BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In Re: Petition for Determination of Need for an Electrical Power Plant in Okeechobee County by Okeechobee Generating Company, L.L.C.	DOCKET NO. 991462-EU FILED: Oct. 25, 1999

ORIGINAL

DIRECT TESTIMONY

OF

ROGER E. CLAYTON, P.E.

ON BEHALF OF

OKEECHOBEE GENERATING COMPANY, L.L.C.

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

IN RE: PETITION FOR DETERMINATION OF NEED FOR THE OKEECHOBEE GENERATING PROJECT, FPSC DOCKET NO. 991462-EU

DIRECT TESTIMONY OF ROGER E. CLAYTON, P.E.

Q: Please state your name and business address.

A: My name is Roger E. Clayton, and my business address is 111 Washington Avenue, Albany, New York 12210.

Q: By whom are you employed and in what position?

A: I am employed by PG&E Generating as Director, Power System Assessment.

Q: Please describe your duties with PG&E Generating.

A: My role is to provide technical assistance to the PG&E Generating project teams involved in acquisitions of existing generating plants and development of new generating plants. I also represent the technical interests of PG&E Generating in various forums in New York, New England, and PJM (the coordinated power pool for Pennsylvania, New Jersey, and Maryland).

QUALIFICATIONS AND EXPERIENCE

Q: Please summarize your educational background and experience.

A: I have a BSc. with Honors in Electrical Engineering and an MSc. in Power System Engineering from Aston University in

Birmingham, UK. I have more than thirty years experience working as a transmission planning consultant to the electric power industry in the United States. I have worked for General Electric Company, Power Technologies Inc., Electric Power Consultants, and PG&E Generating in this role. More detail regarding my qualifications is provided in Exhibit No. ____ (REC-1).

Q: What is your experience in generation planning, transmission planning, transmission design, and power flow studies?

A: In my career, I have performed and directed numerous transmission system impact studies for a significant number of clients. From this extensive experience, I am familiar with the data, criteria, and analytical methods employed in power flow, short-circuit, and stability analyses.

Q: Have you previously testified before regulatory authorities or courts?

A: Yes. In 1991, I testified before this Commission on behalf of Nassau Power Corporation in Nassau Power's need determination proceeding, In Re: Petition of Nassau Power Corporation to Determine Need for Electrical Power Plant, FPSC Docket No. 910816-EQ. I have also testified before the state public utility commissions in New York and Vermont.

Q: Are you a registered professional engineer?

A: Yes. I am a registered Professional Engineer in the State of New York.

SUMMARY AND PURPOSE OF TESTIMONY

Q: What is the purpose of your testimony in this proceeding?

A: I am testifying on behalf of Okeechobee Generating Company, L.L.C. ("OGC") in support of OGC's proposal to construct and operate the Okeechobee Generating Project (the "Project"). My testimony demonstrates that the Project can be interconnected to the FPL system and deliver power to FPL or the other utilities in Peninsular Florida with no adverse impact on the transmission reliability of Peninsular Florida.

Q: Please summarize your testimony.

A: I developed the scope of work for a transmission system impact study for the Okeechobee Generating Project that the Power Systems Energy Consulting (PSEC) department of General Electric International, Inc. ("GE") performed for PG&E Generating. I was involved in the execution of that study, both in the study management and in the analysis of results. I will discuss the results of the GE transmission system impact study and show that the Project will not have an adverse impact on the reliability of the Peninsular Florida transmission system.

Q: Are you sponsoring any exhibits to your testimony?

A: Yes, I am sponsoring the following exhibits:

Exhibit No. REC-1: Resume' of Roger E. Clayton, P.E.;

Exhibit No. REC-2: PG&E Generating Company, Okeechobee System Impact Study;

Exhibit No. REC-3: Okeechobee Generating Project - Interconnection Studies from GE Interconnection Studies;

Exhibit No. REC-4: Okeechobee Generating Project - Regional Transmission Map;

Exhibit No. REC-5: PG&E Generating Data and Information Request to Florida Power & Light Company; and

Exhibit No. REC-6: FP&L's Response to PG&E's Data Request.

I am also sponsoring Figures 9 and 10 contained in the Exhibits filed with the Petition for Determination of Need for the Okeechobee Generating Project and the associated narrative text at pages 2 and 25-30 of those Exhibits.

Q: What are your responsibilities with respect to the Okeechobee Generating Project that is the subject of this proceeding?

A: My role is to provide technical assistance to the project team involved in the development of the Okeechobee Generating Project. Specifically, my technical assistance is in the area of transmission planning.

Q: With what similar projects have you been involved, and in what capacity?

A: I have been involved as technical support in similar PG&E Generating projects in New England (Lake Road, Millennium, Brayton Point), New York (Athens), New Jersey (Mantua Creek, Liberty), Michigan (Covert) and Wisconsin (Badger).

TRANSMISSION INTERCONNECTION FOR THE OKEECHOBEE GENERATING PROJECT

Q: Please describe the transmission facilities by which the Okeechobee Generating Project will be connected to the Florida transmission grid.

A: The Okeechobee Generating Project will interconnect to the 230 kV transmission system of Florida Power & Light Company ("FPL") by looping the existing Sherman-to-Martin 230 kV transmission line, which traverses the Project site, into the switchyard of the Project. The interconnection facilities are illustrated schematically on Exhibit ____ (REC-3). The location of the Sherman-to-Martin transmission line, and of the Project in relation to other transmission facilities in the region, is shown on Exhibit ____ (REC-4).

TRANSMISSION SYSTEM IMPACT STUDY - DATA AND METHODOLOGY

Q: How did you evaluate the capability of the Okeechobee Generating Project to deliver wholesale power to FPL and other retail-serving utilities in Florida?

A: I developed the scope of work for a system impact study for the Okeechobee Generating Project. This scope of work was based upon my prior experience in this area, FPL's data, published criteria of the Florida Reliability Coordinating Council ("FRCC"), the FRCC's Form 715 filings with the Federal Energy Regulatory Commission ("FERC"), and North American Electric Reliability Council ("NERC") criteria. The scope of work was based upon a relative study approach whereby the existing system performance, without the Okeechobee Generating Project, was established as a benchmark.

The system performance with the Okeechobee Generating Project was then established and compared to the benchmark performance. This approach is valuable because criteria violations in the existing system (if any) can be identified and any new criteria violations caused by power deliveries from the Okeechobee Generating Project can thus be separately identified.

Q: Did any other general objective guide your study scope?

A: Yes, I assumed that the Project would be operating as a merchant plant and would be available for sales of electricity to any part of Peninsular Florida.

Q: How did you simulate sales to other parts of Peninsular Florida?

A: To test the ability of the Okeechobee Generating Project to deliver power throughout Peninsular Florida, five dispatch scenarios were analyzed under both 2003 summer and winter peak load conditions. These scenarios represented power flows, at the Project's full rated seasonal capacity, from the Project to Tampa Electric Company (TECO), Jacksonville Electric Authority (JEA), southern FPL, northern FPL, and Florida Power Corporation (FPC).

Q: How were the five different dispatch scenarios simulating inter-Florida sales created?

A: These simulated dispatch scenarios were created by committing the Okeechobee Generating Project at its appropriate maximum dispatch level for summer (516.5 MW) or winter (563.5 MW) conditions, and then redispatching generation local to the five areas in an appropriate amount. (The dispatch scenarios analyzed in the GE study were based on preliminary summer and winter maximum levels for the Project. It is my

understanding that the current engineering estimates for the Project's maximum seasonal output are 514.3 MW in the summer and 561.3 MW in the winter. These slight differences would have no effect on the results of the GE study.)

Q: How was the local generation redispatch chosen in each of the five areas?

A: This was done by selecting generation in each area that was believed to have a peaking dispatch characteristic and thus susceptible to redispatch.

Q: Please describe the technical analyses that were performed in order to establish the benchmark performance.

A: The required study procedure includes the following analyses:

- Load Flow Analysis;
- Transient Stability Analysis;
- Short Circuit Analysis; and
- Special Studies, as required.

These technical analyses conform to the criteria specified in the document, Methodology for Completing a System Impact Study, which was provided by Mr. Hector Sanchez of FPL as Appendix No. 2 to Exhibit 1 to Attachment D furnished by FPL in response to a PG&E Generating data and information request dated July 23, 1999.

Q: What actual analyses were done for your study?

A: Steady state analyses, including power flow analyses, short circuit analyses, and power-voltage (voltage stability) analyses were performed. Stability analyses were also performed. The power flow analyses identified branch (e.g., transmission line or transformer) loadings and bus voltage violations under both normal and contingency (e.g., single line outage) operating conditions. The short circuit analysis determined the maximum three-phase symmetrical current at the Okeechobee, Sherman and Martin substations, and the power-voltage (abbreviated "PV") analysis evaluated the impact of the Okeechobee Generating Project on maximum power transfer capability across the Georgia-Florida interface. Finally, the stability analyses evaluated both first swing stability and system damping for a variety of system conditions and disturbances.

Q: Did you evaluate the Project's capability to deliver power outside Florida? If not, why not?

A: No. This was not in the scope of work because the Project is not expected to export power outside Florida.

Study Criteria

Q: What steady state voltage and rating criteria were employed in your study?

A: In response to PG&E Generating's data and information request to FPL of July 23, 1999, Mr. Sanchez provided the FPL planning criteria as well as the *Power Delivery System Facility Rating Methodology* (May 1999). For our power flow analysis, the same voltage performance criteria were used for normal operation and for contingency operation. Under both conditions, the minimum acceptable voltage is 95% of nominal rated voltage and the maximum acceptable voltage is 105% of nominal rated voltage.

Similarly, the same thermal, or branch loading, performance criteria (measured in megavolt-amperes, or MVA) were used for normal operation and for contingency operation. Under both conditions, acceptable branch loadings are less than 100% of the normal continuous summer rating (Rate 1 in the power flow study). However, FPL uses emergency ratings (Rate 2 in the power flow study) for autotransformers.

Q: Which Florida areas were monitored?

A: The monitored areas consisted of all Florida areas down to the 69 kV voltage level, as identified in the power flow database.

Q: Your analyses and results refer to "contingencies." Please define "contingency" as that term is used in the transmission system impact study.

A: In a transmission system impact study, a "contingency" is an event in which one or more system components (e.g., a transmission line, transformer, or generator) is faulted and removed from service until the fault is cleared. For example, a lightning strike on a transmission line would cause circuit breakers at each end of the line to open and remove the line from service. In general, the lightning arc will be de-ionized after approximately 0.5 seconds and the line can be safely returned to service. The period that the line is out of service could be only 0.5 seconds if the circuit breakers are equipped to reclose automatically at high speed; to seconds if delayed reclosure is employed; to minutes if manual reclosure is employed. The significance of these contingencies is that while the faulted line is out of service, the loading on the remaining system is increased as it adjusts to carry the loading that was previously carried by the faulted line. Thus, post-contingency conditions are those most likely to experience rating and voltage criteria violations.

Q: How did you develop the contingency lists used in your steady state analysis?

A: The contingency lists for both the power flow and stability analyses were developed in compliance with the *FRCC Planning Principles and Guides* (September 25, 1996). The power flow contingency list focuses on major generating unit or 230kV and 500kV transmission line outages in Florida, including fault scenarios that result in the outage of a single transmission line, transformer, or generating unit. A total of 141 contingencies were evaluated.

Q: How did you develop or identify the list of contingencies for the stability analyses?

A: Ten 3-phase fault scenarios were analyzed for the stability analysis. The selected fault scenarios were based on events in which protective equipment cleared the fault by removing particular equipment (transmission lines or generators) from service. Such events can, for example, result from lightning, wind, or fire. The selected fault scenarios resulted in the outage of a single generating unit, a single transmission line, or one line and one generating unit.

System Impact Study Data

Q: Did you request information from FPL in order to perform your system impact study?

A: Yes. Exhibit No. REC-5, Letter from Sean J. Finnerty to Hector Sanchez dated July 23, 1999, lists the information request that was made to FPL on July 23, 1999. Although PG&E Generating requested seventeen data items, to date we have received specific information from FPL on only seven items.

Q: What information is still missing?

A: The data items in Exhibit No. REC-5 marked with an asterisk have been supplied by FPL. All other data items are missing.

Q: What reason did FPL give for not supplying all of the requested data?

A: Mr. Hector Sanchez of FPL indicated that FPL would only supply that data that is currently available in the public forum, at this time. This is indicated on page 2 of Exhibit No. REC-6, Letter from Hector J. Sanchez to Sean J. Finnerty dated August 9, 1999.

Q: What is the significance of the missing data?

A: That data identifies the criteria, contingency definition, equipment ratings, and relevant power flow and stability databases. By denying PG&E Generating the missing data at

this time, FPL is preventing Okeechobee Generating Company from performing a timely due diligence study using the same basis as that which FPL would use for its own studies.

Q: So what was the basis for the system data and conditions used in your transmission system impact study for the Okeechobee Generating Project?

A: The benchmark system was defined by the project in-service date of April 2003. The FRCC 1999 series summer and winter power flow cases for 2003 were downloaded from the FERC 715 site. Modifications were made to represent the 2003 transmission network as defined by the Florida Reliability Coordinating Council (FRCC) 1999 Regional Load and Resource Plan (July 1999) and to supply missing transmission line ratings. In addition, the summer power flow database was modified to include the Sanford repowering project as defined by the Florida Power & Light (FPL) Ten-Year Site Plan 1999-2008 (April 1999). The Ft. Myers repowering project was already modeled in the FERC databases in accordance with the FPL Ten-Year Site Plan.

Q: From what sources was the stability data obtained?

A: The dynamic stability data were derived from a Mid Atlantic Area Council (MAAC) System Dynamics Database Working Group (SDDWG) database representing the entire eastern U.S.

interconnection for the 2003 summer peak condition. This data was publicly available on the MAAC website, which is accessible via the Pennsylvania-New Jersey Maryland (PJM) Interconnection website (www.pjm.com).

SYSTEM IMPACT STUDY RESULTS

Q: What were the results of the pre-contingency power flow studies?

A: No pre-contingency adverse rating violations were observed with the Okeechobee plant in-service for any of the studied summer or winter dispatch scenarios. A few pre-contingency adverse voltage violations were observed with the Okeechobee plant in-service for several dispatch scenarios.

Q: What were the results of the post-contingency power flow studies?

A: One 101% post-contingency adverse rating violation was noted in the FPC system for one contingency under one 2003 summer Okeechobee dispatch scenario. Several adverse post-contingency voltage violations were observed.

The post-contingency power flow analysis under 2003 winter conditions showed several adverse rating violations in the FPL system with magnitudes less than or equal to 108%. Several adverse post-contingency voltage violations were observed.

The apparent rating violations may be simulation artifacts and require further study. All voltage violations, both pre-contingency and post-contingency, were relatively minor in magnitude and are likely to be easily mitigated.

Q: What were the results of the short-circuit studies?

A: The short circuit results show that post-project fault currents do not exceed 50 kiloamperes ("kA") at any of the 230-kV or 500-kV buses in the immediate vicinity of the Okeechobee Generating Project.

Q: What were the results of the PV studies?

A: The PV analyses focused on the impact of an increase in power transfer from the Southeastern Reliability Council ("SERC") region on the Florida 500kV and 230kV bus voltages. The starting point for the benchmark PV analysis was the 2003 benchmark summer power flow. The increase in power flow across the Georgia-Florida interface was implemented by increasing the power generated at large generating plants outside Florida and decreasing the power generated at the Port Everglades and Lauderdale plants.

The Florida 500kV and 230kV bus voltages with all lines in service were acceptable throughout the simulation, with or

without the Okeechobee Generating Project. However, voltage collapse occurs at a pre-contingency Georgia-Florida interface flow of approximately 3,650 MW for the Turkey Point outage contingency, and 3,500 MW for the St. Lucie outage contingency. These voltage collapses occur at these levels independent of the Okeechobee Generating Project. This screening analysis indicates that the Okeechobee Generating Project has negligible impact on the PV performance of the Georgia-Florida interface.

Q: Please explain what you mean by "voltage collapse."

A: The key to understanding voltage collapse is that loads, in general, have a constant power characteristic. Thus, if the transmission receiving end voltage (designated Vr) drops, the transmission receiving end current (designated Ir) must increase in order to maintain a constant power level (designated P; P = Vr x Ir). In long, heavily loaded transmission systems under contingency conditions, this relationship becomes non-linear, creating a vicious cycle: loss of a part of the transmission system increases system impedance, lowers receiving end voltage, and increases receiving end current, thereby further lowering receiving end voltage, and so on until voltage collapses to an unstable or unsustainable level.

In more specific, technical terms, the voltage magnitude at the receiving end of a transmission system is dependent on the magnitude of the sending end voltage and the voltage drop from the sending to the receiving end of the transmission system. The system voltage drop is dependent upon the system impedance (which is a function of the length of the system and its voltage) and the system loading. Short, high voltage, and lightly loaded systems have small voltage drops and vice versa. Under normal conditions, voltage drop is on the order of 5 percent and the system acts in a linear manner; that is, a 1 percent increase in loading results in a 1 percent increase in voltage drop (receiving end voltage decreases by 1 percent). However, long, heavily loaded transmission systems under contingency conditions become increasingly non-linear as loading is increased. In such systems and conditions, a 1 percent increase in loading can result in a 10 percent increase in voltage drop, or even a voltage collapse to an unsustainable voltage level.

Q: What were the results of the stability studies?

A: The stability analyses were designed to evaluate the impact of the Okeechobee Generating Project by focusing on the relative performance of the system with the proposed plant in comparison to that of the existing system. Under the 2003

summer and winter system conditions, the system response for all contingencies was "first-swing stable" (an indication that the system remained within acceptable stability limits in response to the initial disruption caused by the respective contingencies) with "well-damped oscillations" (an indication that the system tended to restore itself to normal operating parameters in a timely manner) for the benchmark cases as well as for all Okeechobee Generating Project dispatch scenarios. However, three Turkey Point units lost synchronism in response to contingency 10 (3-phase fault at Turkey Point 230kV bus, 5-cycle tripping of Turkey Point #3, 12-cycle backup tripping of Turkey Point-Galloway 230kV line). These units lost synchronism for the benchmark cases as well as for all Okeechobee Project dispatch scenarios. Therefore, these results confirm that the operation of the Okeechobee Generating Project has no significant impact on the performance of the Turkey Point units in response to this severe contingency.

Q: There have recently been some announcements regarding Duke's New Smyrna Beach Power Project. Would this project have any effect on the results of your system impact studies?

A: No. Sensitivity studies with the New Smyrna Beach Power Project in operation indicated that this generating station

would have no impact on the results of our transmission system impact study.

CONCLUSIONS

Q: What is the overall conclusion of your analysis?

A: The Okeechobee Generating Project has no adverse impact on the Peninsular Florida interconnected transmission system for any of the dispatch scenarios studied.

Q: What about the apparent rating criteria violations that were noted in FPL's and other systems?

A: These are relatively minor in magnitude and require detailed examination. It is possible that they are simulation artifacts due to the missing FPL data.

Q: What do you mean by simulation artifacts?

A: Simulation artifacts may include local errors in:

1. Normal and emergency ratings;
2. Local modeling detail;
3. Operating constraints; and
4. Post-contingency special protection systems.

Q: If these apparent adverse impacts are determined to be real, what action is PG&E Generating prepared to take?

A: If the apparent adverse impacts are determined to represent real problems, PG&E Generating will work with the affected utilities to remedy the violations in accordance with applicable transmission tariffs, FERC regulations, and applicable safety standards.

Q: Does this conclude your direct testimony?

A: Yes.

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In Re: Petition for Determination of Need for an Electrical Power Plant in Okeechobee County by Okeechobee Generating Company, L.L.C.	DOCKET NO. 991462-EU FILED: Oct. 25, 1999

EXHIBITS

OF

ROGER E. CLAYTON, P.E.

ON BEHALF OF

OKEECHOBEE GENERATING COMPANY, L.L.C.

ROGER E. CLAYTON, P.E.

Director – Power System Assessment
U.S. Generating Company

EDUCATION

MSc., Power System Engineering, Aston University, Birmingham, U.K., 1968.
BSc. with Honors, Heavy Current Electrical Engineering, Aston University, Birmingham, U.K., 1966.
Student apprentice program, Midlands Electricity Board, Birmingham, U.K., 1968

EXPERIENCE

Mr. Clayton joined GE's Electric Utility Engineering Operation (EUEO) in 1968, and was engaged in studies of power system transients and transmission line design. He taught GE's courses on insulation coordination, transmission line design, and utility practice. He had additional responsibility as liaison engineer with GE's protective equipment department, with special interest in station arrester application.

Mr. Clayton joined Power Technologies Incorporated in 1972. At PTI, Mr. Clayton worked on transmission line design studies involving economic optimization, electrical performance and EMF analysis. He taught PTI's courses on transmission line theory and insulation coordination. From 1974 through 1986, Mr. Clayton was Project Engineer for major transmission system planning studies in Mexico, Venezuela, Argentina and Peru. These studies involved power flow, short circuit and stability performance analyses of various system expansion options. He had a two-year assignment with EDELCA in Venezuela leading their transmission planning studies for the GURI 11,000 MW generation project.

Mr. Clayton formed Electric Power Consultants, Inc. in 1986 to provide analytical services and products to the electric utility and industrial power sectors. He developed overhead line constants and EMF software at EPC. He was heavily involved in Independent Power Producer interconnection and wheeling analyses while at EPC.

Mr. Clayton rejoined GE in their Power System Energy Consulting department upon the acquisition of EPC's assets by GE in 1994. As Manager of PSEC's T & D Consulting Group he was engaged in and directed studies in support of the deregulation of the electric power industry in the U.S. These analyses included site evaluation, system impact studies, generation integration/islanding studies, development of wheeling algorithms, and transmission congestion analyses in support of market evaluation and in dispute resolution. He taught PSEC's Power System Analysis and Transmission Planning courses at GE.

Mr. Clayton joined U.S. Generating Company in 1998 as Director, Power System Assessment. His responsibilities include evaluation of the impact of transmission constraints on potential acquisitions and on the development of new sites, analysis of the impact of market rules and tariffs, as well as participation in regulatory and ISO forums.

AFFILIATIONS, PATENTS, PUBLICATIONS

Mr. Clayton is a registered Professional Engineer in the State of New York. He is a senior member of IEEE, and has published numerous technical articles and papers.

FPSC Docket No. 991462-EU
OGC
Witness: Clayton
Exhibit _____ (REC-2)

BOUND SEPARATELY

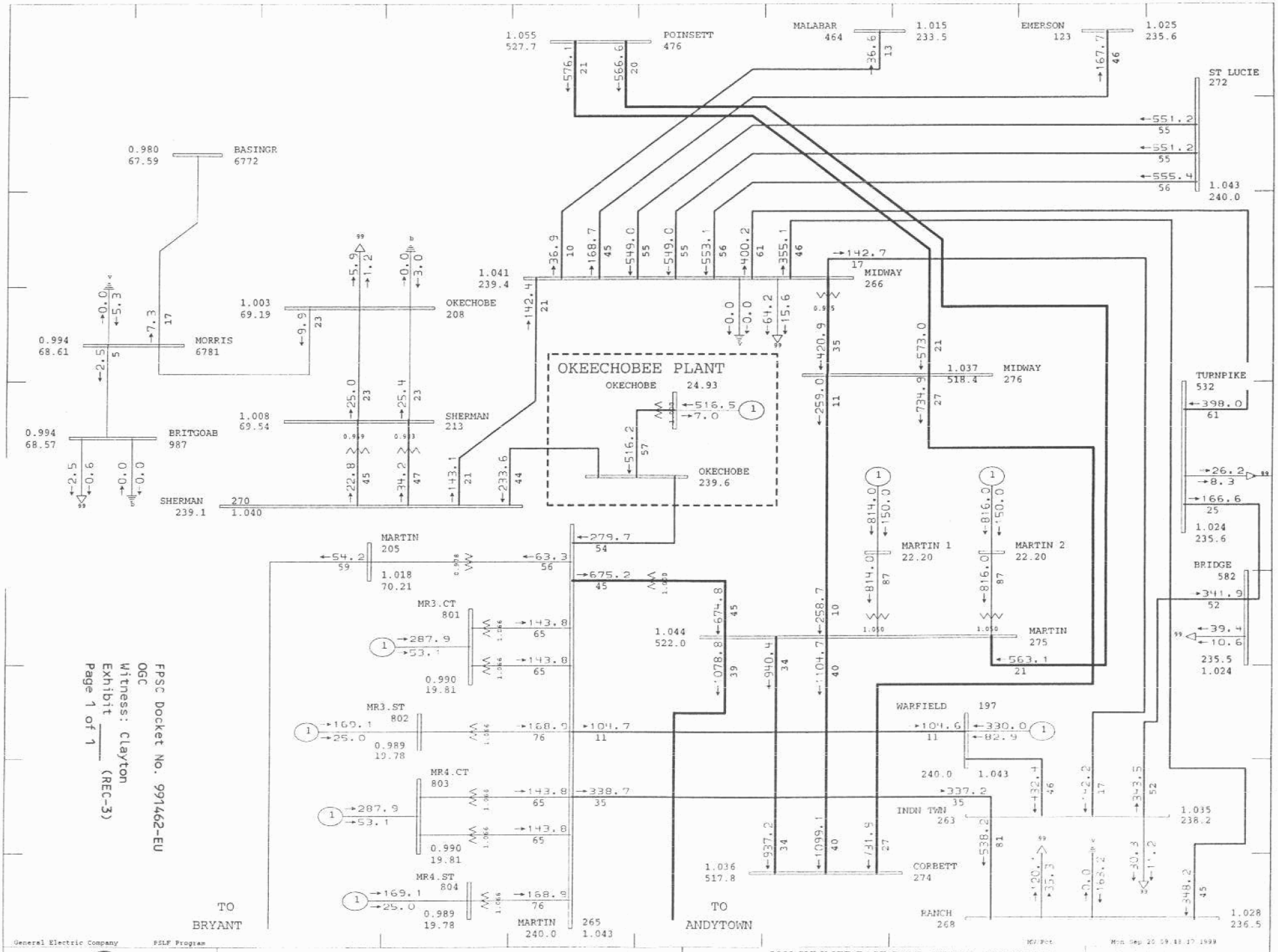
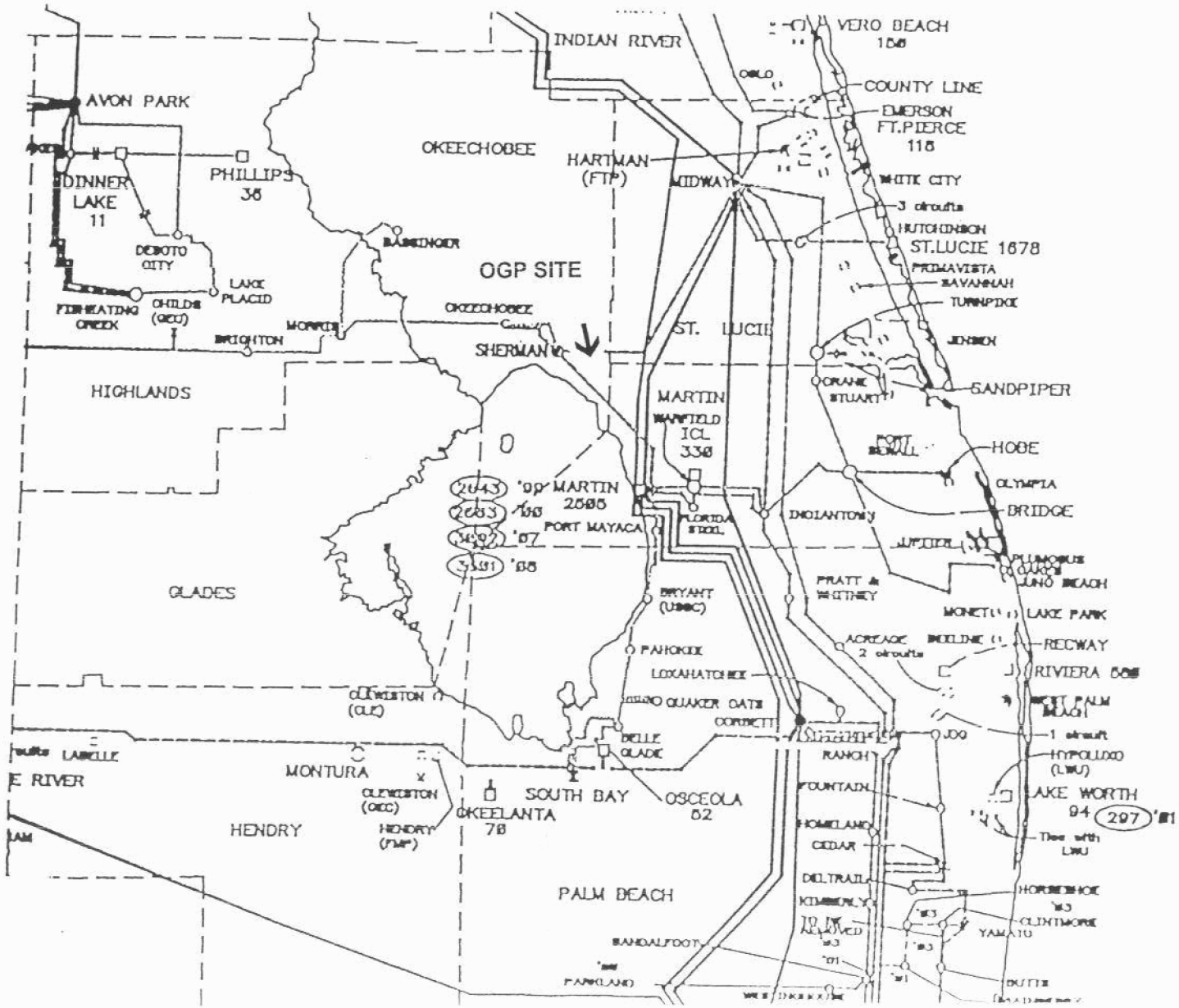


FIGURE 10
OKEECHOBEE INTERCONNECTION STUDIES

2003 SUMMER BASE CASE - FY 1998 - REVISION 5
CASE 503-A: 516.5 MW FROM OKEECHOBEE
PLANT DISPATCHED TO TEC

FIGURE 9
Okeechobee Generating Project
Regional Transmission Map



FPSC Docket No. 991462-EU
OGC
Witness: Clayton
Exhibit ____ (REC-4)
Page 1 of 1

PG&E Generating ™

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Okeechobee
File # 16.22.1
DCN _____

July 23, 1999

Mr. Hector J. Sanchez
Transmission Business Manager
Florida Power & Light Company
9250 West Flagler Street
Miami, FL 33174

Dear Mr. Sanchez,

Thank you for meeting with Roger Clayton, Doug Egan and myself on Tuesday, July 20 in your Miami office to discuss the Okeechobee Generating Company ("OGC") project being developed by PG&E Generating ("PG&E Gen").

As discussed, PG&E Gen submitted to Florida Power & Light ("FPL") a request for Network Transmission service on June 22, 1999. At your suggestion we subsequently revised that request to a request for interconnection. Pursuant to that request, an interconnection study and a system study will be required. I understand that FPL is willing to perform the interconnection study and that you will provide to us a draft interconnection study agreement within the next two weeks. As soon as I have received the interconnection study agreement and application from FPL, a completed study agreement and any associated application for an interconnection study will be submitted to FPL. I understand that upon submission to FPL, the interconnection study should take no longer than 90 days to complete. My understanding is that once OGC has signed the agreement, it will be processed. If there is information that has not been provided, FPL will immediately contact OGC to request such information. A cost estimate will also be provided as soon as possible, with the first stage feasibility study expected to take 90 days and the second stage facilities study expected to take 120 days.

Following up on the lengthy discussion of the requested interconnection study and the system impact study associated with OGC, there are a number of additional action items both PG&E Gen and FPL need to address. I have taken the liberty of listing these items below along with an associated timeline for attending to individual items.

As discussed, PG&E Gen, on behalf of OGC, is submitting the attached data request in order to perform a system impact study related to the delivery of power from OGC onto the electric transmission grid (Attachment A). As a result of our discussions, we understand that it is your position that OGC should perform a system impact study independent of FPL because FPL does not want to be a transmission consultant to multiple projects, and if FPL performed the system impact study, it would yield identical results given identical input data. You also indicated that all of the data for performing these studies is available through your FERC filings and on FLOASIS. We have examined your 1999 FERC 715 filings and find that there is insufficient

information to perform the required power flow, short-circuit and stability studies. In some cases there are apparent errors of data omission and in others the criteria are too vague to be of use. As we discussed PG&E hereby formally requests that you provide us with the data, criteria and study methodology information listed in Attachment A. Once OGC has received the requested information from FPL it will undertake an independent system study, a copy of which will be provided to FPL upon completion.

You have committed to provide a written response to the attached data request. Due to the nature of this request, we expect that the information could be provided no later than August 13, 1999. The response should correct any inaccurate or omitted information contained in FPL's most recent FERC 715 filing and should accurately reflect the data that would be used by FPL in conducting a system impact study should it be requested to do so.

Again, I appreciate the opportunity to have met with you and your staff to discuss these matters and look forward to receiving the above-mentioned information pursuant to the associated timelines. As always, I anticipate continuing an open dialog as FPL and PG&E work through this process and the development of the Okeechobee Generating project.

Sincerely,

Sean J. Finnerty
Manager, Project Development

Attachment A - Data Request to FP&L for OGC System Impact Study

* 1. Admittance values for all FP&L (Area 1) branches that are set to zero in the 1999 FERC filed FRCC case for the year 2002 for summer peak conditions (Y98_02s5.raw). There are approximately 198 line branches between 13.8 kV and 230 kV in this condition.

* 2. Rating values for all FP&L (Area 1) branches that are set to zero in the 1999 FERC filed FRCC case for the year 2002 for summer peak conditions (Y98_02s5.raw). There are approximately 158 line branches between 69 kV and 230 kV in this condition.

* 3. Provide an FP&L citation or document describing FP&L's line and transformer rating methodology and associated ambient conditions.

* 4. Confirm that FP&L does not utilize Long Term Emergency and Short Term Emergency ratings on any of its transmission lines and transformers under contingency conditions, neither for transmission planning nor for operations.

5. Define FP&L's criteria governing the application of special protection schemes like post-contingency generator runback.

* 6. Define FP&L's pre and post-contingency voltage criteria as a function of voltage level, maximum and minimum voltage limits and pre to post-contingency incremental voltage constraints.

7. Define FP&L's voltage collapse or voltage instability "P-V" criterion and the method by which FP&L applys the test transfer.

8. Define FP&L's inter-control area and intra-control area interfaces and their associated limits or operating nomograms.

* 9. Define FP&L's power flow simulation solution method with respect to system control devices both pre and post-contingency. Control devices include: area interchange; transformer TCUL; SVD; HVDC; generator VAR limits; PARS.

10. Define FP&L's stuck breaker criterion.

11. Provide FP&L's normal and extreme contingency list and breaker diagrams for its 115 kV, 138 kV, 230 kV and 500 kV systems.

12. Provide FP&L's 230 kV and 500 kV symmetrical breaker ratings at Martin and 230 kV symmetrical breaker ratings at Sherman.

* 13. Define FP&L's transient and dynamic stability criteria.

14. A stability data base in either PTI's PSS/E or GE's PSLF program format that corresponds to the 1999 FERC filed FRCC case for the year 2002 for summer peak conditions (Y98_02s5.raw).

15. Define the horizon years of analysis and system loading conditions that FP&L would utilize in an OGC system impact study. System loading conditions could include summer peak, winter peak, light load, shoulder, firm dispatch and economic dispatch.

16. Identify other IPPs that have requested transmission service and FP&L resource additions/retirements through the year 2002.

17. Identify FP&L's transmission system reinforcements through the year 2002.

Florida Power & Light Company, P. O. Box 029100, Miami, FL 33102-9100

FPL

FPSC Docket No. 991462-EU
OGC
Witness: Clayton
Exhibit ____ (REC-6)
Page 1 of 3

Okeechobee
File # 6.22.1
DCN

August 9, 1999

Mr. Sean J. Finnerty
Manager, Project Development
PG&E Generating
One Bowdoin Square
Boston, MA 02114-2910

Dear Mr. Finnerty:

This letter responds to your letter dated July 23, 1999, in connection with PG&E Generating's ("PGE") proposal to build a generating plant in the vicinity of Lake Okeechobee, Florida, which would interconnect to FPL's Sherman 230 kV Substation. FPL is prepared to proceed with PGE's request promptly. However, in light of our discussions, I want to clarify FPL's position regarding the status of PGE's request, so that a later misunderstanding does not arise concerning FPL's interpretation of PGE's rights under FPL's Open Access Transmission Tariff ("OATT").

There are two aspects to PGE's request. First, you have asked that FPL perform a study to determine the feasibility of interconnecting PGE's proposed power plant to FPL's Sherman 230 kV Substation, and the attendant interconnection facilities and associated costs. Second, you have indicated that PGE may want FPL to study the feasibility of satisfying a request for Long-Term Firm Point-to-Point transmission service from FPL's Sherman Substation to FPL's Martin 500kV Substation.

With respect to the request for an interconnection study, enclosed for PGE's review is a draft Interconnection Study Agreement. As we discussed earlier, in order for FPL to estimate the cost of the Interconnection Study, it needs from PGE the information requested in the attachments to the Interconnection Study Agreement. Once such information is received by FPL, we may want to quickly schedule a meeting or conference call to clarify the information provided or other pertinent issues. However, it is FPL's intent to proceed promptly with the study upon receiving the necessary information and execution of the Study Agreement.

At the July 20, 1999 meeting PGE indicated that it might submit an application for Long-Term Firm Point-to-Point transmission service under FPL's OATT. Such request would specify FPL's Sherman Substation as the Receipt Point and FPL's Martin 500 kV Substation as the Delivery Point. FPL is uncertain whether this would constitute a valid request for transmission service under the OATT because there is no wholesale or retail load at FPL's Martin 500 kV Substation, the proposed Delivery Point. FPL's OATT, which is based on the FERC pro forma tariff, provides that a valid request for Long-Term Firm Point-to-Point transmission service must include "the identities of the Receiving Party" (OATT Section 17.2(iii)) and "the location of the load ultimately served by the capacity and energy transmitted." (OATT Section 17.2 (iv)). The selection of FPL's Martin 500 kV Station as the Delivery Point does not include any load or

identification of a customer, and you have indicated that PGE is not in a position to provide FPL such information at the current time.

FPL proposes to handle the situation discussed above as follows. If PGE decides to submit an application for the transmission service, FPL, without waiving any rights it may have under the OATT, will conditionally accept it and proceed to process the application by performing, subject to entering into an agreement under the OATT, studies modeling an injection of power (e.g., 500 MW) at FPL's Sherman 230 kV Substation and a hypothetical load (e.g., 500 MW adjusted for losses) at FPL's Martin 500 kV Substation. This study should assist PGE in its assessment of its proposed development of a plant at the Okeechobee site.

For the purposes of any priorities under the OATT and associated queuing, PGE's request for transmission service would be treated as follows:

1. Upon receipt of PGE's application in accordance with the OATT, FPL will time and date stamp the application for provisional placement in the transmission service queue, unless or until a subsequent valid request for service is received.

2. If FPL receives a subsequent valid request for transmission service that requires the use of transmission capability that would be available "but for" PGE's (or any other similarly situated entity's) request, FPL will notify PGE promptly. At that point, PGE may choose to make a declaratory order filing at the FERC asking FERC to determine that PGE's original request, as described above, satisfies the requirements of the OATT. If the FERC approves PGE's declaratory order request, FPL will place all subsequently received applications for transmission service in the queue after PGE's application. If PGE does not file a declaratory order request promptly (within 20 days), its request for service will be deemed withdrawn.

3. In addition, FPL would be prepared to offer PGE the opportunity to maintain a place in the transmission queue, based on the date of its original submittal, by identifying a transaction that includes the identification of one or more Delivery Points that includes the specific information required by OATT Sections 17.2(iii) and (iv) within ten business days of notification from FPL that a subsequent request has been received. Such modification to the Delivery Point would be subject to the appropriate provisions in the OATT.

Finally, PGE has requested data and information from FPL that would enable PGE to perform its own assessment of transmission availability. FPL is prepared to make available to PGE any of the data and information you have identified that are already public (See attachments, FPL's form 715 and FPL's OASIS node at the e-mail address enx.com). FPL does not believe it appropriate to provide non-public data and information at this time. At the time the results of an interconnection or transmission study are provided, FPL will, subject to appropriate confidentiality arrangements, share with PGE the underlying data and information that was relied upon and explain the basis for conclusions to the extent the studies may not be clear.

If you have any questions about this letter, please contact me at (305) 552-3964.

Sincerely,

Hector J. Sanchez
Transmission Business Manager,
Transmission Services