

**BEFORE THE FLORIDA  
PUBLIC SERVICE COMMISSION**

**DOCKET NO. 040206-EI  
FLORIDA POWER & LIGHT COMPANY**

**IN RE: FLORIDA POWER & LIGHT COMPANY'S  
PETITION TO DETERMINE NEED FOR  
TURKEY POINT UNIT 5  
ELECTRICAL POWER PLANT**

**DIRECT TESTIMONY OF:**

**C. MARTIN MENNES**

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5                   **March 8, 2004**

6  
7           **Q.     Please state your name and business address.**

8           A.     My name is C. Martin Mennes. My business address is 9250 West Flagler  
9           Street, Miami, FL 33174.

10  
11          **Q.     By whom are you employed and what is your position?**

12          A.     I am employed by Florida Power & Light Company (“FPL”) as Vice President  
13          of Transmission and Substation.

14  
15          **Q.     Please describe your duties and responsibilities as Vice President of**  
16          **Transmission and Substation.**

17          A.     I am responsible for FPL’s bulk and regional transmission planning,  
18          operations, engineering and construction. This includes responsibility for the  
19          reliability and security of the FPL transmission system, which includes  
20          approximately 6,379 circuit miles of transmission lines.

1       **Q.    Please describe your educational background, business experience, and**  
2       **professional associations.**

3       A.    I graduated with honors from the University of Florida in 1968 with a  
4       Bachelor of Science degree in Electrical Engineering.  I earned a Post-  
5       Graduate Certificate of Proficiency in Electrical Engineering from the  
6       University of Miami in 1974, and completed the Program for Management  
7       Development from the Harvard University Graduate School of Business in  
8       1981.  I am a registered Professional Engineer in the State of Florida.

9  
10       I began working at FPL in 1968 in the area of protective relay and control  
11       systems.  Since then I have held the positions of Manager of System  
12       Protection, Manager of System Operations, Manager of Bulk Power Markets,  
13       Director of Power Supply, Vice President, Transmission Operations and  
14       Planning, and Vice President, Transmission and Substation.  On July 1, 2003,  
15       I assumed my present position.

16  
17       My industry-related activities include serving as the chair of the following  
18       organizations:  North American Electric Reliability Council (“NERC”)  
19       Performance Subcommittee, NERC Security Coordinator Subcommittee,  
20       Southeastern Electric Reliability Council (“SERC”) Operating Committee  
21       (“OC”).  I have represented the transmission owners by serving as vice chair  
22       of the Industry Commercial Practices Working Group and the NERC Market  
23       Interface Committee.  Presently, I am the Investor Owned Utility

1 representative to the NERC-OC and chair of the Florida Reliability  
2 Coordinating Council (“FRCC”)-OC. I also have worked on numerous NERC  
3 committees and taskforces including the Transmission Transfer Capability  
4 Taskforce and the Electronic Information Network Taskforce.

5

6 **Q. What is the purpose of your testimony?**

7 A. The purpose of my testimony is to provide an overview of the FPL electric  
8 system. I will also discuss FPL’s continuing concern with the growing  
9 imbalance between load and generation in the Southeast Florida area and its  
10 impact on costs. In addition, I will describe the transmission-related costs  
11 assessment that was performed as part of this Request for Proposals (“RFP”).

12

13 **Q. Are you sponsoring any part of the Need Study for this proceeding?**

14 A. Yes, I co-sponsor Section V.B. and sponsor Appendix A of the Need Study.

15

16 **Q. Please describe FPL’s transmission system.**

17 A. The FPL transmission system is comprised of 6,379 circuit miles of  
18 transmission lines. The FPL transmission system is designed to integrate in a  
19 reliable and cost effective manner all of FPL’s generation resources to serve  
20 FPL’s retail customers and to meet FPL’s firm long-term transmission service  
21 obligations. It is designed consistent with NERC and FRCC reliability  
22 criteria.

1       **Q. FPL has stated there is a load / generation imbalance in the southeast**  
2       **area of its service territory. Please explain that imbalance.**

3       A. The southeast area of FPL's system is the region south and east of and  
4       including FPL's Corbett Substation; this includes a portion of southern Palm  
5       Beach County and Broward and Miami-Dade counties. By 2007 FPL will  
6       have about 12,000 MW of load in this area, and the load is forecasted to  
7       continue to grow by about 250 MW per year. Currently, FPL has only 6,459  
8       MW of installed capacity in the Southeast Florida area, and there are no  
9       planned generation additions in this area before 2007. As the load in  
10      Southeast Florida continues to grow, FPL will need to rely upon its  
11      transmission system to import greater amounts of power into the area to serve  
12      the load. However, FPL has a finite capability of about 7,000 MW to import  
13      power into Southeast Florida. This import capability is lower when multiple  
14      generating facilities or transmission facilities in Southeast Florida are  
15      unavailable due to maintenance or forced outages. This is the load /  
16      generation imbalance issue which FPL has identified.

17  
18      **Q. What impact does the Southeast Florida imbalance have on transmission**  
19      **costs to FPL's customers related to the addition of generation resources?**

20      A. Transmission integration costs tend to be higher for generation additions  
21      located outside of Southeast Florida. Also, locating new generation units  
22      outside of Southeast Florida increases the amount of power moved over  
23      longer distances. Depending on the specifics of the transmission facilities

1 required for integration, increased transmission losses could result. Higher  
2 transmission losses increase costs because the capacity and energy that is lost  
3 must be replaced. In addition, the location of new generation resources  
4 outside of Southeast Florida could, depending on the impact the transmission  
5 facilities required for integration have on the capability to import power into  
6 this area, affect the extent to which FPL will need to uneconomically dispatch  
7 higher heat rate gas turbines in Southeast Florida to maintain reliability.

8  
9 **Q. Has FPL made others aware of this growing imbalance between**  
10 **generation and load in the Southeast Florida area?**

11 **A.** Yes. In the fall of 2002, upon completion of a transmission assessment, FPL  
12 identified a concern regarding the growing magnitude of the load to  
13 generation imbalance combined with the finite capability to import power into  
14 Southeast Florida for 2007 and beyond. In November 2002, FPL posted on its  
15 OASIS website information about transmission capability on its system,  
16 including information relating to concerns associated with the Southeast  
17 Florida load / generation imbalance.

18  
19 As FPL continued to assess further this imbalance and generation expansion  
20 alternatives in 2007 and beyond, FPL updated this information on its OASIS  
21 website. FPL's Ten Year Site Plan, issued on April 1, 2003, highlights this  
22 issue and refers to its OASIS website where this information has been made  
23 available. FPL's concern with this growing imbalance in Southeast Florida,

1 the need to address this issue, and the real transmission-related costs that will  
2 be incurred as a result this growing imbalance, were expressly addressed in  
3 Part I.F. of the RFP entitled “Geographic Preference.”  
4

5 **Q. Will the addition of Turkey Point Unit 5 improve the Southeast Florida**  
6 **load / generation imbalance?**

7 A. Yes.  
8

9 **Q. In addition to improving the growing load / generation imbalance in**  
10 **Southeast Florida, would the addition of Turkey Point Unit 5 otherwise**  
11 **enhance FPL’s ability to provide reliable service in Southeast Florida?**

12 A. Yes. There is no question that the addition of FPL’s Turkey Point Unit 5  
13 would enhance FPL’s operating flexibility and reliability margin for Southeast  
14 Florida.  
15

16 While FPL always strives to plan and operate its system in a reliable manner, I  
17 think it is irrefutable that, from a reliability perspective, it is preferable to have  
18 generation located in close proximity to major load centers whenever possible.  
19 The siting of at least some generation close to the load center certainly adds a  
20 level of operating flexibility and margin that contributes to increased  
21 reliability.  
22

1 Moreover, siting generation near load reduces the risk associated with having  
2 to construct transmission facilities that could be necessary to move power  
3 from remote locations. The siting, licensing, permitting and construction of  
4 major transmission facilities can take a significant amount of time. In fact, in  
5 some instances major transmission facilities necessary to integrate certain  
6 generating options could take as long or longer than permitting and  
7 constructing the generating facility.

8  
9 **Q. Please discuss in general terms how the transmission assessment for this**  
10 **RFP was undertaken?**

11 A. The transmission assessment for this RFP involved load flow studies and  
12 economic analyses to determine what transmission facilities and/or upgrades  
13 were necessary to integrate the proposed generation options in a reliable and  
14 cost effective manner. The Commission recognized the appropriateness of the  
15 evaluation of transmission integration costs in approving FPL's need for the  
16 Martin Unit 8 and Manatee Unit 3 plants in Docket Nos. 020262-EI and  
17 020263-EI. Mr. Dag Reppen, FPL's independent transmission expert,  
18 discusses this analysis in his testimony.

19  
20 FPL enhanced its analytical approach in this RFP by incorporating two major  
21 improvements in the economic analysis in order to better identify and consider  
22 certain costs that will ultimately be paid for by FPL's customers. These  
23 improvements address the economic impact of increased transmission system



1 losses and increased operating costs resulting from the uneconomic dispatch  
2 of gas turbines in Southeast Florida. These improved methods of analysis for  
3 evaluating the capacity options for this RFP were applied to find the most  
4 cost-effective option for FPL.

5  
6 **Q. Please discuss transmission losses.**

7 A. Transmission losses are a real cost of service borne by FPL's customers.  
8 Consideration of transmission losses is particularly important to FPL  
9 customers due to the vast geographic expanse of its service territory because  
10 moving power over long distances generally results in higher losses. Load  
11 flow simulations conclusively show that the amount of generation needed to  
12 serve a given amount of load varies depending on the electrical location and  
13 characteristics of the generator(s) serving a given load. Transmission losses  
14 increase costs because the capacity and energy that is lost must be replaced.

15  
16 The transmission loss assessment is applied to all capacity options, including  
17 FPL's Next Planned Generating Unit, using the same methodology.  
18 Transmission losses can be quantified and converted to costs. The recognition  
19 of transmission losses in an RFP analysis is necessary for an accurate  
20 evaluation of cost-effectiveness. Mr. Reppen, an independent transmission  
21 expert, and Dr. Sim, discuss this analysis in their respective testimony. FPL  
22 believes that the evaluation of transmission losses is a significant  
23 enhancement to the RFP process for the benefit of our customers.

1       **Q.    Please explain how increased operating costs are an issue with respect to**  
2       **the load imbalance you have described?**

3       A.    FPL's customers bear increased operating costs arising from the need to  
4       operate Southeast Florida gas turbines to maintain reliability instead of other  
5       more economic generation located outside of Southeast Florida. These costs  
6       could be reduced if efficient new generation is located within Southeast  
7       Florida, or if the finite capability to import power into Southeast Florida is  
8       increased by constructing new transmission facilities. Thus, the identification  
9       and inclusion of these costs in evaluating potential generation options is  
10      appropriate and is in the interest of FPL's customers. This is another example  
11      of an improvement to FPL's RFP process and economic analysis. Mr.  
12      Reppen, FPL's independent transmission expert, discusses this analysis in his  
13      testimony.

14  
15      **Q.    Does the addition of Turkey Point Unit 5 permanently address the load**  
16      **and generation imbalance in Southeast Florida?**

17      A.    No. The addition of Turkey Point Unit 5 constitutes a major improvement in  
18      the load and generation imbalance in Southeast Florida. However, continued  
19      load growth in this area will eventually require additional generation to be  
20      added in the area or an increase in import capability through the addition of  
21      new transmission facilities.

22

23

1      **Q.    Does this conclude your testimony?**

2      **A.    Yes.**