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January 12, 2001

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Ms. Blanca S. Bayo, Director
Division of Records and Reporting
Florida Public Service Commission
4075 Esplanade Way, Room 110
Tallahassee, FL 32399-0850

In re: Need Determination for the Osprey Energy Center in Polk County by Seminole Electric Cooperative, Inc. and Calpine Construction Finance Company, L.P.
Docket No. 001748-EC

Dear Ms. Bayo:

Enclosed please find the original and 15 copies of the Amended Direct Testimony and Exhibits of Kenneth J. Slater on behalf of Calpine Construction Finance Company, L.P. in the above-referenced case.

If you or your staff have any questions, please feel free to call. Thank you for your assistance.

Sincerely,

Schef Wright

Robert Scheffel Wright

Enclosures

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BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In Re: Petition for Determination of Need for the Osprey Energy Center in Polk County by Seminole Electric Cooperative, Inc. and Calpine Construction Finance Company, L.P.	)	**DOCKET NO. 001748-EC** **FILED: January 12, 2001**

AMENDED DIRECT TESTIMONY AND EXHIBITS

OF

KENNETH J. SLATER

ON BEHALF OF

CALPINE CONSTRUCTION FINANCE COMPANY, L.P.

IN RE: PETITION FOR DETERMINATION OF NEED
FOR THE OSPREY ENERGY CENTER

AMENDED DIRECT TESTIMONY OF KENNETH J. SLATER

Q: Please state your name and business address.

A: My name is Kenneth J. Slater. My business address is 3370 Habersham Road, Atlanta, Georgia 30305.

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

A: I am President and Chief Executive Officer of Slater Consulting, which I founded in August 1990. The firm is a small engineering-economic and management consultancy with particular expertise in energy and public utility matters. The services, which the firm offers to various participants in the utility business, include analysis of supply/demand options, reliability, operating situations and events, new technologies and industry developments, strategic decisions, public policy matters and ratemaking issues.

Q: Please describe your duties with Slater Consulting.

A: I am the President and Chief Executive Officer of Slater Consulting. Although I am responsible for the overall management and operation of the Company, I spend most of my time working on client projects.

AMENDED DIRECT TESTIMONY OF KENNETH J. SLATER

PROFESSIONAL QUALIFICATIONS AND EXPERIENCE

Q: Please summarize your educational background and experience.

A: I obtained a Bachelor of Science degree in Pure Mathematics and Physics in 1960 and a Bachelor of Engineering degree in Electrical Engineering in 1962, both at the University of Sydney, Australia. I also received a Master of Applied Science degree in Management Sciences at the University of Waterloo in Ontario, Canada in 1974.

Q: Please summarize your employment history and work experience.

A: I have almost forty years of experience in the energy and utility industries in the United States, Canada and Australia. Prior to founding Slater Consulting, I was Senior Vice President and Chief Engineer at Energy Management Associates, Inc. ("EMA") in Atlanta, where I worked from 1983 to 1990. At EMA, after initially contributing to the firm's utility software development functions, I became the head of its consulting practice, leading or making significant contributions to a number of consulting engagements related to valuation or analysis of power supplies and power supply contracts, supply/demand planning, damages assessments, operating reserve requirements, replacement power cost calculations, utility merger valuations, operational integration of utility systems, power pooling, system reliability, ratemaking, power dispatching and gas supply studies. From 1969 until 1983, I worked in the Canadian utility industry. From 1975 to 1983, I ran my own firm, Slater Energy Consultants, Inc., in Toronto, Canada and consulted widely in Canada and the United States for utilities, governments, public enquiry commissions, utility customers and other consulting firms. It was during this time and my time at EMA that I was a major developer of PROMOD III®, (now renamed PROMOD IV®), a widely recognized electric utility planning and reliability model.

From 1969 through 1974, I worked as an Engineer, and then as a Senior Engineer at Ontario Hydro, where I headed the Production Development Section of the utility's Operating Department. There I developed computer models, including one which, for more than 20 years, produced the daily generation schedules for the Ontario Hydro system, and another, the original PROMOD, which was used for coordination and optimization of production planning and resource management. In 1974 and 1975, I worked as Manager of Engineering at the Ontario Energy Board (Ontario's utility regulatory commission) and in 1975 and 1976, I served as Research Director for the Royal Commission on Electric Power Planning (also in Ontario).

Prior to 1969, I was employed by the Electricity Commission of New South Wales, the largest electric utility in Australia, where I was responsible for the day-to-day operation of one of the six regions comprising that system. A copy of my resume' is included as Exhibit KJS-1.

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

A: Yes. I have provided expert testimony in regulatory proceedings in California, Florida, Georgia, Idaho, Indiana, Iowa, Louisiana, New Mexico, New York, Nova Scotia, Ontario, Pennsylvania, Prince Edward Island, South Carolina, Texas, Virginia, and Wisconsin, and at the Federal Energy Regulatory Commission. I have also appeared in Federal Bankruptcy Court and state courts in Florida, Nebraska, Texas and Virginia, and in civil arbitration proceedings in Louisiana, Nevada, New England, and Pennsylvania. I have also served on many occasions as an expert examiner for a Royal Commission in Ontario that was charged with studying and evaluating electric power planning in the Province of Ontario. I have also served as a member of a panel of arbitrator/valuers in a proceeding under the American Arbitration Association concerned with the value of a cogeneration plant.

Q: Are you a registered professional engineer?

A: Yes, I am a registered professional engineer in Ontario.

AMENDED DIRECT TESTIMONY OF KENNETH J. SLATER

PURPOSE AND SUMMARY OF TESTIMONY

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

A: I am testifying on behalf of Calpine Construction Finance Company, L.P. ("Calpine") to provide the results of various analyses, prepared by me or under my direction and supervision, that address various aspects of the Osprey Energy Center (the "Osprey Project" or simply the "Project") and its projected impacts on the Peninsular Florida power supply system. Specifically, my testimony addresses:

1. how the Osprey Project will operate in the Peninsular Florida power supply system;
2. the impacts that the Osprey Project will have on overall fuel consumption, power supply costs, and emissions from electricity generation for Peninsular Florida power supply;
3. the cost-effectiveness of the Osprey Project as a power supply resource for Peninsular Florida; and
4. the impact of the Osprey Project's presence on Peninsular Florida reserves and reliability.

My analyses assume that the Project's output will be sold to Seminole Electric Cooperative, Inc. ("Seminole"), with whom Calpine has a firm power purchase agreement, and potentially to other Peninsular Florida retail-serving utilities pursuant to appropriate contractual commitments.

AMENDED DIRECT TESTIMONY OF KENNETH J. SLATER

Q: Please summarize your understanding of the Osprey Project.

A: I understand the Osprey Project to be a 529 megawatt ("MW") natural gas-fired combined cycle electric generating plant that will be located in Auburndale, Florida, and interconnected to the Peninsular Florida power supply grid at the Recker Substation of Tampa Electric Company ("TECO"). The Project will have summer generating capability of approximately 496 MW and winter capability of approximately 578 MW, without duct-firing and power augmentation. The Project will utilize advanced technology Siemens-Westinghouse Model 501F combustion turbines in a combined cycle configuration. This design is typical of modern, efficient, advanced technology power plants. Finally, although the fact does not impact my analyses, because my analyses address the operation of the Osprey Project within Peninsular Florida considered as a whole, I understand that Calpine will sell 350 MW of firm capacity and associated energy to Seminole beginning in 2004 pursuant to an executed power purchase agreement.

Q: Please summarize the main conclusions of your testimony.

A: My staff and I prepared analyses of the Peninsular Florida power supply system with and without the Osprey Project using the PROMOD IV® production modeling program. My conclusions reflect the assumption that the Project's output will be sold to Seminole and potentially to other Peninsular Florida retail-serving utilities pursuant to appropriate contracts, e.g., the power purchase agreement between Calpine and Seminole. Based on these analyses, it is my opinion that the Osprey Project will make significant and economically valuable contributions to the Peninsular Florida power supply system. Even modeled with conservative assumptions, the Osprey Project is projected:

1. to operate at annual capacity factors between 86 and 93 percent for the entire analysis period, which in our modeling was the first ten years of the Project's commercial life;
2. to provide significant savings -- 6 trillion to 9 trillion Btu per year -- of primary energy used to generate electricity for use in Peninsular Florida;
3. to result in significant savings of petroleum fuels and coal;
4. to improve the overall efficiency of electricity production and natural gas use in and for Peninsular Florida;
5. to result in wholesale power supply cost savings of approximately $794 million (Net Present Value) over the first ten years of the Projects's operations;
6. to provide enhanced reliability of the power supply

system in Peninsular Florida; and

7. to result in significant reductions -- approximately 8,000 to 23,000 tons per year -- in combined emissions of sulfur dioxide and nitrogen oxides from the generation of Peninsular Florida's power supply.

The results are substantially the same under both our base case assumptions and under "sensitivity cases" that we modeled in which we analyzed the Project's operations and impacts assuming a higher natural gas price forecast, lower load growth, and higher load growth in Peninsular Florida.

Q: Are you sponsoring any exhibits to your testimony?

A: Yes. I am sponsoring the following exhibits.

KJS-1. Resume' of Kenneth John Slater.

KJS-2. Fuel Price Assumptions for PROMOD IV® Analyses of Osprey Project Operations.

KJS-3. Efficiency and Cost-Effectiveness of Peninsular Florida Generating Units, 2003.

KJS-4. Efficiency and Cost-Effectiveness of Peninsular Florida Generating Units, 2008.

KJS-5. Peninsular Florida Summary of Existing Capacity As of January 1, 2000.

KJS-6. Peninsular Florida, Historical and Projected Summer and Winter Firm Peak Demands, 1991-2012.

KJS-7. Peninsular Florida, Historical and Projected Net Energy for Load and Number of Customers, 1991-2012.

KJS-8. Osprey Energy Center - Summary of Projected Operations, 2003-2012.

KJS-9. Osprey Energy Center - Summary of Projected Operations, 2003-2012, Higher Natural Gas Price Sensitivity Analysis.

KJS-10. Osprey Energy Center - Summary of Projected Operations, 2003-2012, Load Growth Sensitivity Analyses.

KJS-11. Illustration of Impacts of Osprey Energy Center on Operations of Other Peninsular Florida Power Plants.

KJS-12. Market Indicators - Average Electric Production Costs by NERC Region, 1997-1999.

KJS-13. Peninsular Florida, Impacts of Osprey Energy Center on Average Electricity Generation Heat Rates and Total Fuel Consumption, 2003-2012.

KJS-14. Peninsular Florida, Fuel Consumption Impacts of Osprey Energy Center, 2003-2012.

KJS-15. Peninsular Florida, Summary of Projected Wholesale Energy Cost Savings Due to Osprey Energy Center, Base Case, 2003-2012.

KJS-16. Peninsular Florida, Summary of Projected Wholesale Energy Cost Savings Due to Osprey Energy Center, Higher Fuel Price Sensitivity Case, 2003-2012.

KJS-17. Peninsular Florida, Summary of Projected Wholesale Energy Cost Savings Due to Osprey Energy Center, Low Load Growth Sensitivity Case, 2003-2012.

KJS-18. Peninsular Florida, Summary of Projected Wholesale Energy Cost Savings Due to Osprey Energy Center, High Load Growth Sensitivity Case, 2003-2012.

KJS-19. Comparison of Peninsular Florida Planned and Proposed Generating Units.

KJS-20. Summary of Peninsular Florida Capacity, Demand, and Reserve Margin at Time of Summer Peak, Without and With Osprey Energy Center.

KJS-21. Summary of Peninsular Florida Capacity, Demand, and Reserve Margin at Time of Winter Peak, Without and With Osprey Energy Center.

KJS-22. Peninsular Florida, Emissions Impacts of Osprey Energy Center, 2003-2012.

I am also sponsoring the projected annual output values in Table II-2 in Volume II of the Amended Exhibits in support of Seminole's and Calpine's Amended Joint Petition for Determination of Need for the Osprey Energy Center filed on January 8, 2001 (the "Amended Joint Petition") and Tables II-4, II-5, II-6, II-7, II-8, II-9, II-10, II-11, II-12, II-13.A, II-13.B, II-14, II-15.A, II-15.B, II-16, II-17, II-18.A, II-18.B, and II-18.C of those Amended Exhibits. I am also sponsoring the text associated with these tables in Volume II of the Amended Exhibits to the Amended Joint Petition, and Appendix II-C to those Amended Exhibits, which is titled DESCRIPTION of PROMOD IV® GENERATION MODELING PROGRAM.

MODELS, ASSUMPTIONS, AND METHODOLOGY

Q: How did you analyze the operations of the Osprey Project within the Peninsular Florida power supply system and the impacts of the Project on that system?

A: Under my direction and supervision, Slater Consulting prepared several analyses of the Peninsular Florida power supply system, both with and without the Osprey Project, using the PROMOD IV® computer modeling program. Our analyses treated the Peninsular Florida power supply system as an integrated system. Our analyses studied the period beginning with the first year that the Osprey Project is expected to be in service and continued for ten years. Thus, our analyses begin with the Osprey Project coming into commercial service in 2003 and continue through 2012. I should note that our analyses actually covered the period through 2014 in order to avoid certain artificial results that may occur in power system modeling when the system is modeled as effectively "shutting down" at the end of the analysis period. (This can occur because if the model is programmed not to have to serve load after a certain date, it will simply postpone maintenance.)

The analyses that we performed included a base case and three sensitivity cases, one with a higher natural gas price forecast, one with a lower load growth forecast, and one with a higher load growth forecast.

Q: What, if any, assumptions do your analyses and conclusions reflect regarding the sale of the Project's output?

A: As noted above, our analyses and conclusions reflect the assumption that the Project's output will be sold to Seminole and potentially to other Peninsular Florida retail-serving utilities pursuant to appropriate contractual commitments, e.g., the power purchase agreement between Calpine and Seminole. Based on my basic understanding of that agreement and of the Florida power market generally, I believe that this assumption is wholly reasonable and appropriate.

Q: Please briefly describe the PROMOD IV® computer model, including a summary of the main input variables used by the model and the main output data produced by the model.

A: PROMOD IV® is a widely known and widely used model that simulates the operations of electric power systems. PROMOD IV® is primarily used as a production costing model and can also be used to evaluate electric system reliability. A brief description of PROMOD IV® is included in Appendix C to Volume II of the Amended Exhibits accompanying the Amended Joint Petition. PROMOD IV® can be used to prepare utility fuel budget forecasts, evaluate the economics and operations of proposed generating capacity additions, project utility operating costs, estimate the prices of firm power and energy in defined markets, project hourly marginal energy costs, and calculate avoided energy costs.

The inputs to PROMOD IV® include generating unit data for existing and planned power plants in a defined power supply system, fuel consumption and fuel cost data, load and other utility system data, and data regarding transactions both within and external to the system. The primary outputs are individual utility or system production costs, generation by unit, fuel usage, and reliability information. PROMOD IV® utilizes computationally efficient algorithms that yield results identical to those that would be produced with direct specification of values for all availability states of all units in a power supply system.

Q: Who uses the PROMOD IV® model?

A: A significant number of electric utility companies in North America have used and continue to use PROMOD IV®. To the best of my knowledge, all four of the major investor-owned utilities in Florida, Seminole, and some of the larger municipal utilities in Florida, have used PROMOD IV®.

Q: Before leading us through your detailed results, please summarize the cost structure and performance you have assumed for the Osprey Energy Center.

A: I have assumed that the heat rate of the Osprey Energy Center Project will be 6,800 Btu per kilowatt-hour ("kWh") at full load. I assumed that the variable operating and maintenance cost of the Osprey Energy Center Project will be $1.85 per megawatt-hour ("MWH") in 2000 (the base year for my projections), escalating at 3.0 percent per year. I should add that I also made the conservative assumption that the Osprey Project would have exactly the same heat rate characteristics as all of the other similar technology, new gas-fired combined cycle units planned for Florida except FPL's proposed repowering projects at Sanford and Ft. Myers. I made this assumption in order to avoid "favoring" the Osprey Project in our dispatch modeling, despite the fact that the available evidence indicates that the Osprey Project would in fact be slightly more cost-effective than nearly all of the other planned gas-fired combined cycle units. For FPL's proposed repowering projects, I used heat rate information extracted from FPL's permit applications to the Florida

Department of Environmental Protection; these data indicate that, as one would expect, the repowering projects are somewhat less efficient than the other new, "greenfield" plants. For example, our analyses indicate that, on an "as-dispatched" basis, FPL's repowering projects will have heat rates of approximately 7,150 to 7,280 Btu/kWh, as compared to heat rates of approximately 6,970 to 7,040 Btu/kWh for the new combined cycle units, e.g., the Osprey Project, Cane Island 3, Okeechobee, Payne Creek, Hines 2, Duke New Smyrna Beach, and Purdom. This information is shown in Exhibits _____ and _____ (KJS-3 and KJS-4).

Q: Did your analyses include the possibility of the Osprey Project's having increased output capability from duct-firing and power augmentation?

A: No. Our modeling analyses were conducted assuming no output from duct-firing or power augmentation. If included in the Project's final design configuration, these features would be expected to increase the Project's output during peak conditions and further enhance the reliability of the Peninsular Florida power supply system.

Q: Did you model the Osprey Project as an additional unit, i.e., a unit that was assumed to be brought into service in addition to all other power plants planned for Peninsular Florida, or did you assume that the Osprey Project would displace another unit or units that might otherwise have been built by Florida retail-serving utilities or other entities?

A: I modeled the Osprey Project as an additional unit, that is, as one that was incorporated into the Peninsular Florida power supply system in addition to all other existing and planned units. The planned units were identified through my review of all of the ten-year site plans that were submitted to the Florida Public Service Commission this year.

Q: Why did you model the Osprey Project in this manner?

A: I modeled the Osprey Project in this way because it will give the most conservative results regarding the Project's expected cost savings impacts, fuel savings impacts, and emissions impacts. This is a conservative assumption because it models the impacts of the Osprey Project within a more efficient system.

Q: Has anything changed since you prepared your analyses?

A: Since I originally prepared my analyses reported here, Calpine and Seminole have executed an agreement by which Calpine will sell Seminole 350 MW of firm capacity from the Osprey Project beginning in 2004. This agreement has caused Seminole's previously planned 2004 combined cycle unit to be taken out of the generation expansion plan.

Q: **How would the Osprey Project affect power supply costs if it were developed as a "displacement" unit instead of as an "additional" unit?**

A: The Osprey Project's actual impact on power supply costs would depend on the precise terms of the contract or contracts that Calpine entered into with the utilities whose units were displaced by the Project. However, if one were to model the Project's impact on Peninsular Florida power supply costs treating the system as an integrated whole, the Osprey Project would show greater fuel savings, cost savings, and emissions reductions than in the analyses that we performed treating the Project as an "additional" unit. This is because in the "displacement" case, there is less new, efficient gas-fired combined cycle capacity (like the Osprey Project) in the Peninsular Florida system, and thus the Project would be operating within a system which was, overall, less efficient and more costly to run, which would result directly in its providing greater fuel savings and power supply cost reductions.

In fact, this would now be expected to be the case because of the agreement between Seminole and Calpine for the purchase by Seminole of 350 MW of firm capacity from the Project, instead of building its own combined cycle unit in 2004 as previously planned. This means that my reported results actually understate the cost savings, fuel savings, and emissions reduction benefits of the Osprey Project because now, without Seminole's 2004 combined cycle unit, the Osprey Project will be operating within a slightly less efficient system, thus yielding greater benefits from its operation.

Q: What, if any, documents did you review in preparing your analyses?

A: We initially reviewed the <u>1999 Regional Load & Resource Plan</u> published in July 1999 by the Florida Reliability Coordinating Council (the "<u>FRCC 1999 Resource Plan</u>") and all ten-year site plans submitted to the Commission in the spring of 2000. We also reviewed the <u>2000 Regional Load & Resource Plan</u> published by the FRCC in July 2000.

Q: What assumptions did you make regarding future fuel prices over the period that you analyzed?

A: In developing the fuel price projections for our analyses, we examined historical Florida-specific fuel costs for electricity generation and evaluated the major publicly available fuel price forecasts, which are presented in the Energy Information Administration's ("EIA") Annual Energy Outlook 2000 publication. Our base case fuel price projections were based primarily on the forecasts prepared by EIA but with the gas price projections following those of Resource Data International, Inc. ("RDI"). For the higher gas price sensitivity case, we assumed the EIA projections (the EIA's "reference case") for all fuels. Exhibit _____ (KJS-2) shows the projected fuel prices for both our base case analysis and for the higher natural gas price sensitivity case.

Q: **What assumptions did you make regarding the electric power plants that would be available to serve Peninsular Florida?**

A: The assumptions used in our evaluations regarding available power plants to provide capacity and energy to Peninsular Florida are summarized in Exhibits _____ and _____ (KJS-3 and KJS-4), which present the projected Peninsular Florida generating fleet for 2003 and 2008, respectively. For reference, Exhibit ______ (KJS-5) presents a summary of existing capacity as of January 1, 2000. These data were obtained from the FRCC 2000 Resource Plan.

Q: What assumptions did you make regarding the growth rates of summer and winter peak demands and energy consumption in Peninsular Florida?

A: Exhibit ______ (KJS-6) presents the historical and projected summer and winter firm peak demands for Peninsular Florida. Exhibit ______ (KJS-7) presents the historical and projected net energy for load, number of customers, and load factors for Peninsular Florida. For the base case, the load forecast was developed on a company-by-company basis from the 2000 ten-year site plans. Some adjustments were necessary to account for loads which were included in more than one site plan, for one system which does not file a site plan, and for some overstatement of load management impact. We reconciled our company-by-company forecasts with the FRCC 1999 Resource Plan in order to achieve accuracy and completeness.

Q: What assumptions did you make regarding imports of electric power from outside Peninsular Florida and exports of power from Peninsular Florida to other regions?

A: We assumed that imports into Peninsular Florida would be as projected in the FRCC 1999 Resource Plan. We assumed that there would be no significant exports of power from Peninsular Florida to other regions.

Q: What assumptions did you make regarding the effects of energy conservation and demand-side management programs?

A: We generally assumed that the forecasts of peak demands and net energy for load presented in the FRCC 1999 Resource Plan and the 2000 ten-year site plans reflected the achievement of the Florida retail-serving utilities' Commission-approved energy conservation goals. There was one exception to this assumption, however: the FRCC projections and some of the site plans assume that net energy for load (total energy consumption) will reflect maximum possible reductions from interruptible, load management, and other energy conservation measures and programs. In my opinion, this systematically understates total energy consumption because it assumes far greater reductions in energy use from interruptible and load management customers than are actually realized. Accordingly, we adjusted the net energy for load projections upward to reflect more realistic energy consumption levels where necessary.

Q: How was transmission modeled or treated in your analyses?

A: We modeled Peninsular Florida as an integrated power supply system, with all generation resources available to serve all loads. Transmission was assumed to be costless for all transactions, such that the most efficient generation resources would be dispatched to serve the Peninsular Florida load, without regard to transmission constraints or tariffs.

Q: Do you consider this to be a realistic assumption?

A: Yes. Because it is not known what transmission augmentations will be carried out in the FRCC region in the next twelve years, it is best to make an assumption which would not favor the Osprey Project over any other new project or over existing generation. We made such an assumption.

Q: What, if any, effect would altering this assumption have on your analyses of the operations of the Osprey Energy Center?

A: Altering this assumption would likely have very little effect on the actual dispatch of the Osprey Project.

Q: Did you review any documents that you understood to be confidential or proprietary to Calpine or Seminole?

A: No.

Q: Do you consider any of your input or output data to be confidential, proprietary business information from Slater Consulting's perspective?

A: Yes. Our compilation of the generating units and their dispatch characteristics, and to some extent the load forecast data, are the intellectual work product of Slater Consulting, developed through significant and substantial effort. We consider this to be confidential, proprietary business information, but we are, of course, willing to disclose it pursuant to appropriate confidentiality protections.

OPERATIONS OF THE OSPREY ENERGY CENTER

Q: What does your base case analysis show regarding the projected operations of the Osprey Energy Center?

A: For the base case, our analyses show that the Osprey Energy Center will generally produce between 4,000 and 4,400 gigawatt-hours ("GWH") annually, indicating annual capacity factors between 86 and 93 percent, for the 2003-2012 analysis period. Exhibit ____ (KJS-8) shows the projected annual energy production from the Osprey Project and the annual capacity factors based on the indicated output amounts.

Our analyses also indicate that, in peak demand periods, the Project will make sales equal to the Project's full rated capacity, subject only to outages.

Q: What do your analyses show regarding the projected operations of the Osprey Project if natural gas prices are higher than your base case forecast?

A: Exhibit ______ (KJS-9) displays the results of this sensitivity analysis, and shows that the Osprey Project will produce between 3,900 and 4,400 GWH annually in this case. That is, it will operate at annual capacity factors between 83 and 92 percent.

Q: **What do your analyses show regarding the projected operations of the Osprey Project if Peninsular Florida's load growth is higher or lower than in your base case?**

A: Exhibit ______ (KJS-10) shows that load growth will have virtually no impact on the operations of the Osprey Project.

Q: **What, if any, impacts will the Osprey Project's operation have on other power plants in Peninsular Florida?**

A: Generally, the Project will cause less efficient and more costly plants to operate at lower output levels. Exhibit ______ (KJS-11) shows the modeled impacts of the Osprey Project's operations on other units supplying Peninsular Florida during two representative days in 2005, one a June weekday and one a December weekday. Of course, the actual impacts would depend on the actual availability status of all units in Peninsular Florida on any given day.

Q: **In your opinion, how likely is it that the Osprey Project would make any significant amount of power sales outside Peninsular Florida?**

A: Based on my general knowledge of the Florida and Southeastern Electric Reliability Council ("SERC") markets, including both existing and planned generating capacity for both, and the transmission systems in both markets, I believe that it would be highly unlikely that the Project would make any significant amount of sales outside Peninsular Florida. This is generally because Florida's generation resources are high-cost.

Q: **Are you aware of other evidence that supports your opinion that the Osprey Project will not make significant sales of power outside Peninsular Florida?**

A: Yes, I am. The PowerDAT® data base maintained by Resource Data International, Inc. and reported on a regular basis in Public Utilities Fortnightly shows that the average generation cost (defined as fuel cost plus reported non-fuel operating and maintenance cost) in the FRCC region, i.e., Peninsular Florida, was the highest of all of the reliability regions in the United States for 1997, 1998, and 1999. Exhibit ______ (KJS-12) shows that for 1999, the FRCC region's average generating cost was 2.59 cents per kWh, which equals $25.90 per MWH. The region with the next highest cost was the

Electric Reliability Council of Texas ("ERCOT"), with an average cost of $24.10 per MWH. The average cost for electricity generation in Florida's nearest neighbor regions was significantly less than in the FRCC region: the average cost for the SERC region was $17.60, approximately 32 percent less than in FRCC, the average cost for the Southwestern Power Pool ("SPP") region was $21.10 per MWH, approximately 19 percent less than in FRCC, and the average cost for the East Central America Reliability ("ECAR") region was $21.20 per MWH, approximately 18 percent less than in FRCC.

In addition, I am aware from reading the power generation trade press that there are significant amounts of new, efficient, relatively low-cost capacity being installed in SERC, ECAR, and other regions. The addition of this new capacity will further reduce the economic viability of power exports from Florida to other regions.

FUEL CONSUMPTION IMPACTS OF THE OSPREY ENERGY CENTER

Q: What, if any, effects will the Osprey Project have on the total consumption of primary fuels used to generate the electric power supply for Peninsular Florida?

A: Exhibit ______ (KJS-13) shows the estimated impacts of the Osprey Project's operations on total primary energy consumption for generating Peninsular Florida's electricity supply for each year from 2003 through 2012. (Again, these impacts are based on the reasonable assumption that the Project's output will be sold to Seminole and to other Peninsular Florida retail-serving utilities, pursuant to appropriate contractual commitments, when such transactions are cost-effective.) Our modeling analyses show that the Osprey Project can be expected to reduce total fuel consumption by roughly 6 trillion Btu per year to 9 trillion Btu per year over the analysis period. This is a tremendous amount of energy: 6 trillion Btu is approximately the amount of energy in 6 million Mcf (equivalent to 6 billion cubic feet) of natural gas, or the amount of energy in 1 million barrels of residual fuel oil.

Q: **What effects would the Osprey Project have on the specific fuels used to generate the electric power supply for Peninsular Florida?**

A: Exhibit ______ (KJS-14) shows the impacts of the Osprey Project's operations on the total use of natural gas, No. 6 (residual) fuel oil, No. 2 fuel oil, nuclear, and coal and other solid fuels to generate Peninsular Florida's electricity supply for the 2003-2012 analysis period. Page 1 of 2 of this exhibit shows the impact on fuel use in millions of Btu, and page 2 of 2 of the exhibit shows the impact in terms of gigawatt-hours (i.e., thousands of megawatt-hours) generated using each fuel type. Generally, the Project results in significant decreases in the use of coal and No. 6 oil, with a corresponding increase in natural gas use. The Project's specific impacts are also illustrated in Exhibit ________ (KJS-11), which shows the expected impacts of the Osprey Project's operations on the operations of other units in Peninsular Florida during representative days.

Q: It is relatively easy to understand how the Osprey Project, with its relatively low heat rate, would reduce the use of gas or oil used in less efficient power plants. Can you explain, however, how the Osprey Project would displace generation from coal-fired power plants?

A: Of course. Certain coal plants, while they have relatively low fuel costs, also have relatively high non-fuel operating and maintenance ("O&M") costs. Because dispatch decisions are based on total variable costs, in some instances, the sum of the Osprey Project's incremental fuel and non-fuel variable O&M cost (and the corresponding costs for the other planned gas-fired combined cycle units as well) will be less than the sum of those costs for coal units. This results in the economic dispatch decision being to operate the Osprey Project at higher output levels and the relatively higher-cost coal units at lower levels.

Q: **Please summarize the expected impact of the Osprey Project's operations on the consumption of petroleum fuels for electricity generation for Peninsular Florida?**

A: The Osprey Project's operations can be expected to result in significant reductions in the use of petroleum fuels for electricity generation for Peninsular Florida. For example, Exhibit ____ (KJS-14) shows savings of approximately 13,122 billion Btu of No. 6 oil and another 518 billion Btu of No. 2 oil in 2004. This translates to a total savings of petroleum fuels of 13.6 trillion Btu, or approximately 2.2 million barrels for 2004.

Q: **Will the Osprey Project have any effect on the overall efficiency of natural gas use in Florida?**

A: Yes. The Osprey Project will increase the overall efficiency of natural gas use in Florida. This will occur as the Osprey Project, with its heat rate of approximately 6,970 Btu/kWh (as dispatched), is dispatched economically in preference to other gas-fired units with less efficient heat rates, e.g., the numerous gas-fired steam units in Florida that have heat rates in the range of 10,000 to 11,000 Btu/kWh.

Q: What, if any, effect will the Osprey Project have on the overall efficiency of electricity generation for Peninsular Florida?

A: The Osprey Project will significantly increase the overall efficiency of electricity generation for Peninsular Florida. Exhibit ______ (KJS-13) shows not only that the Project will result in overall savings of 6 trillion to 9 trillion Btu per year for electricity generation, but that the Project will also reduce the average heat rate for Peninsular Florida electricity generation by 24 to 44 Btu per kilowatt-hour, a reduction on the order of 0.4 percent. This is a significant improvement in the overall efficiency of producing approximately 200,000,000 MWH of electricity per year for the fourth largest state in the nation.

Q: Why will the Osprey Project have these effects?

A: The Osprey Project will have these fuel and energy savings effects because it is significantly more efficient and cost-effective than the vast majority of electric generating plants that currently exist in Peninsular Florida and at least as efficient as virtually all of the new capacity that is planned for Peninsular Florida. Exhibit ______ (KJS-3) shows the estimated dispatch costs and heat rates (as assumed in our PROMOD IV® modeling) for all of the power plants that are expected to be serving Peninsular Florida in 2003. The Osprey Project's dispatch cost of $28.09 per MWH is lower than the dispatch costs of approximately 34,000 MW of the total capacity of approximately 47,000 MW (including 3,877 MW of nuclear capacity operated as "must run" generation) that is projected to be available to serve Peninsular Florida in that year. In addition, the Osprey Project's heat rate of 6,967 Btu per kWh (as dispatched in 2003) is more efficient than virtually all of the generating capacity that is projected to be available to serve Peninsular Florida in that year. Similarly, Exhibit ______ (KJS-4) shows the estimated dispatch costs and heat rates for all of the power plants that are expected to be serving Peninsular Florida in 2008. The Osprey Project's dispatch cost of $32.57 per MWH is lower than the dispatch costs of approximately 38,000 MW of the total of approximately 51,000 MW (again including 3,877 MW of nuclear as "must run") that is projected to be available to serve Peninsular Florida in that year. In addition, the Osprey Project's as-dispatched heat rate of 6,984 Btu per kWh (as dispatched in 2008) is more efficient than virtually all of the generating capacity that is projected to be available to serve Peninsular Florida in that year.

Q: Will there be any adverse effect on primary fuel consumption and the efficiency of electricity generation for Peninsular Florida if the Osprey Project is not brought into service as requested by Calpine in this proceeding?

A: Yes. If the Osprey Project is either delayed or not brought into operation at all, Florida will lose the primary fuel savings benefits that the Project will provide. As shown above, these primary fuel savings are quite significant -- on the order of 6 trillion to 9 trillion Btu per year for each year of the Project's operation.

COST-EFFECTIVENESS OF THE OSPREY ENERGY CENTER

Q: Did your analyses address the cost-effectiveness of the Osprey Project as an additional power supply resource in the Peninsular Florida power supply system?

A: Yes. Our analyses addressed the Project's cost-effectiveness by evaluating the impact that it would have as an incremental power supply resource added into the Peninsular Florida power supply system in addition to all other planned additions, as indicated by the ten-year site plans filed with the Commission this year. Basically, our analyses modeled the total power supply costs for serving Peninsular Florida without the Osprey Project and with the Project. The difference in costs represents the cost savings properly attributable to the

Osprey Project. Again, these results are predicated upon the reasonable assumption that the Osprey Project's output will be sold, pursuant to appropriate contractual commitments, to Seminole and to other Peninsular Florida retail-serving utilities when such transactions are cost-effective.

Q: And what did your analyses show?

A: Our "base case" analyses and our sensitivity analyses showed that the Osprey Project will provide significant power supply cost savings to Peninsular Florida. Exhibit ______ (KJS-15) shows that for the base case, the Project would result in power supply cost savings between $113 million and $204 million per year (in nominal terms), with projected total savings of $794 million in Net Present Value terms over the Project's first ten years of operations (2003-2012).

For the higher natural gas price sensitivity case, Exhibit ______ (KJS-16) shows that the Project will provide power supply cost savings between $115 million and $218 million per year (in nominal terms), with projected total savings of $806 million in Net Present Value terms over the Project's first ten years of operations (2003-2012).

For the low load growth sensitivity case, Exhibit ______ (KJS-17) shows that the Project will provide power supply cost savings between $47 million and $219 million per year (in nominal terms), with projected total savings of $627 million in Net Present Value terms over the Project's first ten years of operations (2003-2012).

For the high load growth sensitivity case, Exhibit ______ (KJS-18) shows that the Project will provide power supply cost savings between $88 million and $410 million per year (in nominal terms), with projected total savings of $1.12 billion in Net Present Value terms over the Project's first ten years of operations (2003-2012).

Q: How do these total cost savings translate into reductions in the estimated wholesale cost of power for Peninsular Florida?

A: Exhibit _____ (KJS-15) shows that for the base case, the estimated reduction in the average wholesale cost of power for Peninsular Florida is approximately $0.54 to $0.84 per MWH over the 2003-2012 study period. Exhibit ______ (KJS-16) shows that the impact of the Osprey Project in the higher natural gas price scenario would be approximately $0.55 to $0.88 per MWH over the study period. Exhibit ______ (KJS-17) shows that for the low load growth scenario, the impact of the Osprey Project would be a reduction in average power supply costs of approximately $0.23 to $0.94 per MWH, and that for the high load growth scenario, the impact of the Osprey Project would be a reduction in average power supply costs of approximately $0.41 to $1.47 per MWH.

Q: What, if any, effect would the fact that the Osprey Project is now going to fulfill Seminole's 2004 capacity need have on these cost reduction impacts?

A: The fact that the Osprey Project is now committed to serving Seminole's 2004 need will presumably cause Seminole's previously planned 2004 combined cycle unit to drop out of the projected statewide power supply plan. In turn, because the Osprey Project will now be operating within a slightly less efficient system, this will cause the cost reduction benefits available from the Osprey Project's operation to be slightly greater than the values reported above.

Q: Will the Osprey Project be the most cost-effective alternative available to serve Peninsular Florida's needs for cost-effective, reliable power?

A: In my opinion, yes. The Osprey Project has a favorable heat rate and favorable direct construction costs, as reported by Calpine, when compared to other generating units that are planned or proposed for Peninsular Florida. Combining these factors with the fact that the Project will not be included in any retail-serving utility's rate base, but rather the Project's output will only be purchased for resale to the customers of retail-serving utilities, such as Seminole's member cooperative utility systems that obtain their wholesale power from Seminole, when such purchases are cost-effective, it is obvious that it is the most cost-effective alternative available. Exhibit _____ (KJS-19) lists planned and proposed generating units for Peninsular Florida. Among the gas-fired combined cycle units, the Osprey Project compares quite favorably: only the Cane Island 3, Duke New Smyrna Beach, and Okeechobee units have comparable heat rates and lower construction costs. Most of the proposed combined cycle capacity has significantly higher direct construction costs.

Again, this conclusion is based upon the assumption that the Project's output will be sold, pursuant to appropriate contractual commitments, to Seminole and to other Peninsular Florida retail-serving utilities, when such transactions are cost-effective. As explained above, I believe that this assumption is entirely reasonable.

Q: What, if anything, could prevent the Osprey Project from being a cost-effective power supply resource in the Peninsular Florida region?

A: Only highly unlikely developments, such as the total failure of the Project to become operational or a technological change so dramatic as to make <u>all</u> of the existing and planned

Peninsular Florida generating capacity obsolete, could cause the Osprey Project not to be cost-effective.

Q: How does the Osprey Project compare to other existing and planned Peninsular Florida power plants in terms of its projected operating costs?

A: In terms of its operating costs, the Osprey Project compares quite favorably to all existing generating plants in Peninsular Florida except those fueled by nuclear fuel and some of those fueled by coal. Referring back to Exhibit ______ (KJS-3), the Commission will see that the Osprey Project is more cost-effective, in terms of its dispatch costs, than approximately 34,000 MW out of the total of 47,000 MW (including nuclear as "must run") available to serve Peninsular Florida in 2003. Similarly, Exhibit ______ (KJS-4) shows that the Project is more cost-effective than approximately 38,000 MW of the total of approximately 51,000 MW (including nuclear as "must run") of capacity that is projected to be available to serve Peninsular Florida in 2008. As noted above, the Project also compares favorably to other planned and proposed gas-fired combined cycle units.

I should add that in our modeling, we intentionally assumed identical heat rate characteristics for all of the new gas-fired combined cycle capacity. We did so in order to be conservative with respect to the Osprey Project's impacts and operations.

Q: One of the criteria that the Commission must consider in a need determination proceeding is whether the proposed power plant will contribute to meeting the need for adequate electricity at a reasonable cost. As you understand this term, will the Osprey Project contribute to meeting the needs of Florida retail-serving utilities for adequate electricity at a reasonable cost?

A: Yes. In the simplest terms, the Osprey Project is available to Seminole and potentially to other Peninsular Florida retail-serving utilities, and our PROMOD IV® modeling analyses show that it can save between $627 million and $1.12 billion (Net Present Value) in power supply costs for Peninsular Florida in the first ten years of its life, depending on variations in fuel prices and load growth rates. Clearly, if Florida can obtain its needed power supply at savings between half a billion and more than one billion dollars, it would only be reasonable to take advantage of the opportunity. Given the availability of these savings, paying the extra half billion dollars or more would represent paying an <u>unreasonable</u> amount for needed power.

Q: Will the Project have any effect on potential "price spikes" for wholesale power in Peninsular Florida?

A: Yes, the Project can be expected to suppress and reduce the magnitude of prices in basically all hours when the Project is available to serve. (The Project would be expected to be available to serve continuously during all summer and winter peak periods, except for unplanned or forced outages.) While our modeling analyses did not address extreme peak conditions, it is obvious that the Project's presence would suppress prices in any extremely tight supply conditions that might be experienced in Peninsular Florida.

Q: What, if any, value would the Project have with respect to other services? For example, would the Project suppress the price of ancillary services to Seminole and to other Peninsular Florida retail-serving or load-serving utilities?

A: Generally, the Project will also suppress the cost or price of other services, including ancillary services. (Ancillary services are defined by the Federal Energy Regulatory Commission as (a) Scheduling, System Control and Dispatch Service; (b) Reactive Supply and Voltage Control from Generation Sources Service; (c) Regulation and Frequency Response Service; (d) Energy Imbalance Service; (e) Operating Reserve - Spinning Reserve Service; and (f) Operating Reserve

Supplemental Reserve Service.) While our PROMOD IV® analyses only addressed the Osprey Project's value in supplying energy and did not include any analyses of the Project's impact on the prices of ancillary services, from my experience I can say that the Project's presence will suppress the prices of ancillary services for retail-serving utilities in Peninsular Florida, especially the prices of the various types of reserve services. These effects are likely to be quite significant in Florida once the transmission function is transferred to some form of regional transmission organization that would have the responsibility for procuring ancillary services in the market.

Q: **Do your analyses take account of the value of economic production (e.g., fertilizer, chemicals, services, food products, and so on) that could, and presumably would, be realized by commercial enterprises in Florida if they were able to stay in operation as a result of the Project's presence and operation?**

A: No. Our analyses address only the direct impacts on power supply costs. The value of maintaining electric service is generally significantly greater than the cost of providing incremental energy, even in instances where power supplies are tight and incremental power is available only at extremely high prices, for example, $1,000 or more per MWH. In my experience, the value of "lost production" is frequently several times that amount.

Q: What, if anything, do your analyses of the Osprey Energy Center's operations show regarding the need for the Project?

A: Our analyses show that the Project will meet significant need in Peninsular Florida for cost-effective power, even if the Project were added onto the projected Peninsular Florida generating fleet in addition to all other planned resources. This is demonstrated by the significant, even dramatic, power supply cost reductions that the Osprey Project will provide.

Again, as I indicated above, these analyses provide the most conservative estimate of the Project's contributions to Peninsular Florida, because they model the Project's operations against the backdrop of the greatest amount of new efficient generation in the area. Given that the bulk of the Osprey Project's capacity is now firmly committed to Seminole, with the corresponding replacement of Seminole's previously planned 2004 combined cycle unit in the statewide generation expansion plan, the Project can be expected to provide even greater total benefits in terms of reduced power supply costs.

Q: Based on your analyses, and in your opinion, will there be any adverse effects on total power supply costs for Seminole and for other Peninsular Florida retail-serving or load-serving utilities if the Osprey Project is not brought into service as requested by Calpine and Seminole?

A: Yes. Our analyses demonstrate quite clearly that the Project will provide significant, even dramatic, benefits to Seminole and potentially to other Peninsular Florida retail-serving and load-serving utilities (subject to appropriate contracts) if and when it is brought into service as proposed by Calpine and Seminole. With respect to power supply costs, if the Project were not brought into service as proposed by Calpine and Seminole, these benefits, specifically the projected cost savings of about $800 million (Net Present Value) over the Project's first ten years of operation, would be lost. Losing these benefits would be a significant adverse effect of the Project's not being brought into service as requested by Calpine and Seminole. Similarly, delaying the Project's commercial operation will "cost" on the order of $150 million in lost power supply cost reductions annually for each year of delay.

RELIABILITY IMPACTS OF THE OSPREY ENERGY CENTER

Q: How should the Commission evaluate the impact of the Osprey Energy Center on the reliability of the power supply system for Peninsular Florida?

A: The Commission should include the Osprey Project in its reliability evaluation for Peninsular Florida as a committed resource, in this case to Seminole.

Q: What impact will the Osprey Project have on the reliability of Peninsular Florida's power supply system?

A: The Osprey Project will improve Peninsular Florida reliability by increasing Peninsular Florida reserve margins by approximately 1.1 to 1.3 percent in both summer and winter seasons following the Project's achievement of commercial in-service status. For example, Exhibit ______ (KJS-20) shows that in the summer of 2003, the Project will increase Peninsular Florida's reserve margin from 15.3 percent to 16.5 percent. Exhibit ______ (KJS-21) shows similar improvement in winter reserve margins.

Q: What, if any, impact would the availability of the Osprey Project have on the ability of Peninsular Florida's retail-serving utilities to maintain service to their retail customers during periods when power supply was short relative to demand?

A: The Osprey Project will have significant beneficial effects on the ability of Seminole and potentially other Peninsular Florida retail-serving utilities, subject to appropriate contracts, to maintain uninterrupted service to their firm and non-firm customers. This would apply not only during extreme seasonal peak demand conditions, but any time that supply was "tight" relative to demand. Such conditions have occurred in what are typically regarded as "shoulder" months when demand was higher than projected (though far below annual peak levels) but supply was tight due to scheduled maintenance outages and unexpected outages of generating units.

In an extreme winter peak event, the Project's capacity of approximately 578 MW would enable Seminole and other Florida retail-serving utilities, subject to appropriate contracts, to maintain service to between 115,000 and 165,000 residential customers, at an average coincident peak demand of 3.5 to 5.0 kilowatts per household. Even in less extreme conditions, the Project's capacity would enable Florida retail-serving utilities to maintain service to more of their customers without implementing direct load control measures or without interrupting service to commercial and industrial interruptible customers. In an extreme summer event, the Project's summer capacity of 496 MW would enable Florida's retail-serving utilities to maintain service to between 99,000 and 142,000 residential customers or equivalent load.

Q: In your opinion, would it be accurate to say that Florida has a need for the Osprey Project from a reliability perspective?

A: Yes. Given the firm commitment of 350 MW of the Project's capacity to Seminole and the availability of the balance of the Project's capacity to Seminole on a reserve capacity option basis, the Osprey Project will enhance the reliability of Seminole's system and of Peninsular Florida's electric power supply system as a whole.

Q: Will there be any adverse effects on the reliability of the Peninsular Florida power supply system if the Osprey Project is not brought into service as requested by Calpine and Seminole?

A: Yes. Considering the firm commitment of 350 MW of the Project's capacity to Seminole and the availability of the balance of the Project's capacity to Seminole on a reserved firm capacity basis, reserve margins will be greater, by a measurable, significant amount, than if the Project is not added. More significantly, in practical terms, subject to appropriate contracts, Seminole and potentially other Peninsular Florida retail-serving utilities will be unable to serve approximately 500 MW of load (up to approximately 660 MW of load with duct-firing and power augmentation) that they could serve if the Project were constructed as sought by Calpine and Seminole. This means that, in periods when supply is short relative to demand, the equivalent of 99,000 to 185,000 homes will not be served, or will have their service interrupted, if the Project is not built. The actual impacts could be felt by residential customers or by industrial and commercial customers who would have to shut down their operations as a result of power supply shortages. The actual amount of load affected depends on the season and the final configuration of the Project.

IMPACTS OF THE OSPREY ENERGY CENTER ON ENVIRONMENTAL EMISSIONS FROM ELECTRICITY GENERATION

Q: Did you evaluate the impacts of the Osprey Energy Center's operations on the emissions of pollutants that are associated with electricity generation?

A: Yes. Our PROMOD IV® analyses evaluated the impacts on total emissions of sulfur dioxide and nitrogen oxides from the operation of the power plants included in our analyses. In this application, we evaluated the emissions of sulfur dioxide and nitrogen oxides in the various cases with and without the Osprey Project included as a power supply resource for Peninsular Florida. (Again, these results are predicated on the reasonable assumption that the Project's output will be sold to Seminole and to other Peninsular Florida retail-serving utilities, pursuant to appropriate contractual commitments, when such transactions are cost-effective.)

Q: **What are the projected impacts of the Osprey Energy Center on the emissions of sulfur dioxide and nitrogen oxides associated with producing the electric power supply for Peninsular Florida?**

A: Exhibit ______ (KJS-22) shows that with the Osprey Project in service in our base case scenario, the emissions of sulfur dioxide are approximately 4,600 to 16,000 tons per year less than if the Osprey Project is not in service. Similarly, Exhibit _______ (KJS-22) shows that the Osprey Energy Center's operations are expected to result in reductions of nitrogen oxides emissions of approximately 3,900 to 7,000 tons per year.

Q: Will there be any adverse effects on Florida's environment if the Osprey Project is not brought into service as requested by Calpine and Seminole in this proceeding?

A: Yes. The combined emissions of sulfur dioxide and nitrogen oxides from producing Peninsular Florida's electricity supply will be more than eight thousand tons greater in each year that the Osprey Project's operation is delayed.

Q: Does this conclude your direct testimony?

A: Yes. It does.

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In Re: Petition for Determination of Need for the Osprey Energy Center in Polk County by Seminole Electric Cooperative, Inc. and Calpine Construction Finance Company, L.P.	DOCKET NO. 001748-EC FILED: January 12, 2001

AMENDED EXHIBITS

OF

KENNETH J. SLATER

ON BEHALF OF

CALPINE CONSTRUCTION FINANCE COMPANY, L.P.

Technical Qualifications and Professional Experience

Kenneth John Slater

EDUCATION

B.Sc.,	Pure Mathematics and Physics,	Sydney University, 1960
B.E.,	Electrical Engineering,	Sydney University, 1962
M.A.Sc.,	Management Sciences,	University of Waterloo, 1974

PROFESSIONAL AFFILIATIONS

Association of Professional Engineers of Ontario
- Registered Professional Engineer

Institute of Electrical and Electronic Engineers
- Member of Power Engineering Society
- Past member of Power System Engineering Committee
- Past member of System Economics subcommittee and working group

EXPERIENCE

1957-62 Mr. Slater was a Junior Professional Officer at the Electricity Commission of New South Wales attending university and undergoing on-the-job training in power station and substation design, construction, protection, maintenance, and operation.

1962-67 Mr. Slater was a Professional Engineer Grades 1 and 2 at The Electricity Commission of New South Wales, engaged in a variety of functions within the areas of Power Station Construction, Generation Planning, System Operation and Load Dispatch.

1967-69 As Assistant Engineer Area Operations/Sydney West (Professional Engineer, Grade 3) with the Electricity Commission of New South Wales, Mr. Slater was responsible for the day-to-day operation of the Sydney West Area (approximately 20% of the State System).

He supervised the day-to-day work of more than 18 operators as they provided safe working conditions for Commission staff and others on system apparatus, and as they provided safe, secure, reliable and economic operation of this portion of the State System.

He performed the liaison function with head office staff, other divisions and customers on all operating activities, directed the performance of complicated operating procedures and trained both regular and emergency operators.

While he was in this and his previous position, Mr. Slater was responsible for the design and manufacture of the live line testing devices used by the Commissions' operators and linemen.

As well, he assumed responsibility for the preparation and execution of "black start" exercises and for the arrangement and detailing of complicated switching for major rearrangements and commissionings on the State System. He also developed original computer applications.

1969-74 As Engineer, and then Senior Engineer, heading the Production Development Section of Ontario Hydro's Operating Department, Mr. Slater was engaged in developing computational procedures and computer programs for Production Economics and Resource Management.

Major contributions included (1) the development and implementation of the computer program which, for more than 20 years, produced the daily generation schedule for the Ontario Hydro System, (2) the formulation of a Stochastic System Model to coordinate and optimize the production planning, maintenance planning, interchange planning and resource management of the Ontario Hydro System, and (3) the development of PROMOD, a Probabilistic Production Cost and Reliability model, the first version of the "core" of the Stochastic Model in (2) above.

As a member of the project group implementing the Operating Department's Data Acquisition and Computer System, he headed a work unit responsible for providing the application programs related to generation scheduling, power interchange and resource management. Also, he held responsibilities in the areas of policy determination, analytical techniques and the planning of future applications.

1974-75 As Manager of Engineering at the Ontario Energy Board, Mr. Slater was heavily involved in public hearings into Ontario Hydro's System Expansion Plans and Financial Policies, and into Ontario Hydro's Bulk Power Rates.

During this time, he provided much of the power system engineering input necessary for the start-up and formulation of the public hearing process related to Ontario Hydro. He also provided the engineering input for the regulation of Ontario's three major investor owned gas utilities.

1975-76 For 12 months, Mr. Slater was a private consultant contracted to the Royal Commission on Electric Power Planning, in Ontario, as its Research Director. During this time, he directed and participated in various studies of different aspects of electricity supply. He was also a member of the panel of expert examiners in a number of the Royal Commission's public hearings.

1976-83 As President of Slater Energy Consultants, Inc., in Toronto, Mr. Slater performed or made major contributions to a number of important assignments at the forefront of the electrical energy industry. These included:

- The Export of Electrical Power
  .... a study for the Ontario Ministry of Industry and Tourism.

- Load Management Studies
  .... for the Detroit Edison Company.

- California Utilities Increased Integration Study
  .... for San Diego Gas & Electric Company, Southern California Edison Company, Los Angeles Department of Water and Power, and Pacific Gas and Electric Company.

- Bradley-Milton 500 kV Transmission Lines
  .... a study for the Ontario Ministry of Energy and the Interested Citizens Group (Halton Hills).

- Solar Energy and the Conventional Energy Industries
  .... a study for the Canadian Ministry of Energy, Mines and Resources.

- The Expert Examiner for the Ontario Royal Commission on Electric Power Planning during hearings into Priority Projects.

- Various Studies into Unconventional Electrical Resources
  ....for the P.E.I. Institute of Man and Resources and the P.E.I Energy Corporation.

- Analysis and Expert Testimony in Support of Lower Demand Rates for Lake Ontario Steel Company Limited, Ivaco Industries Limited and Atlas Steels.

- Claims for Consequential Damages of the Roseton Boiler Implosions
  ....for Consolidated Edison Company, Central Hudson Power Company and Niagara Mohawk Power Corporation.

- A study of the Potential for Megawatt Scale Wind Power Plants in Electrical Utilities
  ....for the Canadian Ministry of Energy, Mines and Resources.

These studies have included the need to create special and unique power system models and solution techniques and have addressed significant issues of major importance in the electricity supply industry. Mr. Slater also has carried out assignments for the following clients;

Nova Scotia Power Corporation.
The Government of Prince Edward Island.
The New Brunswick Electric Power Commission.
Ontario Energy Corporation.
Ontario Energy Board.
Go-Home Lake Cottagers Associations.
Saskatchewan Power Corporation.
FMC Corporation.
FMC of Canada Limited.
ERCO Industries Limited.
Canadian Occidental Petroleum Ltd.
State Energy Commission (Western Australia).
Toronto District Heating Corporation.

In connection with his consulting activities, Mr. Slater gave expert testimony in the state of Idaho and in the provinces of Ontario and Prince Edward Island.

Mr. Slater also was a principal developer of PROMOD III. a proprietary electric utility production cost and reliability model owned by Energy Management Associates, Inc.. This model was used by over seventy utilities in Canada, the United States. Japan and Australia. Its wide acceptance made it the "Industry Standard" in the U.S..

1983-90 As Vice President and Chief Engineer for Energy Management Associates, Inc., Mr. Slater was responsible for giving technical direction for the development and maintenance of Energy Management Associates, Inc., state-of-the-art software products. As Senior Vice President and Chief Engineer. Mr. Slater was head of the Energy Management Associates, Inc.'s utility consulting practice. He led or made significant contributions to a number of important consulting engagements, including:

- Study and regulatory testimony concerning the value to the Idaho Power Company system of the interruptibility provisions in F.M.C.'s supply contract.
- Generation planning studies for Cincinnati Gas and Electric Company, San Diego Gas & Electric Company and the City of Austin Electric Utility Department.
- Assistance to legal counsel during regulatory litigation regarding the hostile takeover of a major Canadian gas utility holding company (Union Enterprises). including definition and examination of issues, selection of witnesses. and analysis of the opposing case.
- Development and demonstration of a method for the allocation of the Inland Power Pool's operating reserve requirement among its members.
- Analysis of replacement power costs during the outage of Niagara Mohawk Power Corporation's Nine Mile Point #1 nuclear unit.
- Reserve margin assessments for Public Service Company of Indiana, Allegheny Power System Inc., Iowa Electric Light & Power Company, San Diego Gas & Electric Company, and El Paso Electric Company.

- Examination of the gas supply situation in Southern California and regulatory testimony regarding the "unbundling" of storage service.

- Evaluation of the operational, planning and financial impacts of merging two large Eastern U.S. electric utilities.

- Study and regulatory testimony regarding the value and appropriate level of interruptible demand for the Union Gas system.

- Evaluation of the benefits of increased operational integration of a group of electric utilities.

- Assistance for Tucson Electric Power Co. and its legal counsel during arbitration of its dispute with San Diego Gas and Electric Company regarding the operation of a large power sale agreement.

- Analysis of the economics of a third A/C transmission line linking California and Oregon.

- A seminar on "Power Pooling and Inter-Utility Interconnections" for the management of the Central Electricity Generating Board and other parties involved in U.K. privatisation.

- Determination of the benefits of pool membership for two electric utilities in the Northeast U.S..

- Assistance for Riley Stoker Corporation and its legal counsel with the arbitration of direct and consequential damages arising out of the late completion and early poor performance of two major coal-fired generating units. The work included case examination and development, detailed reconstruction of events, analysis of all financial and economic consequences of project delay and performance with separation of fault, analysis of opponent's case and assistance with cross-examination, direct and rebuttal testimony, and assistance with oral and written argument.

Mr. Slater's consulting assignments included the areas of power system planning, operations, reliability, economics, ratemaking and assessment of the worth of unconventional resources. He appeared as an expert witness in regulatory hearings in Idaho, Iowa, Indiana, Florida, California, Texas, Ontario and Nova Scotia and in civil arbitration proceedings in Louisiana and Pennsylvania.

Mr. Slater continued to contribute to the development of E.M.A.'s utility software products. His contributions included being a principal developer of SENDOUT, E.M.A.'s proprietary supply model for gas utilities.

1990- In August 1990, Mr. Slater returned to working in his own practice, in Atlanta, where he heads a small corporation, Slater Consulting, which provides consulting services and expert testimony for various different participants in the utility industry.

Slater Consulting assignments, led by Mr. Slater, have included:

- Assistance to legal council for creditors of a bankrupt utility.
- Analysis and testimony for Texas - New Mexico Power Company regarding prudent alternatives to their decision to build TNP ONE Unit 2.
- Assistance and analysis for a utility and its legal counsel during litigation regarding damages sustained because of interference in a proposed merger of that utility with another utility.
- Analyses and testimony before the New York PSC for Sithe Energies, Inc., in certification proceedings and in numerous avoided cost and buy-back rate proceedings.
- Analyses and testimony for the Independent Power Producers of New York in QF curtailment, buy-back rate and back-up rate proceedings before the New York PSC.
- Analysis and testimony for Southwestern Public Service Co. at FERC and before the New Mexico Public Service Commission regarding the lack of production cost savings from the proposed merger of Central & South West Utilities with El Paso Electric Company.
- Analyses and testimony before the Public Service Commission for Independent Power Producers in Florida regarding QF curtailment.

- Analyses and testimony in Civil Court cases for Independent Power Producers in Florida regarding the correct implementation of contractual dispatchability provisions.

- Testimony before regulatory commissions in New York. Pennsylvania. Texas. Florida and Louisiana regarding various aspects of emerging competition.

- Analyses and testimony before the Georgia Public Service Commission on behalf of Mid-Geogia Co-gen and others regarding avoided costs on the Georgia Power . Southern Company system.

- Analysis and testimony before the Georgia Public Service Commission on behalf of Georgia Power Company regarding the Prudence of Georgia Power's 1978-1980 investment in the Rocky Mountain pumped storage plant.

- Testimony before the regulatory commissions of Texas, Virginia and Wisconsin regarding the fair allocation of utility revenue requirements to individual customer classes.

- Testimony before the United States Bankruptcy Court regarding the value of the non-nuclear assets of Cajun Electric Power Co-operative, Inc.

- Analyses for Sithe Energies, Inc. of the future dispatch and associated energy revenues for numerous generating resources in the Northeast United States.

- Operational planning analyses for Sithe Energies, Inc. regarding numerous existing and new generating resources in the Northeast United States.

- Analyses and testimony in Courts and before arbitrators for the non-operating owners of the South Texas Nuclear Project, the Cooper nuclear unit in Nebraska, and the Millstone 3 nuclear unit in Connecticut concerning the replacement power costs during extended outages.

In connection with these and other assignments, Mr. Slater has appeared as an expert in regulatory proceedings in Florida, Georgia, Louisiana, New Mexico, New York, Pennsylvania, South Carolina, Virginia, Wisconsin and Texas, and at the Federal Energy Regulatory Commission. He has also appeared in Federal Bankrupty Court, state courts in Virginia, Nebraska, Texas and Florida, and civil arbitration proceedings in Nevada and Pennsylvania.

PUBLICATIONS & PRESENTATIONS

"Meeting System Demand"
Canada-USSR Electric Power Working Group Electrical Seminar, Montreal, March, 1973.

"Stochastic Model for Use in Determining Optimal Power System Operating Strategies."
Power Devices and Systems Group, Electrical Engineering Department. University of Toronto - 1973.

"Economy-Security Functions in Power System Operations"
IEEE Power System Economic Subcommittee Work Group Paper
IEEE Special Publication 75 CH0960-6-PWR-1975.

"Economy-Security Functions in Power System Operations - A Summary Introduction."
IEEE Power System Economics Subcommittee Working Group Paper
IEEE T.P.A.S. Sept/Oct 1975 p. 1618.

"A Large Hydro-Thermal Scheduling Model"
TIMS/ORSA
Miami, November 1976.

"Generation System Modeling for Planning and Operations"
Atlantic Regional Thermal Conference
Charlottetown, June 1978.

"The Feasibility of Electricity Export from CANDU Nuclear Generation"
Canadian Nuclear Association
Ottawa, June 1978.

"Evaluation of the Worth of System Scale Wind Generation to the Prince Edward Island Electrical Grid."
IEEE Canadian Conference
Toronto, October 1979.

"The Results of a Study Examining The Possible Impact of Solar Space Heating on the Electrical Utility in New Brunswick."
The Potential Impacts of the Deployment of Solar Heating on Electrical Utilities - A workshop sponsored by the Canadian Department of Energy, Mines and Resources
Ottawa, May 1980.

"Reliability Indices: Their Meanings and Differences"
Planmetrics/Energy Management Associates, Inc. 8th Annual National Utilities Conference
Chicago, May 1980.

"Description and Bibliography of Major Economy-Security Functions
Part I - Description
Part II - Bibliography (1959-1972)
Part III - Bibliography (1973-1979)"
IEEE Power System Economics Subcommittee Working Group Papers(3).
IEEE TPAS January 1981, p.211, p.214. p.224.

"PROMOD III Evaluation of the Worth of Grid Connected WECS."
Fifth Annual Wind Energy Symposium. Ryerson Polytechnical Institute
Toronto, December 1982.

"Probabilistic Simulation in Power System Production Models"
China-U.S.A. Power System Meeting, Electrical Power Research Institute of China
Tianjin, China, June 1985.

"Computer Modeling of Wheeling Arrangements"
Electricity Consumers Resource Council Seminar
Washington, D.C. September 1985.

"Power Systems Reliability Improvement Benefits - A Framework for Analysis"
ASME Energy-Sources Technology Conference
Dallas, February 1987.

FUEL PRICE ASSUMPTIONS FOR PROMOD IV(R) ANALYSES OF OSPREY PROJECT OPERATIONS, BASE CASE

(All Values in cents/mmbtu)

Year	COAL		#2 OIL		#6 OIL		GAS			
	Lowest Price	Highest Price	Lowest Price	Highest Price	Lowest Price	Highest Price	Lowest Price		Highest Price	
							Winter	Summer	Winter	Summer
2000	158.3	248.2	558.2	656.1	365.2	489.2	346.4	346.2	377.6	380.1
2001	157.0	246.2	510.6	600.1	323.9	433.9	376.7	347.4	410.8	381.4
2002	162.5	254.8	496.1	583.1	315.5	422.6	377.2	347.4	411.4	381.4
2003	168.0	263.3	528.5	621.2	329.3	441.1	382.6	358.1	417.3	393.2
2004	173.4	271.9	561.0	659.4	343.1	459.6	393.4	368.9	429.1	405.0
2005	178.3	279.6	593.0	697.0	357.1	478.3	404.2	379.7	440.9	416.8
2006	182.3	285.9	614.2	721.9	368.2	493.3	415.1	390.7	452.9	428.8
2007	186.4	292.3	636.1	747.7	379.8	508.7	427.3	404.0	466.1	443.3
2008	190.6	298.9	658.8	774.4	391.6	524.6	440.7	417.6	480.8	458.3
2009	194.9	305.6	682.3	802.0	403.9	541.0	454.6	431.8	496.0	473.7
2010	199.3	312.5	706.7	830.6	416.5	558.0	468.9	446.4	511.7	489.7
2011	203.7	319.4	727.3	854.9	430.7	576.9	483.8	461.4	527.9	506.1
2012	208.3	326.5	748.6	879.9	445.3	596.5	499.1	477.0	544.7	523.1

Osprey Energy Center
Calpine
Witness: Kenneth J. Slater
Exhibit ______ (KJS-2)

FUEL PRICE ASSUMPTIONS FOR PROMOD IV(R) ANALYSES OF OSPREY PROJECT OPERATIONS, HIGHER GAS PRICE CASE

(All Values in cents/mmbtu)

	COAL		#2 OIL		#6 OIL		GAS			
							Lowest Price		Highest Price	
Year	Lowest Price	Highest Price	Lowest Price	Highest Price	Lowest Price	Highest Price	Winter	Summer	Winter	Summer
2000	158.3	248.2	558.2	656.1	365.2	489.2	346.4	346.2	377.6	380.1
2001	157.0	246.2	510.6	600.1	323.9	433.9	376.7	347.4	410.8	381.4
2002	162.5	254.8	496.1	583.1	315.5	422.6	382.6	358.1	417.3	393.2
2003	168.0	263.3	528.5	621.2	329.3	441.1	393.4	368.9	429.1	405.0
2004	173.4	271.9	561.0	659.4	343.1	459.6	404.2	379.7	440.9	416.8
2005	178.3	279.6	593.0	697.0	357.1	478.3	415.1	390.7	452.9	428.8
2006	182.3	285.9	614.2	721.9	368.2	493.3	430.9	411.3	470.1	451.3
2007	186.4	292.3	636.1	747.7	379.8	508.7	451.9	432.8	493.2	474.9
2008	190.6	298.9	658.8	774.4	391.6	524.6	474.0	455.4	517.3	499.7
2009	194.9	305.6	682.3	802.0	403.9	541.0	497.2	479.2	542.7	525.7
2010	199.3	312.5	706.7	830.6	416.5	558.0	521.6	504.2	569.4	553.0
2011	203.7	319.4	727.3	854.9	430.7	576.9	544.1	524.3	594.0	574.9
2012	208.3	326.5	748.6	879.9	445.3	596.5	564.5	545.1	616.4	597.7

EFFICIENCY AND COST-EFFECTIVENESS OF PENINSULAR FLORIDA GENERATING UNITS, 2003

Plant	Unit	Summer Capacity (MW)	Average Annual Heat Rate (Btu/kwh)	Average Annual Dispatch Cost ($/MWh)
Nuclear				
CRYSTAL	3	805	Must Run at Maximum Available Capacity	
STLUCIE	1	839	Must Run at Maximum Available Capacity	
STLUCIE	2	839	Must Run at Maximum Available Capacity	
TURKEYPT	3	697	Must Run at Maximum Available Capacity	
TURKEYPT	4	697	Must Run at Maximum Available Capacity	
Coal and Petroleum Coke				
BIG BEND	1	421	9,965	30.29
BIG BEND	2	421	9,972	30.57
BIG BEND	3	428	9,956	28.72
BIG BEND	4	442	9,943	26.93
CRYSTAL	1	386	9,679	25.40
CRYSTAL	2	488	9,596	25.26
CRYSTAL	4	714	9,094	23.67
CRYSTAL	5	697	9,092	23.41
DEERHAVN	2	228	10,608	25.20
GANNON	1	0	9,688	31.24
GANNON	2	0	9,671	31.19
GANNON	6	362	10,246	35.01
MCINTOSH	3	338	9,093	23.65
NORTHSID	1	265	9,753	23.34
NORTHSID	2	265	13,156	29.42
SCHERER	4	846	9,949	24.53
SEMINOLE	1	638	10,041	26.38
SEMINOLE	2	638	10,041	26.28
ST JOHNS	1	624	9,179	22.26
ST JOHNS	2	638	9,258	22.88
STANTON	1	442	9,777	24.99
STANTON	2	446	9,079	22.85

New Gas Combined Cycle

BAYSIDE	1	707	7,236	29.38
BRANDY B	4	482	7,176	29.68
CANE IS	3	260	6,999	28.11
FT MYERS	3	1446	7,145	29.08
HINES EC	1	470	7,049	28.30
HINES EC	2	0	7,002	29.59
KELLEY	4	113	8,362	36.91
N SMYRNA	1	520	6,971	28.04
OKEECHOB	1	260	6,965	27.76
OKEECHOB	2	260	6,966	27.76
OSPREY	1	520	6,967	28.09
PAYNECRK	3	520	7,001	28.14
PURDOM	8	260	6,995	28.10
SANFORD	14	964	7,206	29.29
SANFORD	15	964	7,208	29.29

Other Units

ANCLOTE	1	503	10,952	69.84
ANCLOTE	2	503	10,485	66.36
AVONPKGT	1	29	No Significant Output	
AVONPKGT	2	29	No Significant Output	
BARTOW	1	115	9,982	39.38
BARTOW	2	117	9,983	39.81
BARTOW	3	208	9,975	38.84
BARTOWGT	1	46	No Significant Output	
BARTOWGT	2	46	No Significant Output	
BARTOWGT	3	46	No Significant Output	
BARTOWGT	4	49	No Significant Output	
BAYBROGT	1	47	No Significant Output	
BAYBROGT	2	47	No Significant Output	
BAYBROGT	3	47	No Significant Output	
BAYBROGT	4	47	No Significant Output	
BGBENDGT	1	12	No Significant Output	
BGBENDGT	2	61	11,635	75.05
BGBENDGT	3	61	11,635	75.10
BRANDY B	1	0	11,224	56.71
BRANDY B	2	0	11,266	56.96
BRANDY B	3	153	11,383	56.01
CANE GT	1	30	11,166	50.91
CANE ISL	2	108	9,583	42.41
CAPECNVR	1	405	9,437	40.46
CAPECNVR	2	408	9,441	40.66
CUDJOE D	1	5	No Significant Output	
CUTLER	5	71	11,720	45.14
CUTLER	6	144	11,741	45.33

DEBARYGT	1	54	No Significant Output	
DEBARYGT	2	54	11,730	76.32
DEBARYGT	3	54	No Significant Output	
DEBARYGT	4	54	No Significant Output	
DEBARYGT	5	54	No Significant Output	
DEBARYGT	6	54	No Significant Output	
DEBARYGT	7	88	11,890	76.92
DEBARYGT	8	88	11,890	76.97
DEBARYGT	9	88	11,880	76.91
DEBARYGT	10	88	11,880	77.09
DEERHAVN	1	85	10,604	45.57
DRHVN GT	1	18	14,471	68.60
DRHVN GT	2	18	14,471	68.80
DRHVN GT	3	75	14,471	68.15
EVERGL T	1	35	17,121	74.24
EVERGL T	2	35	17,121	74.10
EVERGL T	3	35	17,121	73.81
EVERGL T	4	35	17,121	73.86
EVERGL T	5	35	17,121	73.60
EVERGL T	6	35	17,121	73.92
EVERGL T	7	35	17,121	73.65
EVERGL T	8	35	17,121	73.39
EVERGL T	9	35	17,121	73.35
EVERGL T	10	35	17,121	73.46
EVERGL T	11	35	17,121	73.04
EVERGL T	12	35	No Significant Output	
EVERGLDS	1	221	9,550	38.49
EVERGLDS	2	221	9,557	38.63
EVERGLDS	3	375	9,944	39.71
EVERGLDS	4	410	9,925	39.66
FTMYER T	1	54	No Significant Output	
FTMYER T	2	54	No Significant Output	
FTMYER T	3	54	No Significant Output	
FTMYER T	4	54	No Significant Output	
FTMYER T	5	54	No Significant Output	
FTMYER T	6	54	No Significant Output	
FTMYER T	7	54	No Significant Output	
FTMYER T	8	54	No Significant Output	
FTMYER T	9	54	No Significant Output	
FTMYER T	10	54	No Significant Output	
FTMYER T	11	54	No Significant Output	
FTMYER T	12	54	No Significant Output	
FTMYERCT	13	153	11,302	52.34
FTMYERCT	14	153	11,311	52.38
GANNONGT	1	12	No Significant Output	
HANSELCC	2	48	9,817	46.24
HANSELIC	8	3	9,300	43.19

HANSELIC	14	2	9,300	43.23
HANSELIC	15	2	9,300	43.25
HANSELIC	16	2	9,300	43.25
HANSELIC	17	2	9,300	43.23
HANSELIC	18	2	No Significant Output	
HANSELIC	19	3	No Significant Output	
HANSELIC	20	3	9,300	43.25
HARDEE	1	224	7,300	34.54
HARDEECT	1	74	9,732	45.33
HIGGNSGT	1	29	No Significant Output	
HIGGNSGT	2	29	No Significant Output	
HIGGNSGT	3	35	No Significant Output	
HIGGNSGT	4	35	No Significant Output	
HOOKERS	1	0	No Significant Output	
HOOKERS	2	0	No Significant Output	
HOOKERS	3	0	No Significant Output	
HOOKERS	4	0	No Significant Output	
HOOKERS	5	0	No Significant Output	
HOPKINGT	1	12	14,029	60.59
HOPKINGT	2	24	13,597	63.57
HOPKINS	1	75	11,357	47.25
HOPKINS	2	238	10,652	41.92
IND RIVR	1	88	10,033	42.34
IND RIVR	2	201	9,982	39.50
IND RIVR	3	319	10,469	41.65
INDRVRGT	1	37	11,540	52.40
INDRVRGT	2	37	11,540	52.51
INDRVRGT	3	108	11,100	50.84
INDRVRGT	4	108	11,100	50.84
INTER GT	1	47	No Significant Output	
INTER GT	2	47	No Significant Output	
INTER GT	3	47	No Significant Output	
INTER GT	4	47	No Significant Output	
INTER GT	5	47	No Significant Output	
INTER GT	6	47	No Significant Output	
INTER GT	7	83	12,210	79.38
INTER GT	8	83	No Significant Output	
INTER GT	9	83	No Significant Output	
INTER GT	10	83	12,030	77.69
INTER GT	11	143	12,030	78.03
INTER GT	12	76	12,572	59.75
INTER GT	13	76	12,558	59.59
INTER GT	14	76	12,523	59.47
IVEY IC	1	4	9,300	42.70
IVEY IC	2	5	9,300	42.71
IVEY IC	3	9	12,280	54.15
IVEY IC	4	6	12,280	54.23

IVEY IC	5	4	9,300	42.70
IVEY IC	6	18	9,300	42.70
KELLY	7	23	16,441	68.60
KELLY GT	1	14	No Significant Output	
KELLY GT	2	14	No Significant Output	
KELLY GT	3	14	No Significant Output	
KENEDYGT	3	54	No Significant Output	
KENEDYGT	4	54	No Significant Output	
KENEDYGT	5	54	No Significant Output	
KENEDYGT	7	153	11,380	56.05
KING	5	8	10,483	42.59
KING	6	17	12,842	51.73
KING	7	32	12,858	54.99
KING	8	50	12,710	52.43
KING DSL	1	5	No Significant Output	
KING GT	9	23	10,500	51.01
LARSEN	8	102	10,610	42.77
LARSENGT	2	10	No Significant Output	
LARSENGT	3	10	No Significant Output	
LAUDER T	1	36	15,908	66.47
LAUDER T	2	35	15,908	66.46
LAUDER T	3	35	15,908	66.53
LAUDER T	4	35	15,908	66.47
LAUDER T	5	35	15,908	66.54
LAUDER T	6	35	15,908	66.44
LAUDER T	7	35	15,908	66.55
LAUDER T	8	35	15,908	66.59
LAUDER T	9	35	15,908	66.62
LAUDER T	10	35	15,908	66.61
LAUDER T	11	35	15,908	66.70
LAUDER T	12	35	15,908	66.71
LAUDER T	13	35	16,227	67.94
LAUDER T	14	35	16,227	67.94
LAUDER T	15	35	16,227	67.92
LAUDER T	16	35	16,227	68.11
LAUDER T	17	35	16,227	68.09
LAUDER T	18	35	16,227	68.04
LAUDER T	19	35	16,227	68.02
LAUDER T	20	35	16,227	68.19
LAUDER T	21	35	16,227	68.28
LAUDER T	22	32	16,227	68.21
LAUDER T	23	32	16,227	68.15
LAUDER T	24	35	16,227	68.35
LAUDERCC	4	440	7,640	32.83
LAUDERCC	5	440	7,654	33.48
MANATEE	1	819	9,928	39.50
MANATEE	2	819	9,909	39.50

MARATHON	1	8	No Significant Output	
MARATHON	2	5	9,300	42.70
MARATHON	3	8	12,280	54.18
MARTIN	1	814	8,904	36.37
MARTIN	2	816	8,939	36.16
MARTINCC	3	445	7,232	31.20
MARTINCC	4	445	7,235	31.08
MARTINCT	1	153	11,266	52.39
MARTINCT	2	153	11,266	52.38
MCINT GT	1	17	15,000	65.71
MCINT IC	1	5	No Significant Output	
MCINTOSH	1	87	10,815	43.98
MCINTOSH	2	103	10,274	40.96
MCINTOSH	5	310	7,262	30.03
NORTH GT	3	52	No Significant Output	
NORTH GT	4	52	No Significant Output	
NORTH GT	5	52	No Significant Output	
NORTH GT	6	52	No Significant Output	
NORTHSID	3	505	9,688	40.75
OLEAN GT	1	153	11,291	52.41
OLEAN GT	2	153	11,303	52.48
OLEAN GT	3	153	11,301	52.43
OLEAN GT	4	153	11,316	52.50
OLEAN GT	5	153	11,325	52.51
PHILLIPS	1	17	13,500	55.45
PHILLIPS	2	17	13,500	55.48
POLK CT	2	153	11,366	54.72
POLK CT	3	153	11,348	54.74
POLKIGCC	1	250	10,079	29.97
PURDOM	7	48	16,947	69.23
PURDOMGT	1	12	No Significant Output	
PURDOMGT	2	12	No Significant Output	
PUTNAMCC	1	249	9,115	39.31
PUTNAMCC	2	249	9,114	39.36
REEDYCRK	1	35	10,400	45.89
RIOPINGT	1	15	No Significant Output	
RIVIERA	3	290	9,729	37.23
RIVIERA	4	290	9,729	37.52
SANFORD	3	153	8,877	40.06
SEM CT	1	153	11,357	54.83
SMITH	1	7	18,840	75.52
SMITH	2	7	18,822	75.58
SMITH	3	22	16,777	70.99
SMITH	4	32	16,798	71.08
SMITH D	1	9	No Significant Output	
SMITH CC	1	32	10,400	48.43
SMITH GT	1	26	No Significant Output	

SMITH ST	1	3	No Significant Output	
SMITH ST	2	2	No Significant Output	
SMITH ST	3	6	No Significant Output	
ST CLOUD	1	4	No Significant Output	
ST CLOUD	2	6	No Significant Output	
ST CLOUD	3	6	No Significant Output	
ST CLOUD	4	12	10,696	73.23
STOCK DS	1	9	9,300	64.95
STOCK DS	2	9	9,300	65.06
STOCK GT	1	21	No Significant Output	
STOCK GT	2	16	No Significant Output	
STOCK GT	3	16	No Significant Output	
STOCK IC	1	6	No Significant Output	
SUWAN GT	1	54	No Significant Output	
SUWAN GT	2	54	No Significant Output	
SUWAN GT	3	54	No Significant Output	
SUWANNEE	1	33	11,729	51.07
SUWANNEE	2	32	11,733	51.09
SUWANNEE	3	80	11,750	51.17
SWOOPEIC	1	5	No Significant Output	
TIGERBAY	1	194	7,553	32.32
TURKEYIC	1	14	No Significant Output	
TURKEYPT	1	410	9,433	39.54
TURKEYPT	2	400	9,395	39.80
TURNERGT	1	15	No Significant Output	
TURNERGT	2	15	No Significant Output	
TURNERGT	3	65	No Significant Output	
TURNERGT	4	65	No Significant Output	
UNIV FLA	1	36	11,166	50.41
VERO BCH	1	13	13,041	52.60
VERO BCH	2	13	8,928	36.66
VERO BCH	3	33	13,141	54.47
VERO BCH	4	56	11,739	48.61
VERO BCH	5	35	11,171	45.71

NUGs

AGRICHEM	1	6
AS-AVAIL	1	63
BAY CTY	1	11
BIOENRGY	1	10
BROWARDS	1	54
BROWARDS	2	56
CARGILL	2	15
CEDARBAY	1	250
CFRBIOGN	1	74
DADE CTY	1	43

ELDORADO	1	114
FLASTONE	1	133
HILLSBOR	1	26
INDIANTN	1	330
LAKE CTY	1	13
LAKECOGN	1	110
LFC JEFF	1	9
LFC MADS	1	9
MULB-FPC	1	79
ORANGE	1	22
ORLANDO	1	79
PALMBCH	1	44
PASCO	1	109
PASCOCTY	1	23
PINELLAS	1	40
PINELLAS	2	15
RIDGE	1	40
ROYSTER	1	31
TAMPACTY	1	19
JEA-QFs		17

External Purchases

ENTERGY	1	23
SOUTHERN CO.		1615

Source: PROMOD IV(R) analyses prepared by Slater Consulting

EFFICIENCY AND COST-EFFECTIVENESS OF PENINSULAR FLORIDA GENERATING UNITS, 2008

Plant	Unit	Summer Capacity (MW)	Average Annual Heat Rate (Btu/kwh)	Average Annual Dispatch Cost ($/MWh)
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CRYSTAL	3	805	Must Run at Maximum Available Capacity	
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CRYSTAL	2	488	9,600	28.04
CRYSTAL	4	714	9,124	26.57
CRYSTAL	5	697	9,121	26.10
DEERHAVN	2	228	10,609	28.60
MCINTOSH	3	338	9,099	26.95
MCINTOSH	4	288	8,492	24.19
NORTHSID	1	265	9,786	26.49
NORTHSID	2	265	13,421	34.04
SCHERER	4	846	9,969	27.53
SEMINOLE	1	638	10,089	29.97
SEMINOLE	2	638	10,077	29.62
ST JOHNS	1	624	9,204	25.31
ST JOHNS	2	638	9,288	25.77
STANTON	1	442	9,782	27.70
STANTON	2	446	9,086	26.03
New Gas Combined Cycle				
BAYSIDE	1	707	7,221	34.15
BAYSIDE	2	715	7,186	34.01

BRANDY B	4	482	7,254	34.71
CANE IS	3	260	7,026	32.74
FT MYERS	3	1446	7,203	33.90
GREEN CC	1	260	6,979	32.57
HINES EC	1	470	7,082	32.95
HINES EC	2	520	7,005	32.69
HINES EC	3	520	7,016	32.67
HINES EC	4	520	7,020	32.74
KELLEY	4	113	8,536	43.43
MARTINCC	5	380	6,804	31.96
MARTINCC	6	380	6,804	31.96
N SMYRNA	1	520	6,992	32.62
OKEECHOB	1	260	6,978	32.44
OKEECHOB	2	260	6,977	32.56
OSPREY	1	520	6,984	32.57
PAYNECRK	3	520	7,037	32.76
PURDOM	8	260	7,009	32.69
SANFORD	14	964	7,276	34.17
SANFORD	15	964	7,282	34.17
SEMIN CC	4	260	7,010	32.67
SEMIN CC	5	260	7,011	32.67
UNKNOWCC	1	364	6,981	32.53
UNKNOWCC	2	364	6,990	32.63

<u>**Other Units**</u>

ANCLOTE	1	503	11,581	90.11
ANCLOTE	2	503	11,378	89.16
BARTOW	1	115	9,971	46.89
BARTOW	2	117	10,003	46.60
BARTOW	3	208	9,978	46.05
BARTOWGT	1	46	No Significant Output	
BARTOWGT	2	46	No Significant Output	
BARTOWGT	3	46	No Significant Output	
BARTOWGT	4	49	No Significant Output	
BGBENDGT	1	12	No Significant Output	
BGBENDGT	2	61	No Significant Output	
BGBENDGT	3	61	No Significant Output	
BRANDY B	3	153	11,464	65.79
CANE GT	1	30	11,166	59.41
CANE ISL	2	108	9,581	49.24
CAPECNVR	1	405	9,444	48.37
CAPECNVR	2	408	9,444	48.47
CUDJOE D	1	5	No Significant Output	
CUTLER	5	71	11,721	52.49
CUTLER	6	144	11,734	52.59
DEBARYGT	1	54	No Significant Output	

DEBARYGT	2	54	No Significant Output	
DEBARYGT	3	54	No Significant Output	
DEBARYGT	4	54	No Significant Output	
DEBARYGT	5	54	No Significant Output	
DEBARYGT	6	54	No Significant Output	
DEBARYGT	7	88	No Significant Output	
DEBARYGT	8	88	No Significant Output	
DEBARYGT	9	88	No Significant Output	
DEBARYGT	10	88	No Significant Output	
DEERHAVN	1	85	10,609	52.93
DRHVN GT	1	18	No Significant Output	
DRHVN GT	2	18	No Significant Output	
DRHVN GT	3	75	No Significant Output	
EVERGL T	1	35	No Significant Output	
EVERGL T	2	35	No Significant Output	
EVERGL T	3	35	No Significant Output	
EVERGL T	4	35	No Significant Output	
EVERGL T	5	35	No Significant Output	
EVERGL T	6	35	No Significant Output	
EVERGL T	7	35	No Significant Output	
EVERGL T	8	35	No Significant Output	
EVERGL T	9	35	No Significant Output	
EVERGL T	10	35	No Significant Output	
EVERGL T	11	35	No Significant Output	
EVERGL T	12	35	No Significant Output	
EVERGLDS	1	221	9,546	44.78
EVERGLDS	2	221	9,551	44.71
EVERGLDS	3	375	9,897	45.90
EVERGLDS	4	410	9,892	45.91
FTMYER T	1	54	No Significant Output	
FTMYER T	2	54	No Significant Output	
FTMYER T	3	54	No Significant Output	
FTMYER T	4	54	No Significant Output	
FTMYER T	5	54	No Significant Output	
FTMYER T	6	54	No Significant Output	
FTMYER T	7	54	No Significant Output	
FTMYER T	8	54	No Significant Output	
FTMYER T	9	54	No Significant Output	
FTMYER T	10	54	No Significant Output	
FTMYER T	11	54	No Significant Output	
FTMYER T	12	54	No Significant Output	
FTMYERCT	13	153	11,343	61.30
FTMYERCT	14	153	11,355	61.33
GANNONGT	1	12	No Significant Output	
HANSELCC	2	48	9,777	53.15
HANSELIC	8	3	9,300	50.48
HANSELIC	14	2	9,300	50.50

HANSELIC	15	2	9,300	50.41
HANSELIC	16	2	9,300	50.51
HANSELIC	17	2	9,300	50.42
HANSELIC	18	2	No Significant Output	
HANSELIC	19	3	No Significant Output	
HANSELIC	20	3	9,300	50.40
HARDEE	1	224	7,300	39.97
HARDEECT	1	74	9,732	52.50
HOPKINGT	1	12	No Significant Output	
HOPKINGT	2	24	No Significant Output	
HOPKINS	1	75	11,386	54.86
HOPKINS	2	238	10,636	48.54
IND RIVR	1	88	10,026	49.15
IND RIVR	2	201	9,971	45.80
IND RIVR	3	319	10,463	48.23
INDRVRGT	1	37	11,540	60.96
INDRVRGT	2	37	11,540	61.06
INDRVRGT	3	108	11,100	59.03
INDRVRGT	4	108	11,100	59.15
INTER GT	1	47	No Significant Output	
INTER GT	2	47	No Significant Output	
INTER GT	3	47	No Significant Output	
INTER GT	4	47	No Significant Output	
INTER GT	5	47	No Significant Output	
INTER GT	6	47	No Significant Output	
INTER GT	7	83	No Significant Output	
INTER GT	8	83	No Significant Output	
INTER GT	9	83	No Significant Output	
INTER GT	10	83	No Significant Output	
INTER GT	11	143	No Significant Output	
INTER GT	12	76	12,568	69.17
INTER GT	13	76	12,583	69.28
INTER GT	14	76	12,567	69.23
IVEY IC	1	4	9,300	50.59
IVEY IC	2	5	9,300	50.60
IVEY IC	3	9	12,280	64.70
IVEY IC	4	6	No Significant Output	
IVEY IC	5	4	9,300	50.58
IVEY IC	6	18	9,300	50.58
KELLY	7	23	16,878	81.75
KELLY GT	1	14	No Significant Output	
KELLY GT	2	14	No Significant Output	
KELLY GT	3	14	No Significant Output	
KENEDYGT	3	54	No Significant Output	
KENEDYGT	4	54	No Significant Output	
KENEDYGT	5	54	No Significant Output	
KENEDYGT	7	153	11,306	65.11

KING	5	8	10,479	49.55
KING	6	17	12,844	60.53
KING	7	32	12,942	64.15
KING	8	50	12,728	61.06
KING DSL	1	5	No Significant Output	
KING GT	9	23	10,500	59.26
LARSEN	8	102	10,610	49.95
LARSENGT	2	10	No Significant Output	
LARSENGT	3	10	No Significant Output	
LAUDER T	1	36	No Significant Output	
LAUDER T	2	35	No Significant Output	
LAUDER T	3	35	No Significant Output	
LAUDER T	4	35	No Significant Output	
LAUDER T	5	35	No Significant Output	
LAUDER T	6	35	No Significant Output	
LAUDER T	7	35	No Significant Output	
LAUDER T	8	35	No Significant Output	
LAUDER T	9	35	No Significant Output	
LAUDER T	10	35	No Significant Output	
LAUDER T	11	35	No Significant Output	
LAUDER T	12	35	No Significant Output	
LAUDER T	13	35	No Significant Output	
LAUDER T	14	35	No Significant Output	
LAUDER T	15	35	No Significant Output	
LAUDER T	16	35	No Significant Output	
LAUDER T	17	35	No Significant Output	
LAUDER T	18	35	No Significant Output	
LAUDER T	19	35	No Significant Output	
LAUDER T	20	35	No Significant Output	
LAUDER T	21	35	No Significant Output	
LAUDER T	22	32	No Significant Output	
LAUDER T	23	32	No Significant Output	
LAUDER T	24	35	No Significant Output	
LAUDERCC	4	440	7,667	38.21
LAUDERCC	5	440	7,680	38.95
MANATEE	1	819	9,857	46.72
MANATEE	2	819	9,695	45.92
MARATHON	1	8	No Significant Output	
MARATHON	2	5	9,300	50.59
MARATHON	3	8	12,280	64.24
MARTIN	1	814	8,941	42.10
MARTIN	2	816	8,970	42.34
MARTINCC	3	445	7,263	36.26
MARTINCC	4	445	7,265	36.26
MARTINCT	1	153	11,327	61.28
MARTINCT	2	153	11,335	61.29
MCINT GT	1	17	No Significant Output	

MCINT IC	1	5	No Significant Output	
MCINTOSH	1	87	10,814	50.91
MCINTOSH	2	103	10,282	47.50
MCINTOSH	5	310	7,460	35.57
NORTH GT	3	52	No Significant Output	
NORTH GT	4	52	No Significant Output	
NORTH GT	5	52	No Significant Output	
NORTH GT	6	52	No Significant Output	
NORTHSID	3	505	9,653	50.48
OLEAN GT	1	153	11,364	61.32
OLEAN GT	2	153	11,345	61.24
OLEAN GT	3	153	11,352	61.25
OLEAN GT	4	153	11,367	61.24
OLEAN GT	5	153	11,366	61.31
PHILLIPS	1	17	13,500	65.92
PHILLIPS	2	17	13,500	65.92
POLK CT	2	153	11,353	63.94
POLK CT	3	153	11,368	63.99
POLK CT	4	153	11,393	64.00
POLK CT	5	153	11,345	63.89
POLK CT	6	153	11,336	63.85
POLKIGCC	1	250	10,267	35.35
PURDOM	7	48	18,726	87.68
PURDOMGT	1	0	No Significant Output	
PURDOMGT	2	12	No Significant Output	
PUTNAMCC	1	249	9,114	45.67
PUTNAMCC	2	249	9,110	45.70
REEDYCRK	1	35	10,400	53.12
RIVIERA	3	290	9,728	43.93
RIVIERA	4	290	9,738	44.25
SANFORD	3	153	8,877	47.44
SEM CT	1	153	11,383	64.07
SEM CT	2	153	11,422	64.21
SEM CT	3	153	11,375	64.01
SMITH	1	7	No Significant Output	
SMITH	2	7	No Significant Output	
SMITH	3	22	16,685	82.15
SMITH	4	32	16,495	81.24
SMITH D	1	9	No Significant Output	
SMITH CC	1	32	10,400	56.17
SMITH GT	1	26	No Significant Output	
SMITH ST	1	3	No Significant Output	
SMITH ST	2	2	No Significant Output	
SMITH ST	3	6	No Significant Output	
ST CLOUD	1	4	No Significant Output	
ST CLOUD	2	6	No Significant Output	
ST CLOUD	3	6	No Significant Output	

ST CLOUD	4	12	No Significant Output	
STOCK DS	1	9	No Significant Output	
STOCK DS	2	9	No Significant Output	
STOCK GT	1	21	No Significant Output	
STOCK GT	2	16	No Significant Output	
STOCK GT	3	16	No Significant Output	
STOCK IC	1	6	No Significant Output	
SUWAN GT	1	54	No Significant Output	
SUWAN GT	2	54	No Significant Output	
SUWAN GT	3	54	No Significant Output	
SWOOPEIC	1	5	No Significant Output	
TIGERBAY	1	194	7,577	37.45
TURKEYIC	1	14	No Significant Output	
TURKEYPT	1	410	9,406	46.87
TURKEYPT	2	400	9,420	46.90
TURNERGT	3	65	No Significant Output	
TURNERGT	4	65	No Significant Output	
UNIV FLA	1	36	11,166	58.41
VERO BCH	1	13	13,115	61.76
VERO BCH	2	13	8,931	42.62
VERO BCH	3	33	13,164	63.46
VERO BCH	4	56	11,785	56.74
VERO BCH	5	35	11,183	53.25

<u>NUGs</u>

AS-AVAIL	1	63
BAY CTY	1	11
BROWARDS	1	54
BROWARDS	2	56
CARGILL	2	15
CEDARBAY	1	250
CFRBIOGN	1	74
DADE CTY	1	43
ELDORADO	1	114
HILLSBOR	1	26
INDIANTN	1	330
LAKE CTY	1	13
LAKECOGN	1	110
LFC JEFF	1	9
LFC MADS	1	9
MULB-FPC	1	79
ORANGE	1	22
ORLANDO	1	79
PALMBCH	1	44
PASCO	1	109
PASCOCTY	1	23

PINELLAS	1	40
PINELLAS	2	15
RIDGE	1	40
ROYSTER	1	31
TAMPACTY	1	19
JEA-QFs		17

External Purchases

ENTERGY	1	23
SOUTHERN CO.		1615

Source: PROMOD IV(R) analyses prepared by Slater Consulting.

PENINSULAR FLORIDA
SUMMARY OF EXISTING CAPACITY
AS OF JANUARY 1, 2000

UTILITY	NET CAPABILITY SUMMER	WINTER
FLORIDA KEYS ELECTRIC COOPERATIVE ASSOC., INC	22	22
FLORIDA MUNICIPAL POWER AGENCY	498	527
FLORIDA POWER CORPORATION	7,525	8,277
FLORIDA POWER & LIGHT COMPANY	16,444	17,234
FORT PIERCE UTILITIES AUTHORITY	119	119
GAINESVILLE REGIONAL UTILITIES	550	563
CITY OF HOMESTEAD	60	60
JACKSONVILLE ELECTRIC AUTHORITY	2,626	2,749
UTILITY BOARD OF THE CITY OF KEY WEST	52	52
KISSIMMEE UTILITY AUTHORITY	172	190
CITY OF LAKELAND	615	650
CITY OF LAKE WORTH UTILITIES	127	138
UTILITIES COMMISSION OF NEW SMYRNA BEACH	24	24
OCALA ELECTRIC UTILITY	11	11
ORLANDO UTILITIES COMMISSION	1,028	1,072
REEDY CREEK IMPROVEMENT DISTRICT	48	49
SEMINOLE ELECTRIC COOPERATIVE INC.	1,331	1,345
CITY OF ST. CLOUD	22	21
CITY OF TALLAHASSEE	429	449
TAMPA ELECTRIC COMPANY	3,455	3,594
CITY OF VERO BEACH	150	155
TOTALS		
FRCC UTILITIES EXISTING CAPACITY	35,308	37,301
NON-UTILITY GENERATING FACILITIES (FIRM)	2,060	2,124
NON-UTILITY GENERATING FACILITIES (NON-FIRM)	89	111
MERCHANT PLANT FACILITIES (FIRM)	593	593
MERCHANT PLANT FACILITIES (NON-FIRM)	15	26
TOTAL PENINSULAR FLORIDA EXISTING CAPACITY	**38,065**	**40,155**

Data Source:
Florida Reliability Coordinating Council
2000 Regional Load & Resource Plan, Peninsular Florida, July 2000

PENINSULAR FLORIDA, HISTORICAL AND PROJECTED SUMMER AND WINTER FIRM PEAK DEMANDS

1991-2012

ACTUAL PEAK DEMAND (MW)

	1991	1992	1993	1994	1995	1996	1997	1998
SUMMER	27,662	28,930	29,748	29,321	31,801	32,315	32,924	37,153
WINTER	28,179	27,215	28,149	32,618	34,552	34,762	30,932	35,907

PROJECTED FIRM PEAK DEMAND (MW)

	1999 (Actual)	2000	2001	2002	2003	2004	2005	2006
SUMMER	37,493	34,832	35,560	36,432	37,313	38,164	39,065	40,347
WINTER	40,178	36,814	37,753	38,679	39,592	40,551	41,585	42,541

PROJECTED FIRM PEAK DEMAND (MW)

	2007	2008	2009	2010	2011	2012
SUMMER	41,255	42,094	42,980	43,895	44,830	45,785
WINTER	43,445	44,386	45,316	46,281	47,266	48,272

Data Source:
Florida Reliability Coordinating Council,
1991-2009 values, 2000 Regional Load & Resource Plan, Peninsular Florida, July 2000.
2010-2012 values extrapolated at the FRCC projected average annual compond growth rates for 2006-2009.
1991-1999 actual peak demand values exclude interruptible load and load management reductions.
2000-2012 forecasted firm peak demand values include projected interruptible load and load management reduction values, and are non-coincident.

PENINSULAR FLORIDA, HISTORICAL AND PROJECTED NET ENERGY FOR LOAD AND NUMBER OF CUSTOMERS

1991 - 2012

ACTUAL NET ENERGY FOR LOAD (GWH)

	1991	1992	1993	1994	1995	1996	1997	1998
ENERGY	146,786	147,728	153,269	159,353	168,982	173,327	175,534	187,868
LOAD FACTOR	60.58%	58.29%	58.82%	62.04%	59.14%	57.26%	57.64%	57.72%
CUSTOMERS	6,155,380	6,269,358	6,410,797	6,550,760	6,687,155	6,812,603	6,948,888	7,091,803

PROJECTED NET ENERGY FOR LOAD (GWH)

	1999 (Actual)	2000	2001	2002	2003	2004	2005	2006
ENERGY	188,598	196,042	200,188	204,779	209,853	214,507	218,950	223,453
LOAD FACTOR	57.42%	55.70%	62.08%	61.92%	61.93%	61.85%	61.64%	61.34%
CUSTOMERS	7,555,341	7,517,881	7,688,054	7,832,016	7,974,676	8,113,738	8,249,138	8,380,749

PROJECTED NET ENERGY FOR LOAD (GWH)

	2007	2008	2009	2010	2011	2012
ENERGY	227,798	232,032	236,224	240,641	245,141	249,725
LOAD FACTOR	61.13%	60.97%	60.75%	59.36%	59.21%	58.89%
CUSTOMERS	8,510,779	8,640,757	8,771,153	8,905,264	9,041,425	9,179,669

Data Source:
Florida Reliability Coordinating Council,
1991-2009 Energy values, 2000 Regional Load & Resource Plan, Peninsular Florida, July 2000.
2010-2012 Energy values extrapolated at the FRCC projected average annual compound growth rates for 2006-2009.
Load factor values were calculated from these energy values and the peak demand values in Table 4.
1991-2009 Customer values, 2000 Regional Load & Resource Plan, Peninsular Florida, July 2000.
2010-2012 Customer values extrapolated at the FRCC projected average annual compound growth rates for 2006-2009.

OSPREY ENERGY CENTER
SUMMARY OF PROJECTED OPERATIONS
2003-2012

Year	PROJECTED GENERATION (GWH)	ANNUAL CAPACITY FACTOR %
2003	2,624	95.5%
2004	4,379	92.7%
2005	4,293	91.1%
2006	4,279	90.8%
2007	4,333	92.0%
2008	4,254	90.0%
2009	4,172	88.6%
2010	4,301	91.3%
2011	4,070	86.4%
2012	4,389	92.9%

Source: PROMOD IV(R) analyses prepared by Slater Consulting.

Notes: 1. The Project is scheduled to come into service on June 1, 2003. The annual capacity factor reported for 2003 is calculated on the basis of the Project's operations for the period June 1 - December 31, 2003.

2. The indicated capacity factors are subject to the Project's output being contractually committed to Seminole and other Peninsular Florida load-serving utilities.

OSPREY ENERGY CENTER
SUMMARY OF PROJECTED OPERATIONS, 2003-2012
HIGHER NATURAL GAS PRICE SENSITIVITY ANALYSIS

Year	PROJECTED GENERATION (GWH)	ANNUAL CAPACITY FACTOR %
2003	2,616	95.1%
2004	4,351	92.1%
2005	4,264	90.5%
2006	4,229	89.8%
2007	4,266	90.6%
2008	4,149	87.8%
2009	4,066	86.3%
2010	4,161	88.3%
2011	3,935	83.5%
2012	4,265	90.3%

Source: PROMOD IV(R) analyses prepared by Slater Consulting.

Notes: 1. The Project is scheduled to come into service on June 1, 2003. The annual capacity factor reported for 2003 is calculated on the basis of the Project's operations for the period June 1 - December 31, 2003.

2. The Base Case fuel price projections were developed by Slater Consulting based on actual data and the U. S. Energy Information Administration's 2000 Annual Energy Outlook Reference Case Forecast, but with the natural gas price escalations moderated to be more in keeping with the Standard & Poor's DRI forecast, which was included in the EIA's publication as a comparison forecast. The fuel prices for this sensitivity case were the same as for the Base Case except that the prices of natural gas were projected to escalate at the growth rates projected in the EIA Reference Case Forecast.

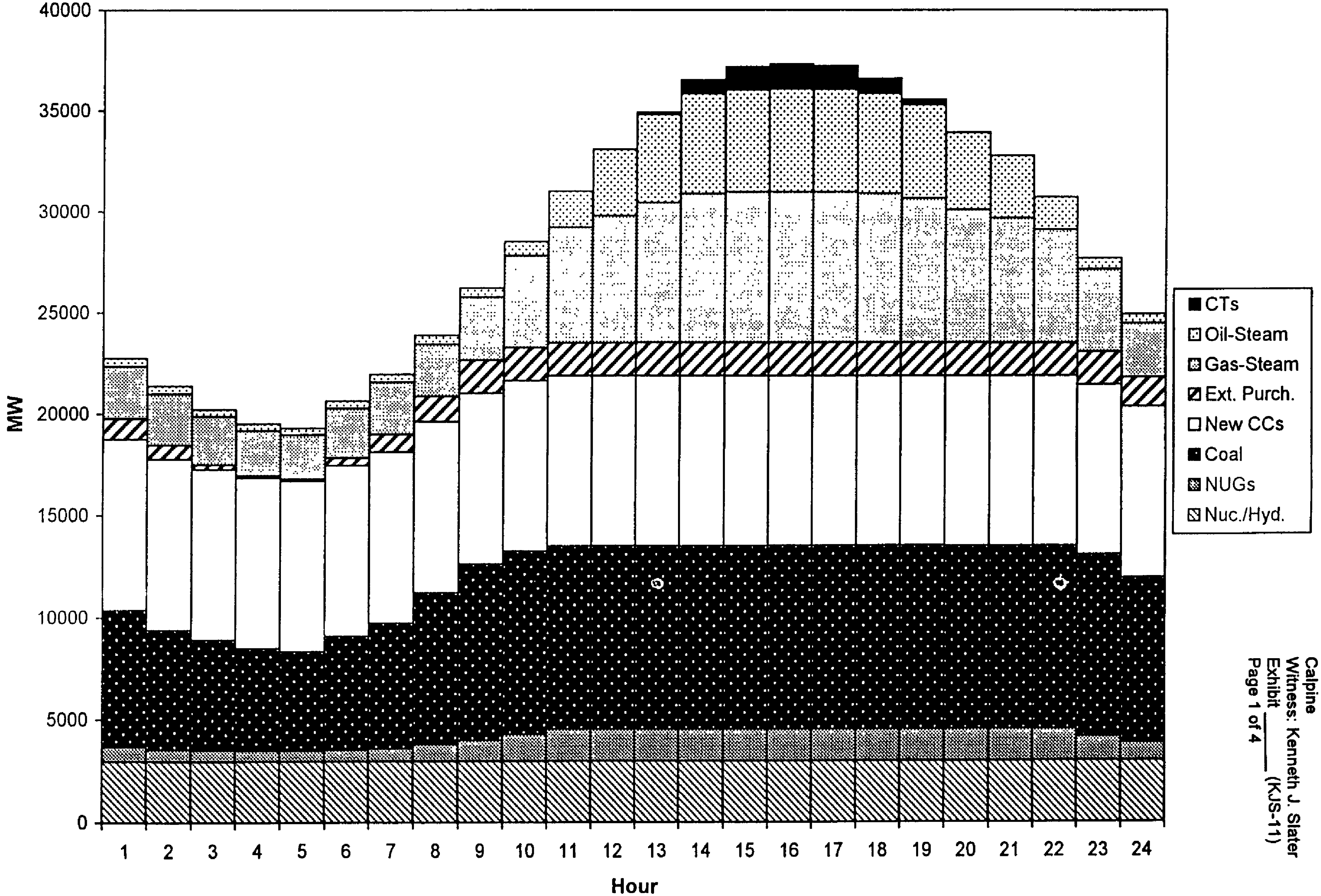
3. The indicated capacity factors are subject to the Project's output being contractually committed to Seminole and other Peninsular Florida load-serving utilities.

OSPREY ENERGY CENTER
SUMMARY OF PROJECTED OPERATIONS
LOAD GROWTH SENSITIVITY ANALYSES, 2003-2012

	LOW LOAD GROWTH		BASE LOAD		HIGH LOAD GROWTH	
Year	PROJECTED GENERATION (GWH)	ANNUAL CAPACITY FACTOR %	PROJECTED GENERATION (GWH)	ANNUAL CAPACITY FACTOR %	PROJECTED GENERATION (GWH)	ANNUAL CAPACITY FACTOR %
2003	2,622	95.4%	2,624	95.5%	2,633	95.8%
2004	4,364	92.4%	4,379	92.7%	4,400	93.1%
2005	4,279	90.8%	4,293	91.1%	4,307	91.4%
2006	4,270	90.6%	4,279	90.8%	4,214	89.4%
2007	4,139	87.9%	4,333	92.0%	4,441	94.3%
2008	4,402	93.2%	4,254	90.0%	4,032	85.4%
2009	4,065	86.3%	4,172	88.6%	4,365	92.7%
2010	4,357	92.5%	4,301	91.3%	4,267	90.6%
2011	4,216	89.5%	4,070	86.4%	4,284	90.9%
2012	4,190	88.7%	4,389	92.9%	4,455	94.3%

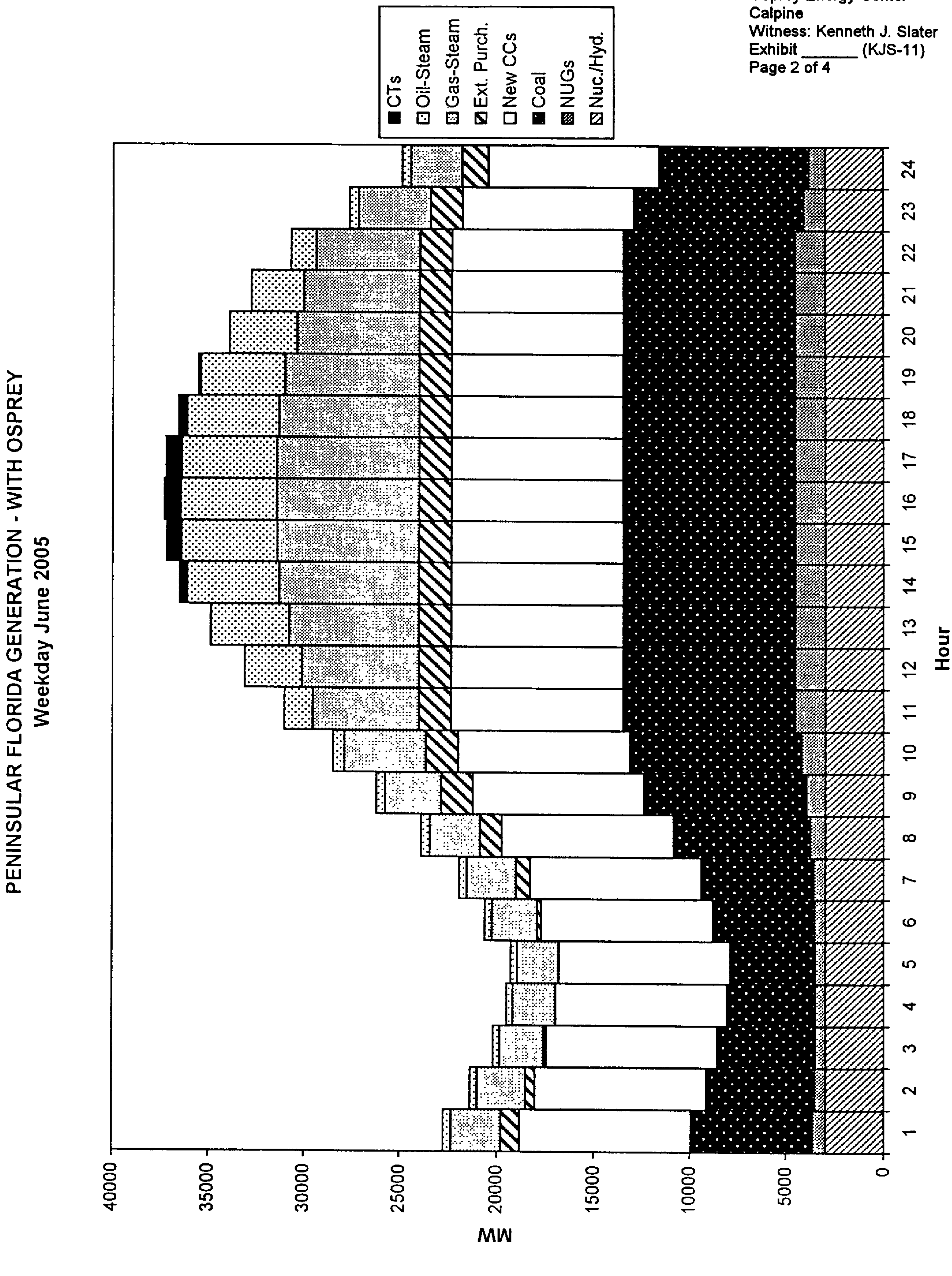
Source: PROMOD IV(R) analyses prepared by Slater Consulting.
Note: The indicated output and capacity factor values are projected subject to the Project's output being contractually committed to Seminole and other Peninsular Florida load-serving utilities.
Assumptions: The Base Case scenario was developed by Slater Consulting based on actual data and consideration of published sources, including the 1999 FRCC Regional Load & Resource Plan and Florida utilities' 2000 ten-year site plans. The Low Load Growth scenario reflects growth rates 0.5 percent per year less than in the Base Case. The High Load Growth scenario reflects growth rates 1.0 percent per year greater than in the Base Case.

PENINSULAR FLORIDA GENERATION - WITHOUT OSPREY
Weekday June 2005

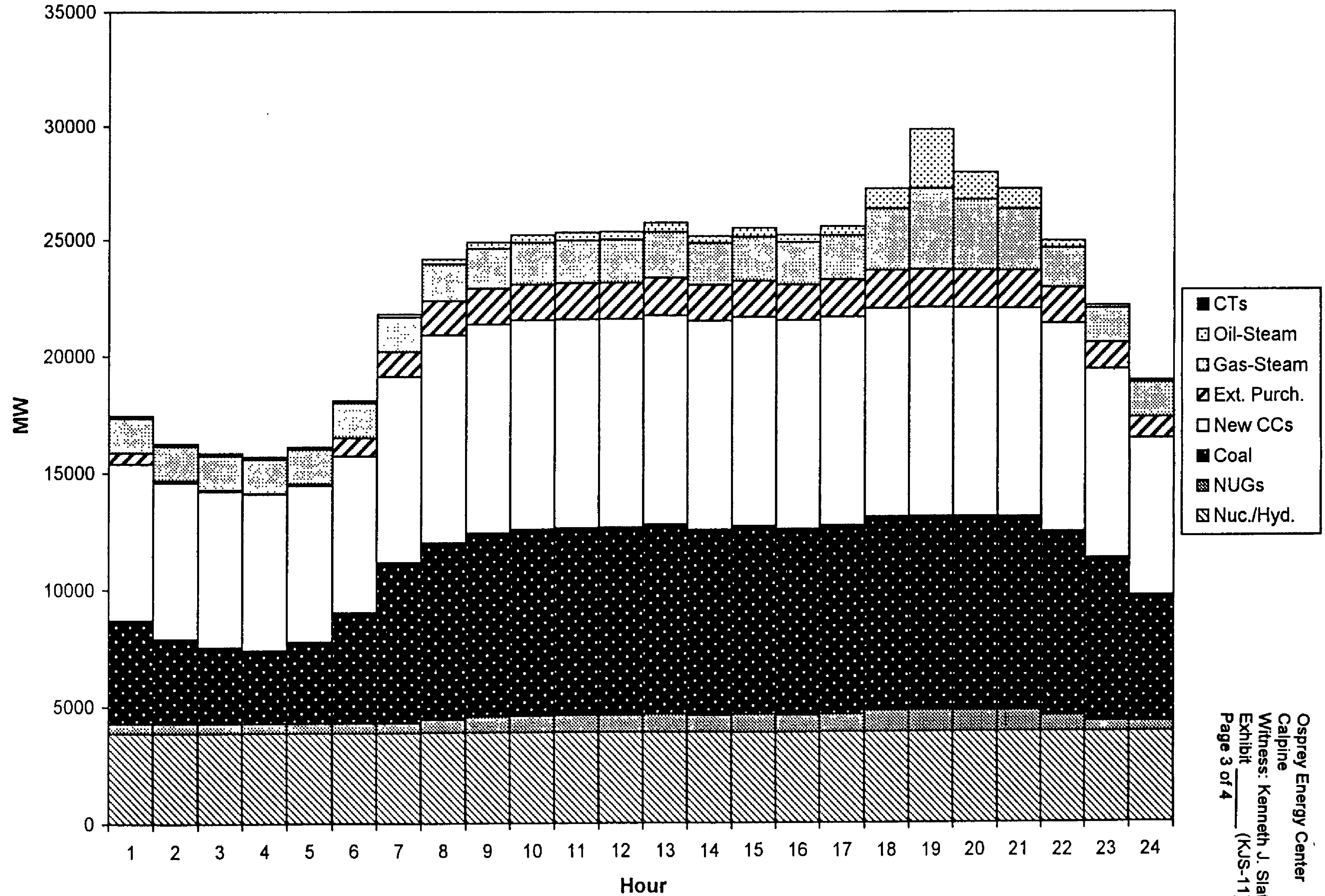


Osprey Energy Center
Calpine
Witness: Kenneth J. Slater
Exhibit _______ (KJS-11)
Page 1 of 4

Osprey Energy Center
Calpine
Witness: Kenneth J. Slater
Exhibit _______ (KJS-11)
Page 2 of 4



PENINSULAR FLORIDA GENERATION - WITHOUT OSPREY
Weekday December 2005



Osprey Energy Center
Calpine
Witness: Kenneth J. Slater
Exhibit ______ (KJS-11)
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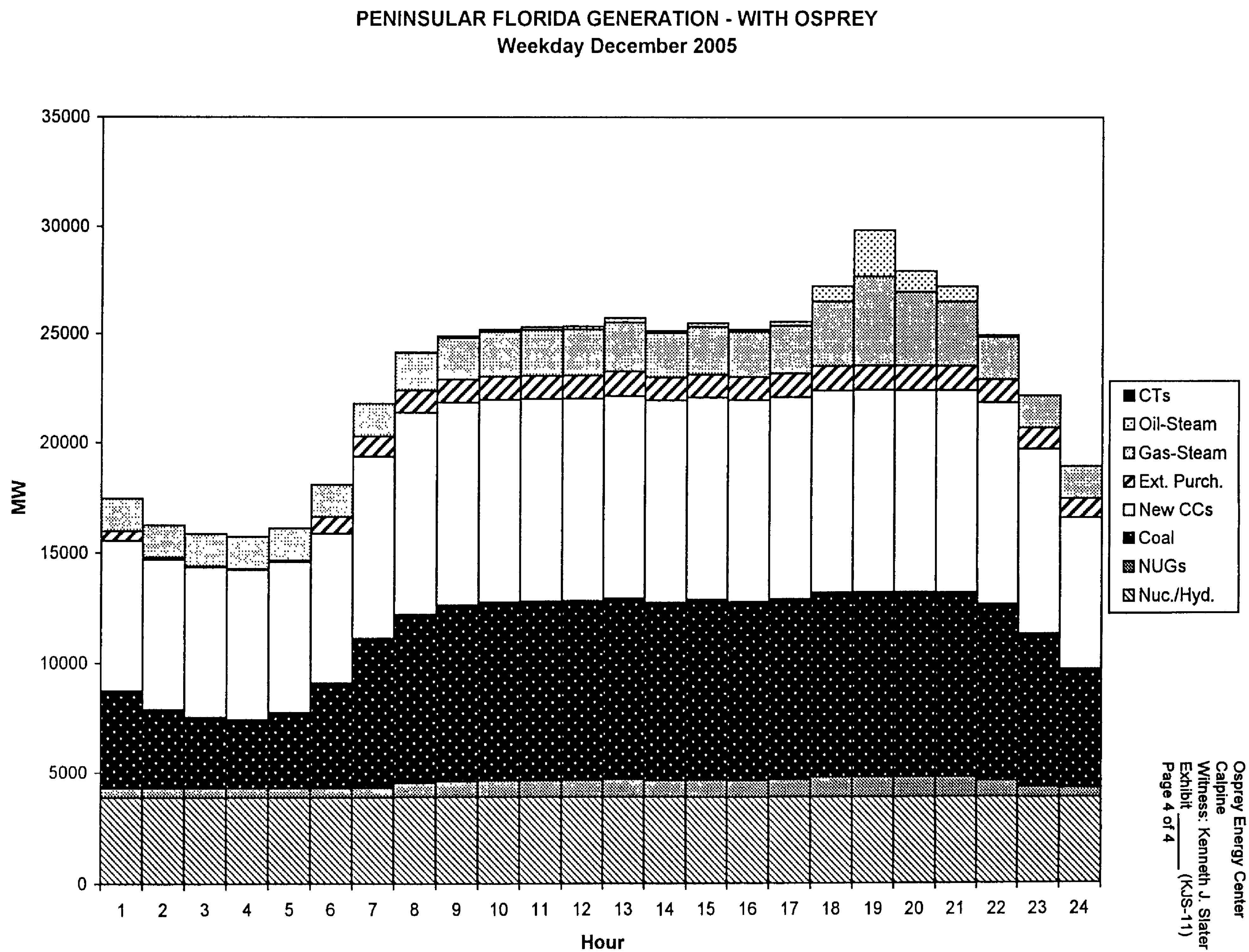
PENINSULAR FLORIDA GENERATION - WITH OSPREY
Weekday December 2005
MW
35000
30000
25000
20000
15000
10000
5000
0
1
2
3
4
5
6
7
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20
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22
23
24
Hour
CTs
Oil-Steam
Gas-Steam
Ext. Purch.
New CCs
Coal
NUGs
Nuc./Hyd.

Market Indicators

NERC Region		MONTHLY TRENDS Oct. 1999	Nov 1999	Dec 1999	Dec 1998	Year Ago Percent Change	JANUARY through DECEMBER 1997	1998	1999	1998-1999 Percent Change
NPCC	Electric Generation (gWh)	16,900	17,277	18,876	14,917	26.54%	182,537	182,468	231,281	26.75%
	Production Costs (¢/kWh)	2.41	2.35	2.28	2.36	-3.22%	2.48	2.30	2.39	3.65%
	Retail Rates (¢/kWh)	10.19	9.83	9.65	10.09	-2.58%	10.81	10.45	10.11	-3.25%
MAAC	Electric Generation (gWh)	18,924	18,925	18,789	19,777	-5.00%	210,399	228,685	252,746	10.52%
	Production Costs (¢/kWh)	2.28	2.19	2.21	1.83	20.45%	2.11	1.91	2.23	16.60%
	Retail Rates (¢/kWh)	7.53	7.35	7.41	8.18	-10.15%	8.86	8.69	8.09	-6.90%
SERC	Electric Generation (gWh)	62,249	58,045	65,901	61,472	7.20%	734,118	763,603	793,411	3.90%
	Production Costs (¢/kWh)	1.76	1.77	1.72	1.72	0.06%	1.79	1.78	1.76	-0.96%
	Retail Rates (¢/kWh)	5.71	5.50	5.53	5.49	0.18%	5.81	5.77	5.71	-1.04%
FRCC	Electric Generation (gWh)	14,169	12,328	12,908	11,963	7.90%	141,111	160,611	173,061	7.75%
	Production Costs (¢/kWh)	2.89	2.76	2.43	2.33	4.37%	2.67	2.39	2.59	8.40%
	Retail Rates (¢/kWh)	6.88	6.90	6.85	7.06	-2.27%	7.30	7.13	6.96	-2.38%
ECAR	Electric Generation (gWh)	44,321	43,829	48,515	44,598	8.78%	529,312	526,524	560,974	6.54%
	Production Costs (¢/kWh)	2.17	2.14	2.13	1.87	13.63%	1.86	1.87	2.12	13.83%
	Retail Rates (¢/kWh)	5.97	5.91	5.86	5.89	0.34%	6.03	5.98	6.01	0.50%
MAIN	Electric Generation (gWh)	19,231	18,992	20,268	19,895	1.88%	216,491	222,092	252,018	13.47%
	Production Costs (¢/kWh)	1.87	1.88	1.79	1.99	-10.12%	2.09	2.05	1.84	-10.42%
	Retail Rates (¢/kWh)	6.22	5.98	5.93	6.40	-6.56%	6.78	6.75	6.43	-4.74%
MAPP	Electric Generation (gWh)	13,282	12,703	14,241	13,496	5.52%	151,337	153,972	161,491	4.88%
	Production Costs (¢/kWh)	1.35	1.37	1.39	1.44	-3.41%	1.50	1.51	1.42	-5.77%
	Retail Rates (¢/kWh)	5.50	5.57	5.62	5.49	1.46%	5.68	5.75	5.79	0.70%
ERCOT	Electric Generation (gWh)	22,973	20,370	22,048	17,796	23.89%	226,751	240,026	287,310	19.70%
	Production Costs (¢/kWh)	2.54	2.40	2.33	1.98	18.18%	2.13	2.12	2.41	13.62%
	Retail Rates (¢/kWh)	6.50	5.88	5.75	5.75	2.26%	6.18	6.12	6.09	-0.49%
SPP	Electric Generation (gWh)	15,144	14,715	16,133	13,562	18.95%	164,934	174,334	200,862	15.22%
	Production Costs (¢/kWh)	2.12	2.08	2.06	1.80	14.33%	1.98	1.89	2.11	11.14%
	Retail Rates (¢/kWh)	5.45	5.08	5.07	5.11	-0.59%	5.60	5.58	5.52	-1.08%
WSCC	Electric Generation (gWh)	51,552	49,931	53,929	48,391	11.44%	561,608	551,533	628,226	13.91%
	Production Costs (¢/kWh)	1.86	1.67	1.58	1.47	7.28%	1.56	1.50	1.60	6.87%
	Retail Rates (¢/kWh)	7.30	6.64	6.75	6.56	7.11%	7.18	6.95	6.89	-0.86%

Source: POWERdat Database. POWERdat is a registered trademark of Resource Data International Inc. (RDI) • Boulder, Colo. • 303-444-7788. Note: Monthly production costs are estimated using current fuel prices and most recently reported nonfuel O&M costs for all regulated companies (IOUs, munis, co-ops & federal).

PENINSULAR FLORIDA, IMPACTS OF OSPREY ENERGY CENTER ON AVERAGE ELECTRICITY GENERATION HEAT RATES AND TOTAL FUEL CONSUMPTION, 2003-2012

	Average Heat Rate (btu/kwh)			Total Primary Energy (1000*mmbtu)		Osprey Net Energy Savings
Year	Without Osprey	With Osprey	Difference	Without Osprey	With Osprey	(1000*mmbtu)
2003	8,864.4	8,837.4	27.0	1,850,893	1,845,257	5,636
2004	8,781.6	8,737.8	43.7	1,874,198	1,864,864	9,334
2005	8,747.8	8,707.6	40.2	1,905,197	1,896,431	8,766
2006	8,662.8	8,626.6	36.2	1,925,724	1,917,686	8,038
2007	8,606.0	8,567.4	38.7	1,949,829	1,941,069	8,760
2008	8,576.2	8,540.5	35.7	1,976,351	1,968,125	8,226
2009	8,536.7	8,512.4	24.3	2,003,095	1,997,395	5,700
2010	8,546.1	8,518.9	27.3	2,041,883	2,035,372	6,511
2011	8,553.6	8,517.0	36.6	2,081,005	2,072,094	8,911
2012	8,575.3	8,540.2	35.1	2,124,464	2,115,761	8,703

Source: PROMOD IV(R) analyses prepared by Slater Consulting.
Note: The estimated energy savings are projections subject to the Project's output being contractually committed to Seminole and other Peninsular Florida load-serving utilities.

PENINSULAR FLORIDA FUEL CONSUMPTION
IMPACTS OF OSPREY ENERGY CENTER, 2003-2012

(All Values in 1,000 x MMBtu)

	Nuclear			Coal and Other Solid Fuels			Natural Gas			No. 6 Oil			No. 2 Oil		
Year	Without Osprey	With Osprey	Difference	Without Osprey	With Osprey	Difference	Without Osprey	With Osprey	Difference	Without Osprey	With Osprey	Difference	Without Osprey	With Osprey	Difference
2003	295,404	295,404	0	769,940	766,231	3,709	663,815	669,766	(5,951)	118,105	110,713	7,392	3,629	3,143	486
2004	321,616	321,616	0	754,909	740,695	14,214	704,970	723,490	(18,520)	89,530	76,408	13,122	3,173	2,655	518
2005	316,996	316,996	0	751,478	743,067	8,411	745,061	755,649	(10,588)	88,372	77,868	10,504	3,290	2,851	439
2006	303,928	303,928	0	743,161	733,395	9,766	791,044	801,777	(10,733)	84,927	76,126	8,801	2,664	2,460	204
2007	312,117	312,117	0	716,668	705,680	10,988	829,301	846,518	(17,217)	89,310	74,427	14,883	2,433	2,327	106
2008	326,697	326,697	0	711,361	703,313	8,048	863,388	874,371	(10,983)	72,295	61,396	10,899	2,610	2,348	262
2009	294,962	294,962	0	716,748	712,157	4,591	897,024	905,427	(8,403)	91,584	82,485	9,099	2,777	2,364	413
2010	321,069	321,069	0	716,779	708,527	8,252	917,233	927,076	(9,843)	84,616	76,538	8,078	2,186	2,162	24
2011	316,945	316,945	0	723,043	709,318	13,725	937,705	952,935	(15,230)	100,807	90,683	10,124	2,505	2,213	292
2012	331,247	331,247	0	734,896	723,896	11,000	946,332	957,427	(11,095)	108,899	100,566	8,333	3,090	2,625	465

Source: PROMOD IV(R) analyses prepared by Slater Consulting.

Note: The project's estimated primary fuel consumption impacts shown here are subject to the Project's output being contractually committed to Seminole and other Peninsular Florida load-serving utilities.

PENINSULAR FLORIDA, FUEL CONSUMPTION
IMPACTS OF OSPREY ENERGY CENTER, 2003-2012

(All Values in GWh)

	Nuclear			Coal and Other Solid Fuels			Natural Gas			No. 6 Oil			No. 2 Oil		
Year	Without Osprey	With Osprey	Difference	Without Osprey	With Osprey	Difference	Without Osprey	With Osprey	Difference	Without Osprey	With Osprey	Difference	Without Osprey	With Osprey	Difference
2003	28,539	28,539	0	79,879	79,444	435	87,441	88,664	(1,223)	12,061	11,331	730	357	311	46
2004	31,071	31,071	0	78,413	76,929	1,484	94,014	96,914	(2,900)	9,169	7,831	1,338	310	263	47
2005	30,625	30,625	0	78,211	77,290	921	99,111	101,185	(2,074)	9,076	7,995	1,081	318	278	40
2006	29,362	29,362	0	77,429	76,407	1,022	106,125	108,042	(1,917)	8,702	7,840	862	262	243	19
2007	30,153	30,153	0	74,651	73,490	1,161	111,992	114,720	(2,728)	9,139	7,641	1,498	242	231	11
2008	31,562	31,562	0	74,029	73,254	775	116,868	118,757	(1,889)	7,394	6,328	1,066	256	232	24
2009	28,496	28,496	0	74,744	74,131	613	121,351	122,947	(1,596)	9,385	8,471	914	271	234	37
2010	31,018	31,018	0	74,622	73,742	880	124,057	125,815	(1,758)	8,652	7,832	820	209	204	5
2011	30,620	30,620	0	75,216	73,803	1,413	126,515	129,017	(2,502)	10,292	9,271	1,021	235	207	28
2012	32,001	32,001	0	76,502	75,472	1,030	127,443	129,382	(1,939)	11,093	10,254	839	291	247	44

Source: PROMOD IV(R) analyses perpared by Slater Consulting.
Note: The Project's estimated primary fuel consumption impacts shown here are subject to the Project's output being contractually committed to Seminole and other Peninsular Florida load-serving utilities.

PENINSULAR FLORIDA, SUMMARY OF PROJECTED WHOLESALE ENERGY COST SAVINGS DUE TO OSPREY ENERGY CENTER, BASE CASE, 2003-2012

YEAR	FRCC NET ENERGY FOR LOAD (GWH)	AVERAGE ANNUAL MARGINAL ENERGY COST WITH OSPREY ($/MWH)	AVERAGE ANNUAL MARGINAL ENERGY COST WITHOUT OSPREY ($/MWH)	WHOLESALE PRICE SUPPRESSION ($/MWH)	ESTIMATED SAVINGS FROM OSPREY ($MILLION)	CUMULATIVE NPV @ 10% 2000 DOLLARS ($MILLION)
2003	208,800	32.83	33.37	0.54	113	85
2004	213,424	31.81	32.55	0.74	158	193
2005	217,791	32.92	33.67	0.75	163	294
2006	222,299	33.36	33.96	0.60	133	369
2007	226,565	33.75	34.48	0.73	165	454
2008	230,447	34.34	34.96	0.62	143	521
2009	234,645	35.85	36.60	0.75	176	595
2010	238,924	36.77	37.51	0.74	177	664
2011	243,289	38.81	39.65	0.84	204	735
2012	247,742	40.27	41.02	0.75	186	794

Source: PROMOD IV(R) analyses prepared by Slater Consulting.

Note: The estimated wholesale energy cost reductions shown here are subject to the Project's output being contractually committed to Seminole and other Peninsular Florida load-serving utilities.

PENINSULAR FLORIDA, SUMMARY OF PROJECTED WHOLESALE ENERGY COST SAVINGS DUE TO OSPREY ENERGY CENTER, HIGHER FUEL PRICE SENSITIVITY CASE, 2003-2012

YEAR	FRCC NET ENERGY FOR LOAD (GWH)	AVERAGE ANNUAL MARGINAL ENERGY COST WITH OSPREY ($/MWH)	AVERAGE ANNUAL MARGINAL ENERGY COST WITHOUT OSPREY ($/MWH)	WHOLESALE PRICE SUPPRESSION ($/MWH)	ESTIMATED SAVINGS FROM OSPREY ($MILLION)	CUMULATIVE NPV @ 10% 2000 DOLLARS ($MILLION)
2003	208,800	32.88	33.43	0.55	115	86
2004	213,424	31.92	32.59	0.67	143	184
2005	217,791	33.06	33.81	0.75	163	285
2006	222,299	33.71	34.35	0.64	142	366
2007	226,565	34.49	35.22	0.73	165	451
2008	230,447	35.43	36.09	0.66	152	522
2009	234,645	37.29	38.03	0.74	174	595
2010	238,924	38.76	39.53	0.77	184	666
2011	243,289	41.04	41.87	0.83	202	737
2012	247,742	42.63	43.51	0.88	218	806

Source: PROMOD IV(R) analyses prepared by Slater Consulting.

Notes: 1. The Base Case fuel price projections were developed by Slater Consulting based on actual data and the U. S. Energy Information Administration's 2000 Annual Energy Outlook Reference Case Forecast, but with the natural gas price escalations moderated to be more in keeping with the Standard & Poor's DRI forecast, which was included in the EIA's publication as a comparison forecast. The fuel prices for this sensitivity case were the same as for the Base Case except that the prices of natural gas were projected to escalate at the growth rates projected in the EIA's Reference Case Forecast.

2. The estimated wholesale energy cost reductions shown here are subject to the Project's output being contractually committed to Seminole and other Peninsular Florida load-serving utilities.

PENINSULAR FLORIDA, SUMMARY OF PROJECTED WHOLESALE ENERGY COST SAVINGS DUE TO OSPREY ENERGY CENTER, LOW LOAD GROWTH SENSITIVITY CASE, 2003-2012

YEAR	FRCC NET ENERGY FOR LOAD (GWH)	AVERAGE ANNUAL MARGINAL ENERGY COST WITH OSPREY ($/MWH)	AVERAGE ANNUAL MARGINAL ENERGY COST WITHOUT OSPREY ($/MWH)	WHOLESALE PRICE SUPPRESSION ($/MWH)	ESTIMATED SAVINGS FROM OSPREY ($MILLION)	CUMULATIVE NPV @ 10% 2000 DOLLARS ($MILLION)
2003	205,684	32.46	32.69	0.23	47	36
2004	209,187	30.97	31.62	0.65	136	128
2005	212,400	32.10	32.84	0.74	157	226
2006	215,713	32.26	32.85	0.59	127	298
2007	218,754	32.58	33.14	0.56	123	361
2008	221,389	33.09	33.56	0.47	104	409
2009	224,295	34.12	34.75	0.63	141	469
2010	227,242	34.96	35.56	0.60	136	522
2011	230,238	36.64	37.08	0.44	101	557
2012	233,280	37.46	38.40	0.94	219	627

Source: PROMOD IV(R) analyses prepared by Slater Consulting.

Notes: 1. This Low Load Growth scenario reflects growth rates 0.5 percent per year less than in the Base Case.

2. The estimated wholesale energy cost reductions shown here are subject to the Project's output being contractually committed to Seminole and other Peninsular Florida load-serving utilities.

PENINSULAR FLORIDA, SUMMARY OF PROJECTED WHOLESALE ENERGY COST SAVINGS DUE TO OSPREY ENERGY CENTER, HIGH LOAD GROWTH SENSITIVITY CASE, 2003-2012

YEAR	FRCC NET ENERGY FOR LOAD (GWH)	AVERAGE ANNUAL MARGINAL ENERGY COST WITH OSPREY ($/MWH)	AVERAGE ANNUAL MARGINAL ENERGY COST WITHOUT OSPREY ($/MWH)	WHOLESALE PRICE SUPPRESSION ($/MWH)	ESTIMATED SAVINGS FROM OSPREY ($MILLION)	CUMULATIVE NPV @ 10% 2000 DOLLARS ($MILLION)
2003	215,127	34.16	34.57	0.41	88	66
2004	222,089	33.44	34.29	0.85	189	195
2005	228,900	35.07	35.99	0.92	211	326
2006	235,976	35.94	36.75	0.81	191	434
2007	242,907	36.59	37.43	0.84	204	539
2008	249,539	38.02	39.04	1.02	255	657
2009	256,627	40.26	41.26	1.00	257	766
2010	263,921	42.51	43.51	1.00	264	868
2011	271,429	46.36	47.63	1.27	345	989
2012	279,162	49.17	50.64	1.47	410	1,119

Source: PROMOD IV(R) analyses prepared by Slater Consulting.

Notes: 1. This High Load Growth scenario reflects growth rates 1.0 percent per year greater than in the Base Case.

2. The estimated energy cost reductions shown here are subject to the Project's output being contractually committed to Seminole and other Peninsular Florida load-serving utlities.

COMPARISON OF PENINSULAR FLORIDA PLANNED AND PROPOSED GENERATING UNITS

PLANNED & PROPOSED UTILITY/UNIT	IN-SERVICE YEAR	SUMMER CAPACITY MW	WINTER CAPACITY MW	PRIMARY FUEL	ALTERNATE FUEL	HEAT RATE (Btu/kWH)	EQUIVALENT AVAILABILITY FACTOR %	TOTAL INSTALLED COST ($/KW) 1/	DIRECT CONSTRUCTION COST ($/KW) 1/	TECHNOLOGY TYPE
OLEANDER 2/	2002	777	910	GAS	NO. 2	9,700	97	N/A	$235	COMBUSTION TURBINE
OSPREY ENERGY 3/	2003	496	578	GAS	NONE	6,800	94	N/A	$357	COMBINED CYCLE
FPL/MARTIN CT	2001	298	362	GAS	NO. 2	10,450	98	$371	$323	COMBUSTION TURBINE
FPL/FT.MYERS	2002	930	1,073	GAS	NONE	6,830	96	$557	$502	COMB. CYCLE/REPOWER
FPL/SANFORD 4-5	2002	1,132	1,342	GAS	NONE	6,860	96	$703	$591	COMB. CYCLE/REPOWER
FPL/FT.MYERS CT	2003	298	362	GAS	NO. 2	10,450	98	$378	$323	COMBUSTION TURBINE
FPL/MARTIN 5-6	2006	788	858	GAS	NO. 2	6,346	96	$679	$484	COMBINED CYCLE
FPL/UNSITED	2007	394	429	GAS	NO. 2	6,830	96	$783	$552	COMBINED CYCLE
FPL/UNSITED	2008	394	429	GAS	NO. 2	6,830	96	$798	$552	COMBINED CYCLE
FPL/UNSITED	2009	394	429	GAS	NO. 2	6,830	96	$812	$552	COMBINED CYCLE
TALLAH/PURDOM 8	2000	233	262	GAS	NO. 2	6,940	NR	$483	$434	COMBINED CYCLE
FPC/INTRCSS 12-14	2000	240	282	GAS	NO. 2	13,272	91	NOT REPORTED	NOT REPORTED	COMBUSTION TURBINE
FPC/HINES 2	2003	495	567	GAS	NO. 2	7,306	91	NOT REPORTED	NOT REPORTED	COMBINED CYCLE
FPC/HINES 3	2005	495	567	GAS	NO. 2	7,306	91	NOT REPORTED	NOT REPORTED	COMBINED CYCLE
FPC/HINES 4	2007	495	567	GAS	NO. 2	7,306	91	NOT REPORTED	NOT REPORTED	COMBINED CYCLE
FPC/HINES 5	2009	495	567	GAS	NO. 2	7,306	91	NOT REPORTED	NOT REPORTED	COMBINED CYCLE
TECO/POLK 2	2000	155	180	GAS	NO. 2	10,580	94	NOT REPORTED	NOT REPORTED	COMBUSTION TURBINE
TECO/POLK 3	2002	155	180	GAS	NO. 2	10,580	94	NOT REPORTED	NOT REPORTED	COMBUSTION TURBINE
TECO/BAYSIDE 1	2003	698	796	GAS	NO. 2	7,080	91	NOT REPORTED	NOT REPORTED	COMBINED CYCLE
TECO/BAYSIDE 2	2004	711	802	GAS	NO. 2	7,050	91	NOT REPORTED	NOT REPORTED	COMBINED CYCLE
TECO/POLK 4-6	2005	465	540	GAS	NO. 2	10,580	94	NOT REPORTED	NOT REPORTED	COMBUSTION TURBINE
TECO/UNSITED	2009	155	180	GAS	NO. 2	10,580	94	NOT REPORTED	NOT REPORTED	COMBUSTION TURBINE
GVLLE/J.R. KELLY	2001	110	110	GAS	NO. 2	8,000	84	$375	$368	COMBINED CYCLE
SEC/PAYNE CRK 4/	2002	488	572	GAS	NO. 2	6,170	93	$412	$378	COMBINED CYCLE
FMPA-KUA CANE 3	2001	244	267	GAS	NO. 2	6,815	92	$430	$320	COMBINED CYCLE
LKLAND McINTSH 5	2002	337	384	GAS	NO. 2	6,523	91	$749	$671	COMBINED CYCLE
LKLAND McINTSH 4	2004	288	288	PET.COKE	COAL	8,452	81	$1,617	$1,317	PRESSURE FLUID BED
LKLAND McINTSH 6	2009	32	46	GAS	NO. 2	10,624	98	$992	$742	COMBUSTION TURBINE
JEA KENNEDY CT 7	2000	149	186	GAS	NO. 2	11,120	97	NOT REPORTED	$261	COMBUSTION TURBINE
JEA BANDY CT 1-3	2001	149	186	GAS	NO. 2	11,120	97	NOT REPORTED	$264	COMBUSTION TURBINE
JEA NORTHSID 1-2	2002	265	265	ET. COK	COAL	9,946	90	NOT REPORTED	$658	CIRCULATING FLUID BED

DATA SOURCES:
1/ TOTAL INSTALLED COST AND DIRECT CONSTRUCTION COST DATA IS REPORTED DIRECTLY FROM THE INDIVIDUAL UTILITY'S 2000 TEN-YEAR SITE PLAN, SCHEDULE 9.
2/ OLEANDER POWER PROJECT DATA IS BASED ON INFORMATION FILED IN THE APRIL 2000 TEN-YEAR SITE PLAN, AND INCLUDES THE COST OF DIRECTLY ASSOCIATED TRANSMISSION LINES.
3/ OSPREY ENERGY CENTER DATA IS BASED ON INFORMATION FROM NEED DETERMINATION AND TEN-YEAR SITE PLAN FILINGS AND INCLUDE THE COSTS OF DIRECTLY ASSOCIATED TRANSMISSION LINES. HEAT RATE IS CALCULATED BASED ON HIGHER HEATING VALUE (HHV).
4/ SEMINOLE ELECTRIC COOPERATIVE'S HEAT RATE FOR THE PAYNE CREEK UNIT 3 IS REPORTED BASED ON LOWER HEATING VALUE (LHV).

Osprey Energy Center
Calpine
Witness: Kenneth J. Slater
Exhibit ______ (KJS-20)

SUMMARY OF PENINSULAR FLORIDA CAPACITY, DEMAND, AND RESERVE MARGIN AT TIME OF SUMMER PEAK WITHOUT OSPREY ENERGY CENTER

Year	INSTALLED CAPACITY (MW)	NET CONTRACT FIRM INTERCHG (MW)	PROJECTED FIRM NET TO GRID FROM NUG (MW)	TOTAL AVAILABLE CAPACITY (MW)	TOTAL PEAK DEMAND (MW)	RESERVE MARGIN W/O EXERCISING LOAD MGMT. & INT. (MW)	RESERVE MARGIN W/O EXERCISING LOAD MGMT. & INT. % OF PEAK	LOAD MGMT. & INT. (MW)	FIRM PEAK DEMAND (MW)	RESERVE MARGIN WITH EXERCISING LOAD MGMT. & INT. (MW)	RESERVE MARGIN WITH EXERCISING LOAD MGMT. & INT. % OF PEAK
2000	36,033	1,697	2,653	40,383	37,728	2,655	7.04	2,896	34,832	5,551	15.94
2001	38,244	1,699	2,653	42,596	38,445	4,151	10.80	2,885	35,560	7,036	19.79
2002	39,380	1,675	2,906	43,961	39,282	4,679	11.91	2,850	36,432	7,529	20.67
2003	41,484	1,583	3,221	46,288	40,157	6,131	15.27	2,844	37,313	8,975	24.05
2004	42,615	1,583	2,768	46,966	41,004	5,962	14.54	2,840	38,164	8,802	23.06
2005	43,211	1,583	2,658	47,452	41,905	5,547	13.24	2,840	39,065	8,387	21.47
2006	44,651	1,583	2,525	48,759	43,190	5,569	12.89	2,843	40,347	8,412	20.85
2007	45,364	1,583	2,220	49,167	44,097	5,070	11.50	2,842	41,255	7,912	19.18
2008	46,393	1,583	2,205	50,181	44,926	5,255	11.70	2,832	42,094	8,087	19.21
2009	47,100	1,583	2,096	50,779	45,810	4,969	10.85	2,830	42,980	7,799	18.15

NOTE: 1. 777 MW - 300 MW = 477 MW OF OLEANDER POWER PROJECT ADDED TO THE INSTALLED CAPACITY COLUMN STARTING IN 2002, SEMINOLE ELECTRIC COOPERATIVE WILL PURCHASE 300 MW UNDER CONTRACT STARTING IN DECEMBER 2002.

SUMMARY OF PENINSULAR FLORIDA CAPACITY, DEMAND, AND RESERVE MARGIN AT TIME OF SUMMER PEAK WITH OSPREY ENERGY CENTER, 496 MW IN 2003

Year	INSTALLED CAPACITY (MW)	NET CONTRACT FIRM INTERCHG (MW)	PROJECTED FIRM NET TO GRID FROM NUG (MW)	TOTAL AVAILABLE CAPACITY (MW)	TOTAL PEAK DEMAND (MW)	RESERVE MARGIN W/O EXERCISING LOAD MGMT. & INT. (MW)	RESERVE MARGIN W/O EXERCISING LOAD MGMT. & INT. % OF PEAK	LOAD MGMT. & INT. (MW)	FIRM PEAK DEMAND (MW)	RESERVE MARGIN WITH EXERCISING LOAD MGMT. & INT. (MW)	RESERVE MARGIN WITH EXERCISING LOAD MGMT. & INT. % OF PEAK
2000	36,033	1,697	2,653	40,383	37,728	2,655	7.04	2,896	34,832	5,551	15.94
2001	38,244	1,699	2,653	42,596	38,445	4,151	10.80	2,885	35,560	7,036	19.79
2002	39,380	1,675	2,906	43,961	39,282	4,679	11.91	2,850	36,432	7,529	20.67
2003	41,980	1,583	3,221	46,784	40,157	6,627	16.50	2,844	37,313	9,471	25.38
2004	43,111	1,583	2,768	47,462	41,004	6,458	15.75	2,840	38,164	9,298	24.36
2005	43,707	1,583	2,658	47,948	41,905	6,043	14.42	2,840	39,065	8,883	22.74
2006	45,147	1,583	2,525	49,255	43,190	6,065	14.04	2,843	40,347	8,908	22.08
2007	45,860	1,583	2,220	49,663	44,097	5,566	12.62	2,842	41,255	8,408	20.38
2008	46,889	1,583	2,205	50,677	44,926	5,751	12.80	2,832	42,094	8,583	20.39
2009	47,596	1,583	2,096	51,275	45,810	5,465	11.93	2,830	42,980	8,295	19.30

Notes: 1. THE INDICATED RESERVE MARGIN IMPROVEMENTS ARE SUBJECT TO THE PROJECT'S OUTPUT BEING CONTRACTUALLY COMMITTED TO SEMINOLE AND OTHER PENINSULAR FLORIDA LOAD-SERVING UTILITIES.
2. 496 MW OF OSPREY ENERGY CENTER ADDED TO THE INSTALLED CAPACITY COLUMN STARTING IN 2003
3. 777 MW - 300 MW = 477 MW OF OLEANDER POWER PROJECT ADDED TO THE INSTALLED CAPACITY COLUMN STARTING IN 2002, SEMINOLE ELECTRIC COOPERATIVE WILL PURCHASE 300 MW UNDER CONTRACT STARTING IN DECEMBER 2002.

SOURCES: Florida Reliability Coordinating Council, 2000 Regional Load & Resource Plan, Peninsular Florida, July, 2000
Calpine Construction Finance Company, L.P.

SUMMARY OF PENINSULAR FLORIDA CAPACITY, DEMAND, AND RESERVE MARGIN AT TIME OF WINTER PEAK WITHOUT OSPREY ENERGY CENTER

Year	INSTALLED CAPACITY (MW)	NET CONTRACT FIRM INTERCHG (MW)	PROJECTED FIRM NET TO GRID FROM NUG (MW)	TOTAL AVAILABLE CAPACITY (MW)	TOTAL PEAK DEMAND (MW)	RESERVE MARGIN W/O EXERCISING LOAD MGMT. & INT. (MW)	RESERVE MARGIN W/O EXERCISING LOAD MGMT. & INT. % OF PEAK	LOAD MGMT. & INT. (MW)	FIRM PEAK DEMAND (MW)	RESERVE MARGIN WITH EXERCISING LOAD MGMT. & INT. (MW)	RESERVE MARGIN WITH EXERCISING LOAD MGMT. & INT. % OF PEAK
2000/01	39,342	1,786	2,717	43,845	40,894	2,951	7.22	4,080	36,814	7,031	19.10
2001/02	40,075	1,688	3,002	44,765	41,811	2,954	7.07	4,058	37,753	7,012	18.57
2002/03	43,513	1,583	3,365	48,461	42,739	5,722	13.39	4,060	38,679	9,782	25.29
2003/04	45,329	1,583	2,912	49,824	43,663	6,161	14.11	4,071	39,592	10,232	25.84
2004/05	45,881	1,583	2,802	50,266	44,638	5,628	12.61	4,087	40,551	9,715	23.96
2005/06	46,845	1,583	2,669	51,097	45,694	5,403	11.82	4,109	41,585	9,512	22.87
2006/07	48,177	1,583	2,324	52,084	46,668	5,416	11.61	4,127	42,541	9,543	22.43
2007/08	49,520	1,583	2,309	53,412	47,573	5,839	12.27	4,128	43,445	9,967	22.94
2008/09	50,129	1,583	2,200	53,912	48,531	5,381	11.09	4,145	44,386	9,526	21.46
2009/10	51,316	1,583	1,778	54,677	49,478	5,199	10.51	4,162	45,316	9,361	20.66

NOTE: 1. 910 MW - 340 MW = 570 MW OF OLEANDER POWER PROJECT ADDED TO THE INSTALLED CAPACITY COLUMN STARTING IN 2002/03, SEMINOLE ELECTRIC COOPERATIVE WILL PURCHASE 340 MW UNDER CONTRACT STARTING IN DECEMBER 2002.

SUMMARY OF PENINSULAR FLORIDA CAPACITY, DEMAND, AND RESERVE MARGIN AT TIME OF WINTER PEAK WITH OSPREY ENERGY CENTER, 578 MW IN 2003/04

Year	INSTALLED CAPACITY (MW)	NET CONTRACT FIRM INTERCHG (MW)	PROJECTED FIRM NET TO GRID FROM NUG (MW)	TOTAL AVAILABLE CAPACITY (MW)	TOTAL PEAK DEMAND (MW)	RESERVE MARGIN W/O EXERCISING LOAD MGMT. & INT. (MW)	RESERVE MARGIN W/O EXERCISING LOAD MGMT. & INT. % OF PEAK	LOAD MGMT. & INT. (MW)	FIRM PEAK DEMAND (MW)	RESERVE MARGIN WITH EXERCISING LOAD MGMT. & INT. (MW)	RESERVE MARGIN WITH EXERCISING LOAD MGMT. & INT. % OF PEAK
2000/01	39,342	1,786	2,717	43,845	40,894	2,951	7.22	4,080	36,814	7,031	19.10
2001/02	40,075	1,688	3,002	44,765	41,811	2,954	7.07	4,058	37,753	7,012	18.57
2002/03	43,513	1,583	3,365	48,461	42,739	5,722	13.39	4,060	38,679	9,782	25.29
2003/04	45,907	1,583	2,912	50,402	43,663	6,739	15.43	4,071	39,592	10,810	27.30
2004/05	46,459	1,583	2,802	50,844	44,638	6,206	13.90	4,087	40,551	10,293	25.38
2005/06	47,423	1,583	2,669	51,675	45,694	5,981	13.09	4,109	41,585	10,090	24.26
2006/07	48,755	1,583	2,324	52,662	46,668	5,994	12.84	4,127	42,541	10,121	23.79
2007/08	50,098	1,583	2,309	53,990	47,573	6,417	13.49	4,128	43,445	10,545	24.27
2008/09	50,707	1,583	2,200	54,490	48,531	5,959	12.28	4,145	44,386	10,104	22.76
2009/10	51,894	1,583	1,778	55,255	49,478	5,777	11.68	4,162	45,316	9,939	21.93

NOTES: 1. THE INDICATED RESERVE MARGIN IMPROVEMENTS ARE SUBJECT TO THE PROJECT'S OUTPUT BEING CONTRACTUALLY COMMITTED TO SEMINOLE AND OTHER PENINSULAR FLORIDA LOAD-SERVING UTILITIES.
2. 578 MW OF OSPREY ENERGY CENTER ADDED TO THE INSTALLED CAPACITY COLUMN STARTING IN 2003/04
3. 910 MW - 340 MW = 570 MW OF OLEANDER POWER PROJECT ADDED TO THE INSTALLED CAPACITY COLUMN STARTING IN 2002/03, SEMINOLE ELECTRIC COOPERATIVE WILL PURCHASE 340 MW UNDER CONTRACT STARTING IN DECEMBER 2002.

SOURCES: Florida Reliability Coordinating Council, 2000 Regional Load & Resource Plan, Peninsular Florida, July, 2000
Calpine Construction Finance Company, L.P.

PENINSULAR FLORIDA EMISSIONS IMPACTS OF OSPREY ENERGY CENTER, 2003-2012

(All Values in 1000's lbs)

	Sulfur Dioxide		Nitrogen Oxides	
Year	Without Osprey	With Osprey	Without Osprey	With Osprey
2003	759,691	767,350	458,702	452,861
2004	702,289	669,806	426,740	412,805
2005	695,946	674,697	423,137	413,850
2006	677,817	654,902	417,541	405,467
2007	658,449	632,952	405,652	392,771
2008	639,130	611,603	391,615	382,230
2009	669,806	660,623	408,957	401,142
2010	679,140	657,030	410,514	400,657
2011	702,883	677,446	418,612	407,683
2012	743,653	720,617	437,591	426,875

Source: PROMOD IV(R) analyses prepared by Slater Consulting.
Note: The estimated emission impacts shown here are subject to the Project's output being contractually committed to Seminole and other Peninsular Florida load-serving utilities.