. BOYD, IV
RICHARD S. BRIGHTMAN
PETER C. CUNNINGHAM
THOMAS M. DeROSE
WILLIAM H. GREEN
WADE L. HOPPING
FRANK E. MATTHEWS
RICHARD D. MELSON
WILLIAM D. PRESTON
CAROLYN S. RAEPPLE
GARY P. SAMS
ROBERT P. SMITH, JR.
CHERYL G. STUART

RICHARD W. MOORE
ANGELA R. MORRISON
MARIBEL N. NICHOLSON
DIANA M. PARKER
LAURA BOYD PEARCE
GARY V. PERKO
MICHAEL P. PETROVICH
DAVID L. POWELL
DOUGLAS S. ROBERTS
CECELIA C. SMITH

OF COUNSEL
W. ROBERT FOKES

ORIGINAL FILE COPY

August 1, 1991

BY HAND-DELIVERY

Mr. Steve C. Tribble, Director
Division of Records and Reporting
Florida Public Service Commission
101 East Gaines Street
Tallahassee, Florida 32301

Re: Docket No. 910578-EI

Dear Mr. Tribble:

Enclosed for filing on behalf of Florida Power Corporation are the original and fifteen copies of FPC's Post-Hearing Brief.

Very truly yours,

Cheryl G. Stuart

ACK
AFA
APP
CAF
CMU
CTR
EAG
LEG 1
LIN 6
OPC
RCH
SEC 1
WAS
OTH

CGS/cla
Enclosure
cc (w/encl.): Bob Elias
Roland Floyd
Pat Brady

cla:TribbleFPC

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FPSC-RECORDS

DOCUMENT NUMBER-DATE
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FPSC-RECORDS/REPORTING

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION ORIGINAL FILE COPY

In Re: Petition of Florida Power Corporation for Determination of Need for DeBary-Winter Springs 230 kV Transmission Line	)	Docket No. 910578-EI
	)	Filed: August 1, 1991

FLORIDA POWER CORPORATION'S POST-HEARING BRIEF

FLORIDA POWER CORPORATION (FPC), by and through its undersigned attorneys, hereby submits its Post-Hearing Brief in the above-captioned docket. Part I is a summary of the need for and description of the Project. Part II is an issue by issue discussion, organized in the same manner as the issues identified in the Prehearing Order. References to the transcript of the July 8, 1991 hearing are indicated by "Tr. __." Exhibits 1 through 13 were admitted at the hearing and are referenced herein by the number assigned at hearing.

I. Summary of Need and Project Description. On May 3, 1991, FPC filed a Notice of Intent to File Petition for Transmission Line Need Determination. On June 3, 1991, and pursuant to Section 403.537, Florida Statutes, FPC filed its Petition for Determination of Need for the DeBary-Winter Springs 230 kV Transmission Line. A prehearing conference was held on June 24, 1991. Pursuant to notice, a hearing was held before the full Commission on July 8, 1991 in Tallahassee.

FPC seeks a determination of need to construct and operate the DeBary-Winter Springs 230 kV Transmission Line (the "Project"). FPC proposes to originate the Project at FPC's DeBary Generating Plant in Volusia County and terminate it at FPC's existing Winter

Springs Substation in Seminole County. (Tr. 12, 21; Ex. 1) While the final length and routing of the Project will depend on the results of further proceedings under the Transmission Line Siting Act, the expected length of the line is 18-22 miles. (Tr. 12-13, 21; Ex. 2, p. 1) The line will be constructed on single-pole steel or concrete structures, using both single-circuit and double-circuit structures in construction. (Tr. 103-104; Ex. 2, p. 5) The Project is estimated to cost approximately $14 million in 1995 dollars. (Tr. 51, 67, 98; Ex. 2, p. 5 and Appendix A) The expected in-service date of the line is December 1995. (Tr. 12, 66; Ex. 2, p. 6)

FPC has developed transmission system planning criteria to ensure that its transmission system performs in a reliable manner. In this context, transmission lines generally have two ratings, a "normal" rating and an "emergency" rating. The planning criteria state that the flow on any transmission line or transformer will be below its normal rating under normal conditions for any reasonable dispatch of generation. "Normal conditions" include the situation where no transmission line or transformer is out of service. "Reasonable dispatch" includes situations where any one generating unit in the area is out of service, such as for scheduled maintenance or a forced outage. (Tr. 57, 76-78)

In addition, the transmission system planning criteria require the system to be designed so that no line or transformer will reach its emergency rating in the event of the loss of any single transmission line or transformer. Violation of this criteria is

called a "single contingency" violation. (Tr. 14, 58, 76-77; Ex. 2, Appendix F) Similarly, a "double contingency" violation occurs where the loss of any two lines or transformers causes another line or transformer to exceed its emergency rating and result in cascading transmission line failures. (Tr. 76; Ex. 2, Appendix F)

FPC's transmission system planning criteria are consistent with the criteria of the Florida Electric Power Coordinating Group (FCG). (Tr. 57; Ex. 2, pp. 9-10, Appendices F and G)

The Project is needed to avoid various violations of FPC's planning criteria in the Greater Orlando Area within the FPC service area. By December 1995, the loss of the Sanford-North Longwood circuit will cause the Sanford-Sylvan-North Longwood line to exceed its emergency rating. This single contingency violation is corrected with the addition of the Project. (Tr. 13-14, 60, 72-73; Ex. 2, p. 13) Similarly, the addition of the Project will avoid the violation of the single contingency criteria during an outage of the North Longwood-Winter Springs line in December 1997. Without the Project, this outage will cause the Rio Pinar-OUC Stanton line to reach its emergency rating in that year. (Tr. 14, 61, 73-74; Ex. 2, p. 14)

The Project is also needed to address the double contingency outage of the Sanford-Altamonte and Sanford-North Longwood lines. These two lines are located on double circuit structures for approximately 12 miles. The double contingency for these lines, therefore, can occur from a single event, the physical outage of a structure. The outage of this double circuit will cause the

Sanford-Sylvan-North Longwood line to greatly exceed its emergency rating. While the Project will not completely avoid outages during this double contingency, it will reduce the overload to give the dispatchers additional time to take remedial measures to prevent cascading transmission line failures. (Tr. 14, 45-46, 60-61, 74; Ex. 2, pp. 14-16)

The Project also addresses two other transmission reliability issues in the Greater Orlando Area. First, the Project will improve the ability to transfer more power from the electric generation sources at FPC's DeBary Plant and Florida Power & Light's (FPL) Sanford Plant into the Greater Orlando Area. These generation sources are generally located north of the load center. By providing another transmission path into the Area, the Project will enable more power from these sources to more reliably serve customers in this load area. (Tr. 14, 63-64, 74-75; Ex. 2, p. 19)

The Project will also allow the Winter Springs Substation to become a strong source to support the future extension of the 230 kV transmission system further east and south. Presently, the area generally located southeast of the Winter Springs substation is served by a 69 kV transmission grid. As the load in this area continues to grow, additional support to that transmission system will be required. Future extension of the 230 kV system will enhance reliability in that area, and the Project will serve as a favorable starting point for that expansion. (Tr. 14, 64, 75; Ex. 2, p. 19)

Finally, the Project meets another important strategic need for FPC. In 1992, FPC will add combustion turbine (CT) capacity at the DeBary site. (Ex. 2, p. 20) Once these CTs are added, additional generation could not be added at DeBary without violating the transmission reliability criteria. In other words, by the end of 1992, this 2,000 acre site will be "transmission limited". (Tr. 15, 22, 28, 63; Ex. 2, pp. 20-21) While FPC has no current plans to add more generation at DeBary, the site serves as the back-up site for the 1993 CTs planned for Intercession City. (Tr. 15; Ex. 2, p. 21) If FPC is unable to add additional generation at Intercession City in 1993, or if any other contingency arises which would require new capacity to be added on relatively short notice, the large DeBary site is the prime candidate for new capacity. These contingencies might include a delay in the proposed 500 kV transmission line, a delay in expected QF capacity or higher than forecasted load growth. (Tr. 23; Ex. 2, p. 23) The Project will allow up to 450 MWs of capacity to be sited at DeBary in addition to the 1992 CTs. (Tr. 28; Ex. 2, pp. 17, 22) Removing the transmission limitation at DeBary with this Project to allow for flexibility in generation siting is prudent utility planning. (Tr. 16; Ex. 2, pp. 19-20, 23-24)

A number of alternatives to the Project were examined and evaluated from both technical and cost perspectives. The only single-line alternative which offered the same benefits was a DeBary-Winter Park East line. This alternative is essentially a longer, more expensive version of the Project. It provides no

additional technical benefits and is more costly than the Project. (Tr. 65; Ex. 2, p. 26) None of the possible combinations of lines considered provided the same benefits at a smaller cost. (Tr. 65; Ex. 2, p. 31) Therefore, the Project is the best alternative to meet the needs it is designed to address, taking into account the need for electric system reliability and integrity, and the need for abundant, low-cost electrical energy to assure the economic well-being of the citizens of Florida.

FPC should be granted a determination of need for the DeBary-Winter Springs 230 kV Transmission Line.

II. FPC's Positions on Issues. FPC takes the following final positions on the issues identified in the Prehearing Order.

Issue 1: Is the proposed Project needed for electric system reliability and integrity?

> Yes. The Project is needed by December 1995 to maintain single contingency reliability on FPC's transmission system. Unless the line is in-service by December 1997, single contingency criteria will be violated for an additional contingency. The Project will also address a double contingency in this time frame.

One measure of electric system reliability and integrity is the transmission system planning criteria used by FPC. The Project will avoid the violation of "single contingency" criteria in December 1995. "Single contingency" criteria means, in part, that no line should reach its emergency rating for the loss of any other transmission system component. (Tr. 14, 58, 76-77; Ex. 2, Appendix F) Without the Project, the loss of the Sanford-North Longwood line will cause the Sanford-Sylvan-North Longwood line to exceed

its emergency rating. This single contingency violation is corrected with the addition of the DeBary-Winter Springs line. (Tr. 58-60, 72-73; Ex. 2, pp. 13-14, 16)

Another single contingency violation is corrected with the Project in December 1997. In that time frame, the loss of the North Longwood-Winter Springs line will cause the Rio Pinar-OUC Stanton line to reach its emergency rating. This situation is corrected with the addition of the Project. (Tr. 61, 73-74; Ex. 2, pp. 14, 16)

Finally, the Project will address a double contingency violation in December 1995. The loss of the Sanford-Altamonte and Sanford-North Longwood double circuit will cause the Sanford-Sylvan-North Longwood line to greatly exceed its emergency rating. While the Project will not totally eliminate the loss of load, it will reduce the overload to allow time for corrective measures to be taken by the dispatchers. (Tr. 45, 60-61, 74; Ex. 2, pp. 14-16)

The Project will thus provide a more reliable system in the Greater Orlando Area served by FPC.

Issue 2: Is the proposed Project needed for abundant, low-cost electrical energy to assure the economic well-being of the citizens of this state?

Yes. The Project is needed to overcome transmission limitations at the DeBary generating site so that FPC can reliably disperse power from that site if additional CTs need to be added on short notice. The Project is also needed to minimize the impact on service to customers in a number of single and double contingency situations.

The proposed starting point for the Project is FPC's DeBary generating site in Volusia County. In 1992, FPC plans to add 340

MW of combustion turbine (CT) capacity at the 2,000 acre DeBary site, for a total of 650 MWs. (Tr. 22, 63; Ex. 2, pp. 12, 22) After that addition, the DeBary site cannot accommodate additional generation capacity without violating transmission reliability criteria. The site will, in fact, be transmission limited. (Tr. 28, 62-63; Ex. 2, p. 20) With the addition of the Project, the site can accommodate approximately an additional 450 MWs of generating capacity without violating transmission reliability criteria. (Tr. 16, 28; Ex. 2, pp. 19-22)

In 1993, FPC plans to add 340 MWs of CTs at its Intercession City site. (Ex. 2, pp. 21-24) If for any reason, however, FPC is unable to license the proposed 1993 CTs at Intercession City, the back-up site for these CTs is the DeBary site. (Tr. 15, 23; Ex. 2, pp. 21, 23-24) Even under the current schedule for the Project, if DeBary is used as the site for the 340 MWs of CTs scheduled for Intercession City, there will be a two-year period where FPC customers would be at risk. This means there would be limits on the output of the capacity at DeBary if certain transmission lines were out of service. With a December 1995 in-service date, this Project will limit that period of risk to two years. (Tr. 29-30; Ex. 2, pp. 23-24)

While FPC has no current plans for additional capacity at DeBary beyond the CTs planned for 1992, having a relatively large site unconstrained by transmission limits is prudent utility planning. (Tr. 15-16; Ex. 2, pp. 22-24) There may be a number of reasons why FPC would need to add generation at DeBary on short

notice. For example, contracted QF capacity may not come on line as expected; load growth may be higher than anticipated; or the 500 kV tie line connecting Florida with the Southern system may be delayed from its currently planned in-service date of 1997. (Tr. 17, 23; Ex. 2, pp. 23-24) The Project will give FPC important generation planning and siting flexibility to meet the energy needs of its customers. (Ex. 2, pp. 23-24)

The number of customers affected by the contingencies addressed by this Project are significant. Without the Project, approximately 95,000 customers could be affected by the single contingency outage of the Sanford-North Longwood line; 16,000 customers could be affected by the outage of the North Longwood-Winter Springs line; and 500,000 customers could be affected by the double contingency outage of Sanford-Altamonte and Sanford-North Longwood. (Tr. 59-61; Ex. 2, pp. 13-15)

The Project is therefore needed for abundant, low-cost electrical energy to serve FPC customers in this area.

Issue 3: Have the major transmission alternatives been adequately addressed?

Yes. FPC examined a number of alternatives that would address the need to maintain transmission reliability by protecting against various contingency situations, and that would overcome the DeBary site's transmission limitations. The only single-line alternative that would solve all of these problems is a longer, more expensive version of the same line. While there are several two-line projects that would address these needs, each of these combinations is more costly than the Project and is less desirable from a technical viewpoint.

FPC evaluated alternatives to the Project that could meet the same needs the Project is designed to address. These alternatives fell into three groups. Group A were those alternatives which satisfied all of the same needs as the Project. Group B alternatives corrected the DeBary-North Longwood corridor violations (the 1995 single contingency and double contingency) and would support additional generation capacity at DeBary, but would not correct the Rio Pinar-OUC Stanton violation. Group C alternatives corrected the Rio Pinar-OUC Stanton violation, but did not address any of the other needs for the Project. Alternatives from Groups B and C can be combined to create a two line project to address all of the needs. (Tr. 64-65; Ex. 2, pp. 25-26)

Only one project fell into Group A. A line from DeBary to Winter Park East would solve all of the problems the Project is designed to address. This line, however, would be approximately 24 miles long and cost approximately $17 million. It is a longer, more expensive version of the Project, but provides no additional benefits. (Tr. 65; Ex 2, p. 26)

Three alternatives fell into Group B. Lines from DeBary to either North Longwood, Piedmont, or Sorrento, were also considered. None of these alternatives would correct the 1997 single contingency violation, and would only partly support additional CTs at DeBary. (Ex. 2, pp. 27-28, 31) In this group, the DeBary-North Longwood line is essentially a segment of the Project. The proposed Project does not interconnect at the North Longwood Substation. A major substation expansion would be necessary to

interconnect yet another line at North Longwood. In addition to the reliability concern of having another line interconnected at North Longwood, the cost of this alternative, when coupled with an alternative from Group C, exceeds the estimated cost of the Project and makes this alternative unattractive. (Tr. 101-103; Ex. 2, pp. 27-28, 31)

The alternatives in Group C included a line from North Longwood to Winter Springs, from Altamonte to Winter Park East, and from OUC Stanton to Rio Pinar. Each of these alternatives would correct the 1997 single contingency violation, but would have to be coupled with an alternative from Group B to address the 1995 single contingency and to support additional CTs at DeBary. From both a cost and technical standpoint, any combination of alternatives from Groups B and C are unacceptable when compared to the Project. (Tr. 65; Ex. 2, pp. 29-31)

Finally, at the staff's request, FPC evaluated an alternative line running from the OUC Stanton Plant to the Winter Springs Substation. That line, which would be approximately 22 miles long, would not correct the 1995 single contingency outage. For that reason, it is not considered an alternative to this Project. (Tr. 94; Ex. 10)

FPC considered a number of transmission alternatives to the Project. All of the alternatives considered were more costly and less technically desirable. The proposed DeBary-Winter Springs line is the best alternative to meet the needs identified in the study.

Issue 4: Have the specific situations which indicate a need for the Project been adequately addressed?

> Yes. The Project is needed to maintain and improve the reliability of service to FPC's customers in the Greater Orlando Area and to overcome transmission limitations at the DeBary generating site. Specifically, the Project will maintain single contingency reliability; will improve transmission reliability in the Greater Orlando Area by minimizing the customer impact of an outage of a double-circuit transmission line; will improve the power transfer capability on FPC's system by providing an additional transmission path from the electrical sources in the north at DeBary and FPL's Sanford Plant to load in the Greater Orlando Area in the south; will support future extension of the 230 kV and 69 kV transmission grid as the load continues to grow in the eastern portion of FPC's service territory; and will overcome transmission limitations at the DeBary generating site.

As discussed in response to Issues 1 and 2 above, the Project will improve the reliability of service in the Greater Orlando Area, address several transmission reliability situations, and overcome transmission limitations at the large DeBary generating site. The Project will also provide two additional transmission reliability benefits. First, it will improve the power transfer capability on FPC's system by providing an additional transmission path from the generating sources at FPC's DeBary Plant and FPL's Sanford Plant to the load in the Greater Orlando Area. The Project will result in a more strongly interconnected utility system in this area, and facilitate the movement of power from the generation in the north to the load served further south. The Project will not, however, impact the import capability at the Florida-Georgia border. (Tr. 18, 74-75; Ex. 2, p. 19)

Second, the Project will establish Winter Springs as a new source. This is particularly important as load continues to grow further to the east and south of the Winter Springs Substation. That area is presently served by a 69 kV transmission grid. As the load continues to grow, it is likely that the 230 kV grid will need to be extended to improve service in that area. The Project will support the future extension of that 230 kV system from Winter Springs. (Tr. 64, 75; Ex. 2, p. 19)

In short, the Project is the best alternative to address multiple needs in a cost effective manner.

Issue 5: Will there be adverse consequences to the electrical system if approval of the Project is delayed or denied?

Yes. FPC's customers will face a risk of more frequent and more severe outages if approval of the Project is delayed or denied.

Any delay in the proposed in-service date of December 1995 will place FPC's customers at risk of losing service in the event of the single contingency outage of the Sanford-North Longwood line. (Tr. 69; Ex. 2, p. 32) That outage would require FPC to reduce generation by about 500 MWs to reduce the flow on the Sanford-Sylvan-North Longwood line to its normal rating. If this reduction were required at a time when the system was capacity limited, the reduction in generation would result in rotating blackouts affecting approximately 95,000 customers at a time. (Tr. 59-60; Ex. 2, pp. 13-14)

A double contingency outage in this time frame would also have severe consequences without the Project. The loss of both circuits

(Sanford-Altamonte and Sanford-North Longwood) would separate the Greater Orlando Area load center from all of the DeBary generation, the Sanford generation, and from the support of the FPL grid through Sanford. This separation would overload other lines into the area and could result in cascading failure and widespread outages affecting approximately 500,000 customers in the Greater Orlando Area. While the Project cannot eliminate this overload entirely, it does reduce the maximum loading on the line to give system dispatchers more time to react in a way to affect fewer customers on a more controlled basis. (Tr. 45-46, 60-61; Ex. 2, pp. 14-15)

Delay in licensing beyond 1997 would have additional adverse consequences. (Ex. 2, p. 32) By that time, the loss of the North Longwood-Winter Springs line would require FPC to reduce approximately 85 MWs of load to respond. Service to approximately 16,000 customers could be interrupted on a rotating basis to alleviate this overload. (Tr. 61; Ex. 2, p. 14) Finally, the single contingency loss of the Rio Pinar-Stanton line in December 1997, would require corrective action that could affect service to approximately 8,000 customers. (Tr. 61; Ex. 2, p. 14)

If the licensing of the Project is denied entirely, then another 230 kV transmission alternative to correct the 1995 and 1997 contingency criteria would be required. However, FPC has evaluated the available alternatives and found all of them to be less desirable from a technical viewpoint and more costly than the Project. (Tr. 70; Ex. 2, pp. 32-33)

In summary, there are significant adverse consequences to FPC and its customers if approval of the Project is delayed or denied.

Issue 6: Are the DeBary Plant in Volusia County and the Winter Springs Substation in Seminole County the appropriate starting and ending points for the Project?

Yes.

Issue 7: Has FPC satisfied the informational requirements of Rule 25-22.076, F.A.C.?

Yes. This issue was stipulated by the parties.

RESPECTFULLY SUBMITTED this 1st day of August, 1991.

HOPPING BOYD GREEN & SAMS

By: Carolyn S. Raepple
Cheryl G. Stuart
Carolyn S. Raepple
Post Office Box 6526
Tallahassee, Florida 32314
(904) 222-7500

and

Pamela I. Smith
FLORIDA POWER CORPORATION
Post Office Box 14042
St. Petersburg, Florida 33733

ATTORNEYS FOR FLORIDA POWER CORPORATION

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a copy of the foregoing Post-Hearing Brief has been furnished by hand delivery this 1st day of August, 1991, to:

Robert Elias
Florida Public Service Commission
101 East Gaines Street
Tallahassee, Florida 32399-0850

Carolyn L. Ruppel
ATTORNEY