

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition for Determination)
of Need of Hines Unit 2 Power)
Plant)

DOCKET NO. 001064-EI

ORIGINAL

Submitted for filing: August 7, 2000

DIRECT TESTIMONY
OF PETER M. O'NEILL

ON BEHALF OF
FLORIDA POWER CORPORATION

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**IN RE: PETITION FOR DETERMINATION OF NEED
BY FLORIDA POWER CORPORATION
FPSC DOCKET NO. _____**

DIRECT TESTIMONY OF PETER M. O'NEILL

1

2

I. INTRODUCTION AND QUALIFICATIONS.

3

4 **Q: Please state your name, your employer, and business address.**

5 **A.** My name is Peter M. O'Neill. I am employed by Florida Power Corporation ("FPC"
6 or the "Company"). My business address is Florida Power Corporation, 6565 38th
7 Avenue, North, St. Petersburg, Florida, 33710.

8

9 **Q. What is your position with the Company?**

10 **A.** I am a Staff Engineer in the Company's Transmission Planning Department.

11

12 **Q. Please tell us about your educational background and work experience.**

13 **A.** I received a Bachelors Degree in Electrical Engineering from Virginia Polytechnic
14 Institute and State University in 1968 and a Masters of Business Administration
15 from the Florida Institute of Technology in 1978.

16

17

18

19

I was employed by Columbus and Southern Ohio Electric Company in the
Transmission Design Department from 1968 to 1973. Since 1973, I have been
employed by FPC in various planning and engineering design positions, including
almost eighteen years in the Company's Transmission Planning Department.

1 Currently, I am responsible for planning FPC's bulk transmission system,
2 overseeing work associated with determining FPC's transmission transfer capability.

3

4 **Q. Are you a member of any professional organizations?**

5 **A.** Yes. I am a member of the Institute of Electrical and Electronic Engineers. I am
6 also the Florida Reliability Coordinating Council's ("FRCC") representative on the
7 North American Electric Reliability Council ("NERC") Reliability Assessment
8 Committee, which is responsible for assessing the reliability of the North American
9 Electric Grid. I further serve on the FRCC Compliance Working Group, which is
10 responsible for developing a compliance program for, and monitoring compliance
11 with, the NERC Planning Standards. I am a Registered Professional Engineer in the
12 State of Florida, and have been since 1974.

13

14 **II. PURPOSE AND SUMMARY OF TESTIMONY.**

15

16 **Q. What is the purpose of your testimony in this proceeding?**

17 **A.** I am testifying on behalf of FPC, in support of its Petition for Determination of
18 Need, by describing FPC's existing transmission and distribution facilities and
19 describing and explaining the need for the transmission facility additions and
20 upgrades required by the addition of the Hines 2 unit at the Hines Energy Complex
21 ("HEC") in November 2003.

22

23

1 **Q. Are you sponsoring any sections of FPC's Need Study, Exhibit ____, (JBC-1)?**

2 **A.** Yes. I am sponsoring Section II, C, "Transmission and Distribution Facilities,"
3 which generally identifies FPC's current transmission and distribution facilities, and
4 Sections VII, F, "Transmission Requirements" and VII, H. 4., "Transmission
5 Interconnection Facilities," which describe the transmission facility additions,
6 upgrades, and costs associated with the addition of the Hines 2 unit at the HEC.

7
8 **Q. Are you sponsoring any exhibits to your testimony?**

9 **A.** Yes. I am sponsoring the following exhibits to my testimony:

**PMO-1 Map of FPC's Existing Generation Plants, Substations, and
Transmission Lines.**

**PMO-2 Map of Transmission Network in the Vicinity of the Hines
Energy Complex.**

10

11 **Q. Please give us a summary of your testimony.**

12 **A.** In part III of my testimony, I generally describe the Company's existing
13 transmission and distribution facilities. I am supporting this information in the
14 Company's Need Study for the Hines 2 plant at the HEC.

15 In part IV, I turn to the transmission facility additions and upgrades that the
16 Company has determined are needed with the proposed addition of the Hines 2 plant
17 at the HEC in Polk County, Florida. I will describe those additions and upgrades
18 and explain the need for them.

19

20

1 **III. FPC’S TRANSMISSION AND DISTRIBUTION FACILITIES.**

2

3 **Q. Can you generally describe the Company’s current transmission and**
4 **distribution facilities?**

5 **A.** Yes. FPC owns approximately 4,700 miles of transmission lines and over 80
6 transmission substations. FPC’s distribution system includes over 25,000 circuit
7 miles and over 270 distribution substations. FPC has 54 points of interconnection
8 with other utilities within its transmission system, and it is part of a nationwide
9 interconnected power network. The existing FPC system in the State of Florida,
10 including generating plants, substations, transmission lines and service area, is
11 shown on the system map in Exhibit __ (PMO-1).

12

13 **IV. HINES 2 TRANSMISSION FACILITIES.**

14

15 **Q. Are any transmission facility upgrades or additions required in connection with**
16 **the addition of the Hines 2 plant at the HEC to FPC’s system?**

17 **A.** Yes. Based on my evaluation of the addition of the Hines 2 plant to FPC’s system
18 for compliance with FPC’s transmission planning criteria and sound transmission
19 engineering practice in the utility industry, I have determined that the following
20 transmission facility upgrades or additions are required as shown on Exhibit _____
21 (PMO-2).

1 (1) The existing Hines Energy substation must be expanded by adding one more
2 230kv substation bay to accommodate additional substation terminations, in
3 particular, a second Hines-Barcola 230kv transmission circuit.

4 (2) To connect Hines 2 to the transmission grid, a second circuit must be added
5 to the existing Hines-Barcola 230kv line. This additional transmission capacity,
6 which the Siting Board certified in 1994, will be required when both Hines 1 and
7 Hines 2 are on line. The Hines-Barcola 230kv, circuit 1 is currently constructed on
8 double circuit, steel pole structures for 3.1 miles between FPC's Hines Energy
9 substation and FPC's Barcola substation. A second, 3.1 mile circuit is proposed to
10 be installed on the existing steel pole structures with the addition of Hines 2 using
11 bundled 954 kcm ACSR conductor per phase.

12 (3) The existing single circuit, 3.97 mile, 230kv transmission interconnection
13 between FPC's Barcola substation and Tampa Electric Company's ("TECO")
14 Pebbledale substation must also be upgraded to accommodate the projected power
15 flow following the addition of Hines 2 and other planned, non-FPC units to the
16 transmission grid. FPC proposes to replace the existing single circuit structures with
17 new double circuit, steel pole structures and upgrade the conductor on the existing
18 circuit from single 954 kcm ACSR conductor to bundled 954 kcm ACSR conductor
19 per phase. FPC and TECO will be negotiating the upgrade of this interconnection in
20 the year 2000, with the final scope and responsibility for the work on this upgrade
21 finalized by a Transmission Interconnection and Operating Agreement between FPC
22 and TECO.

23

1 **Q. Can you generally explain the process by which you determined that**
2 **transmission facility upgrades and additions were required with the addition of**
3 **Hines 2 to FPC's system at the HEC?**

4 **A.** Yes. On a yearly basis, the FPC Transmission Planning Department reviews the
5 transmission facility additions or upgrades required on the FPC transmission system
6 based on the latest FRCC load flow cases. These load flow cases reflect the planned
7 generation additions as proposed in each utility's Ten-Year Site Plan ("TYSP") as
8 filed April 1 of each year, including FPC's TYSP showing its proposed generation
9 additions. Since 1997, FPC has included Hines 2 in its TYSP and the FRCC load
10 flow cases have included a Hines 2 unit as a result.

11 Based on the FRCC load flow cases, FPC's Transmission Planning
12 Department performs load flow analyses and determines the need for transmission
13 facility additions or upgrades based on meeting FPC's "Transmission Planning
14 Reliability Criteria," Section 4 as filed on FERC Form No. 715 "Annual
15 Transmission Planning and Evaluation Report." This ongoing analysis of the FPC
16 transmission system based on the latest FRCC load flow cases and FPC planning
17 criteria has identified the need for a Hines-Barcola 230kv circuit 2 line and an
18 upgrade of the existing Barcola-Pebbledale 230kv interconnection for several years.

19
20 **Q. Why does the Hines Energy 230kv substation need to be expanded for Hines 2?**

21 **A.** To accommodate the Hines 2 power block connection to the transmission grid and to
22 provide a substation termination for the Hines-Barcola 230kv, circuit 2 addition, the

1 Hines Energy substation must be expanded by adding one more 230kv substation
2 bay to provide two additional substation terminations.

3

4 **Q. Why is there a need for an additional 230kv circuit from FPC's Hines Energy**
5 **substation to FPC's Barcola substation?**

6 **A.** With the addition of the proposed Hines 2 unit at the HEC in November 2003, the
7 projected, total net generation at the HEC with Hines 1 and 2 will be 977 MW in the
8 summer and 1,096 MW in the winter. There are three existing 230kv transmission
9 circuits from the HEC that were installed in connection with the Hines 1 unit — two
10 circuits to FPC's Fort Meade substation and a single circuit constructed on double
11 circuit structures to FPC's Barcola substation. With the proposed addition of Hines
12 2 in November 2003, a forced outage of the existing Hines-Barcola 230kv, circuit 1
13 (3.1 miles) could thermally overload the existing FPC Fort Meade-West Lake Wales
14 230kv line under certain operating conditions in violation of FPC's transmission
15 planning criteria. Accordingly, the addition of a second circuit to the Hines-Barcola
16 230kv line is required to alleviate this potential contingency overload situation.

17

18 **Q. Why is there a need to upgrade the Barcola-Pebbledale 230kv line?**

19 **A.** The loading on the existing, single circuit, Barcola (FPC) to Pebbledale (TECO)
20 230kv interconnection is affected by the generation additions at the HEC, Seminole
21 Electric Cooperative, Inc.'s Payne Creek Plant, and TECO's Polk Plant. All three
22 utilities are planning to add generation at these sites in the 2000/04 timeframe. In
23 FPC's transmission planning studies, by the winter of 2003/04, a forced outage of

1 the existing FPC Fort Meade-West Lake Wales 230kv (19.87 miles) circuit will
2 overload the Barcola-Pebbledale 230kv interconnection in violation of FPC's
3 transmission planning criteria. Accordingly, an upgrade of the Barcola-Pebbledale
4 230kv line is required to alleviate this potential contingency overload situation.
5

6 **Q. Has the transmission facility addition for the Hines 2 unit at the HEC been**
7 **authorized by the Florida Siting Board?**

8 **A.** Yes. The Hines-Barcola circuit 2 addition required for the connection of the Hines 2
9 unit with FPC's transmission system was authorized and licensed as an "associated
10 facility" in the Certification of the HEC by the Governor and Cabinet, sitting as the
11 Florida Siting Board, in 1994.
12

13 **Q. How much will the transmission facility upgrades and additions for the Hines 2**
14 **unit cost?**

15 **A.** All of the transmission facility additions and upgrades that I have described together
16 will cost FPC an estimated \$5.6 million. This is the amount listed for transmission
17 facility additions or upgrades in item 11 in Attachment D to FPC's Request for
18 Proposals, Appendix P (JBC-1).
19
20
21
22
23

V. CONCLUSION.

1

2

3 **Q. In your opinion, are the transmission facility upgrades and additions that you**
4 **have described for the addition of the Hines 2 plant to FPC's system**
5 **reasonable?**

6 **A.** Yes. In my professional judgment, and based on my experience and evaluation of
7 the impact of adding the Hines 2 unit to FPC's system, these transmission facility
8 upgrades and additions are what will be reasonably required to accommodate the
9 addition of the Hines 2 unit to the FPC transmission system by November 2003.

10

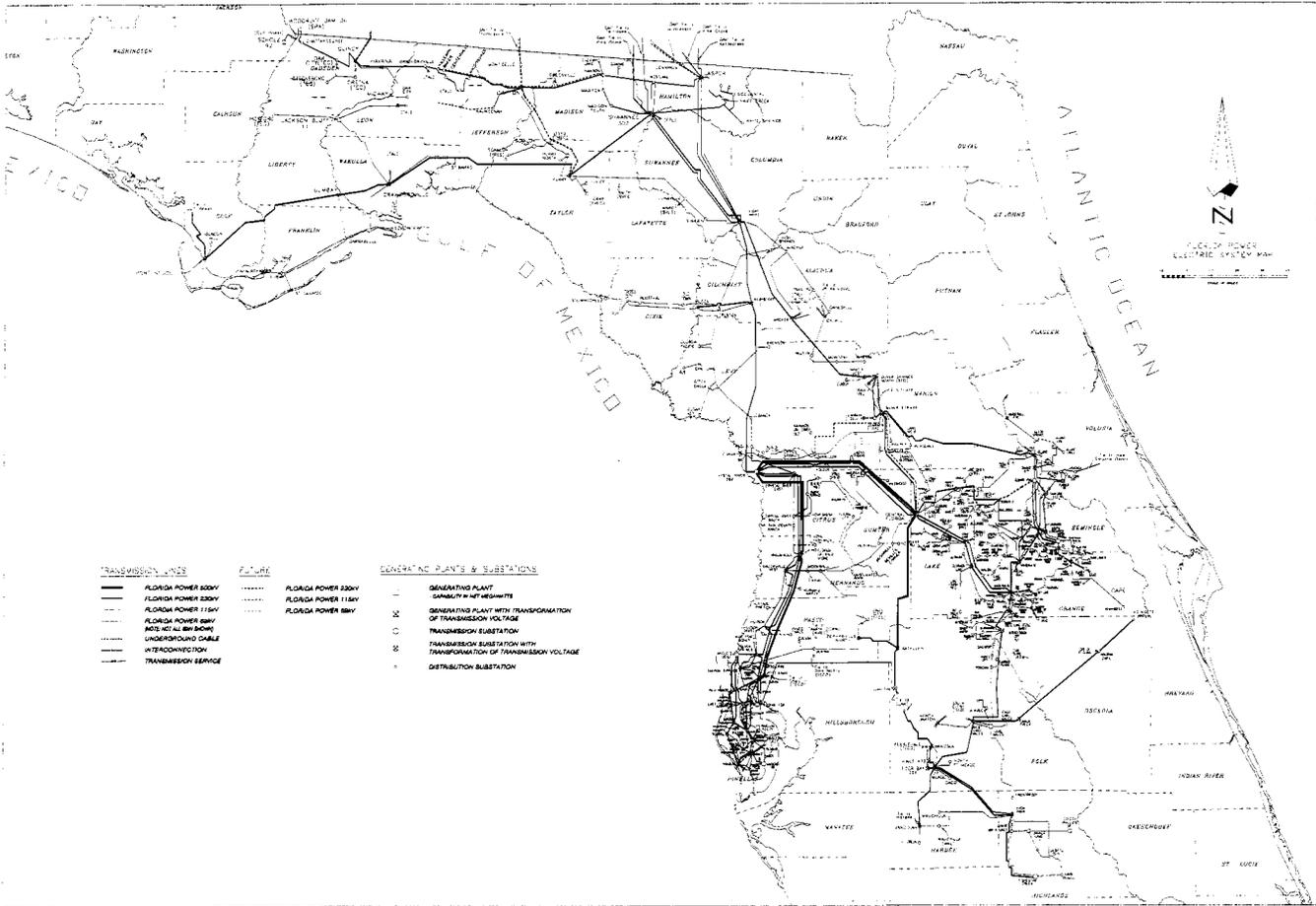
11 **Q. Does this conclude your testimony?**

12 **A.** Yes.

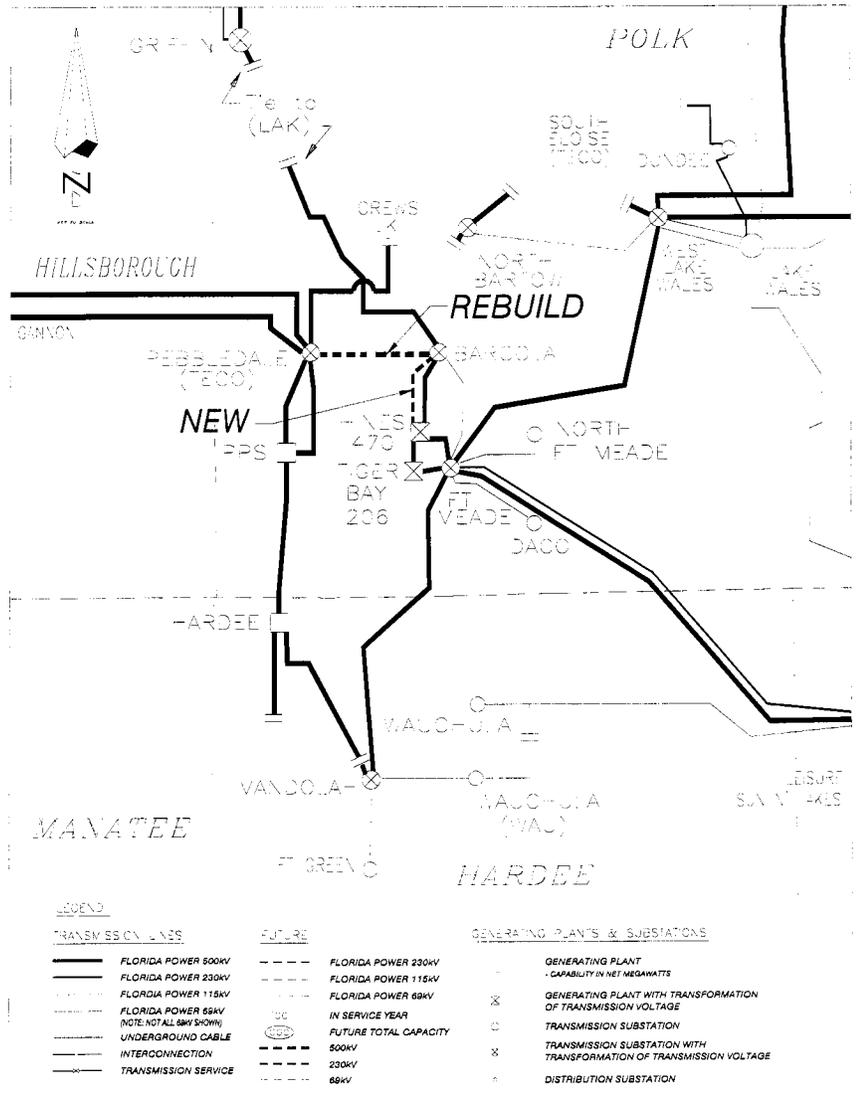
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14

15



FPC's Existing Generation Plants, Substations and Transmission Lines
Exhibit PMO-1



Transmission Network in the Vicinity of Hines Energy Complex
Exhibit PMO-2