BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 07[illegible]-EI
FLORIDA POWER & LIGHT COMPANY

IN RE: FLORIDA POWER & LIGHT COMPANY'S PETITION TO DETERMINE NEED FOR TURKEY POINT NUCLEAR UNITS 6 AND 7 ELECTRICAL POWER PLANT

DIRECT TESTIMONY & EXHIBITS OF:

RENE SILVA

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

FLORIDA POWER & LIGHT COMPANY

DIRECT TESTIMONY OF RENE SILVA

DOCKET NO. 07_____-EI

OCTOBER 16, 2007

INTRODUCTION AND CREDENTIALS

Q. Please state your name and business address.

A. My name is Rene Silva. My business address is 9250 West Flagler Street, Miami, Florida 33174.

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

A. I am employed by Florida Power & Light Company (FPL or the Company) as Senior Director, Resource Assessment and Planning (RAP).

Q. Please describe your duties and responsibilities in that position.

A. I manage the RAP group, the department that is responsible for developing FPL's integrated resource plan (IRP) and other related activities, such as developing system production cost projections for various generation capacity alternatives, analyzing demand side management (DSM) programs, and negotiating and administering wholesale power purchase agreements (PPAs).

Q. Please describe your educational background business experience.

A. I graduated from the University of Michigan with a Bachelor of Science Degree in Engineering Science in 1974. From 1974 until 1978, I was employed by the Nuclear Energy Division of the General Electric Company in

the area of nuclear fuel design. While employed by General Electric, I earned a Masters Degree in Mechanical Engineering from San Jose State University in 1978.

I joined the Fuel Resources Department of FPL in 1978, as a fuel engineer, responsible for purchasing nuclear fuel. While employed by FPL, I earned a Masters Degree in Business Administration from the University of Miami in 1986. In 1987 I became Manager of Fossil Fuel, responsible for FPL's purchases of fuel oil, natural gas and coal. In 1990, I assumed the position of Director, Fuel Resources Department, and in 1991 became Manager of Fuel Services, responsible for coordinating the development and implementation of FPL's fossil fuel procurement strategy. In 1998, I was named Manager of Business Services in the Power Generation Division (PGD). In that capacity, I managed the group that is responsible for coordinating (a) the development of PGD's long-term plan for the effective and efficient construction, operation and maintenance of FPL's fossil generating plants, (b) the preparation of PGD annual budgets and tracking of expenditures, and (c) the preparation of reports related to fossil generating plant performance. On May 1, 2002, I was appointed to my current position.

Q. Are you sponsoring any exhibits in this case?

A. Yes. I am sponsoring an Exhibits RS-1 through RS-4, which are attached to my direct testimony.

Exhibit RS-1 FPL's actual energy mix in 2006

Exhibit RS-2	FPL's projected energy mix in 2021, with and without the addition of Turkey Point 6 & 7
Exhibit RS-3	FPL's flexibility to incorporate increased DSM and renewable resources into the resource plan
Exhibit RS-4	Results of FPL's economic analyses regarding the relative cost of adding Turkey Point 6 & 7 to its portfolio.

Q. Are you sponsoring any sections of the Need Study for Electrical Power document included with FPL's Petition for a Determination of Need?

A. Yes. This document is referred to throughout FPL's filing as the "Need Study." I sponsor Sections I and X, and co-sponsor Sections II and III of the Need Study.

PURPOSE

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

A. The purpose of my testimony is to support FPL's request for an affirmative determination of need for FPL to proceed, consistent with the provisions of Commission Rule 25-6.0423, the Nuclear Power Plant Cost Recovery Rule, to construct up to 3,040 megawatts (MW) of new nuclear generating capacity at its Turkey Point site, to be designated Turkey Point Nuclear Units 6 & 7, including the associated transmission interconnection and integration facilities (Turkey Point 6 & 7 or the Project). FPL seeks to implement a process to

license, develop and construct these critical new nuclear baseload facilities with the aim of placing them into commercial operation by June 2018 and June 2020, respectively. Specifically, I explain why the addition of the proposed Turkey Point 6 & 7 nuclear units to FPL's generation portfolio is the best alternative available for FPL to: continue to provide reliable electric service at a reasonable cost; contribute to a balanced, fuel-diverse generation portfolio; and maintain an adequate reserve margin to meet its customers' projected electricity demand beginning in 2018. I also explain why the Project is a critical component of any plan to reduce emissions of carbon dioxide (CO_2), a key greenhouse gas (GHG), at the same time FPL continues to meet its customers' growing electricity needs.

Q. How is your testimony organized?

A. My testimony consists of 8 sections.

- Section 1 introduces FPL's witnesses and FPL's Need Study and Appendices.
- Section 2 outlines FPL's request for an affirmative determination of need and summarizes FPL's need for generation capacity through 2020.
- Section 3 discusses the value of fuel diversity to FPL's customers and how the Project provides fuel diversity benefits.
- Section 4 outlines the resource plan FPL utilized in its analysis of Turkey Point 6 & 7, and describes the role of Turkey Point 6 & 7 in that plan.

- Section 5 summarizes the results of the economic evaluation, and explains why the addition of Turkey Point 6 & 7 is the best alternative available for FPL to continue to provide reliable electric service at a reasonable price by maintaining a balanced, fuel-diverse generation portfolio, and maintaining an adequate reserve margin to meet its customers' future electricity demand.
- Section 6 describes the many benefits of adding Turkey Point 6 & 7 to FPL's generation portfolio, including the fact that this nuclear addition is an essential part of any plan to reduce GHG emissions while it continues to meet its customers' growing electricity needs.
- Section 7 presents a summary of the benefits already provided to our customers by FPL's existing nuclear units.
- Section 8 presents the significant adverse consequences FPL and its customers would face if FPL's petition is not granted.

SECTION 1 - FPL's WITNESSES AND NEED STUDY DOCUMENT

Q. How many witnesses are supporting FPL's petition through direct pre-filed testimony?

A. Fifteen witnesses are submitting direct testimony. In addition to the various exhibits included with the testimony of these witnesses, many of FPL's witnesses sponsor or co-sponsor a portion of FPL's Need Study and Appendices.

Q. Please summarize the topics addressed in the testimony of each of these witnesses.

A. As President of FPL, Mr. Armando Olivera discusses the overall support for the development of new nuclear generation, presents an overview of the need for Turkey Point 6 & 7, describes the magnitude of this project from the perspective of FPL and its investors, and discusses a few of the key reasons in support of FPL's petition in this proceeding.

Mr. Art Stall, President of FPL Group's Nuclear Energy Division, describes FPL Group's successful record of operating nuclear plants.

Mr. Steven Scroggs describes the steps FPL proposes to take in the licensing and deployment process for Turkey Point 6 & 7, discusses the site selection process, outlines the reactor design choices under consideration for this nuclear generation addition and provides the estimated cost range for the Project.

Dr. Leonardo Green presents FPL's load forecasting process, discusses the methodologies and assumptions used in that process, and presents the resulting load forecast, which was used in FPL's integrated resource planning process, and in the analysis performed related to the addition of Turkey Point 6 & 7.

Dr. Steve Sim describes FPL's integrated planning process, presents the need for new resources to meet customers' demand for electricity in 2007 through 2020, explains why DSM alone cannot meet this need and explains the analysis FPL performed to evaluate the addition of Turkey Point 6 & 7. Dr. Sim also presents the results of this analysis, explains his conclusion that based on FPL's evaluation, adding Turkey Point 6 & 7 in 2018 and 2020 is the best choice for FPL's customers, and discusses the adverse consequences of not adding Turkey Point 6 & 7 in 2018 and 2020, respectively.

Mr. Dennis Brandt presents FPL's DSM goals and achievements and FPL's DSM plan. In addition, Mr. Brandt discusses FPL's ongoing DSM-related activities and describes FPL's view regarding the potential contribution that DSM can make to help meet FPL's resource needs through 2020.

Ms. Henrietta McBee describes FPL's strong record in the development and use of renewables in its resource mix, and describes FPL's plans to pursue such resources, and the anticipated timing and magnitude of additions.

Mr. John Reed (Concentric Energy Advisors, Inc.) addresses the magnitude of the projected availability of renewable resources and demand side management that could contribute to meet FPL's future resource needs and explains why these resources will not be adequate to defer the need for Turkey Point 6 & 7. Mr. Reed also discusses the need for regulatory policies and

processes that can effectively support the development of new baseload nuclear generation.

Dr. Nils Diaz presents an overview of the current state of federal nuclear regulation, and explains how it has been modified to provide for a more efficient licensing process. He also describes the importance of nuclear generation as a part of the nation's generating portfolio and explains why new nuclear units can be built and operated safely and reliably.

Mr. Hector Sanchez discusses the transmission interconnection and integration requirements related to the addition of Turkey Point 6 & 7.

Mr. Gerard Yupp discusses the benefits of fuel diversity in FPL's system resulting from the addition of Turkey Point 6 & 7. He explains the basis for, and inherent uncertainty in, the various fossil fuel price forecasts used in FPL's economic analyses and discusses why such uncertainty requires the use of scenario analysis.

Mr. Claude Villard presents the nuclear fuel price forecast used in FPL's analysis, explains why FPL projects that nuclear fuel supplies will be readily available in the future, and discusses how delivery schedules for nuclear fuel and operating flexibility of nuclear units contribute to system reliability in a way that other technologies cannot match.

Mr. Ken Kosky testifies that the environmental compliance cost scenarios for sulfur dioxide (SO_2), nitrogen oxide (NO_x), mercury (Hg), and CO_2 considered by FPL as part of its analysis of Turkey Point 6 & 7 effectively address the appropriate range of those potential future costs. In addition, Mr. Kosky discusses the historical contributions of FPL's nuclear generation to lower CO_2 and other GHG emissions, and presents the magnitude of future reductions in emissions that will be realized through the addition of Turkey Point 6 & 7.

Ms. Kim Ousdahl describes how FPL will comply with the Commission's Nuclear Cost Recovery Rule as it applies to Turkey Point 6 & 7.

SECTION 2 – THE NEED FOR TURKEY POINT 6 & 7

Q. Please summarize FPL's request in this proceeding

A. FPL seeks from the Commission an affirmative determination of need for the addition to its generation portfolio of Turkey Point 6 & 7, two nuclear fuel generating units, each nominally with a net summer capacity rating of up to approximately 1,520 MW, currently projected to be placed in commercial operation by June 1, 2018 and June 1, 2020, respectively. FPL's request for a determination of need also includes the associated electric transmission facilities described in its petition, the need study, and the testimony of Mr. Sanchez.

As explained in greater detail by Mr. Scroggs, FPL's petition also requests that, in connection with granting a determination of need for Turkey Point 6 & 7, the Commission affirmatively determine that (1) FPL would be prudent to make payments for those long-lead procurement items that are reasonably necessary to preserve the potential for 2018-2020 in-service dates for the Project; and (2) when such payments are made prior to the completion of the Project's site clearing work, they are properly characterized as "pre-construction costs," to be recovered pursuant to the mechanism provided in the Commission's Rule 25-6.0423.

Q. Why is the addition of Turkey Point 6 & 7 needed?

A. The large addition of new nuclear baseload capacity provided by Turkey Point 6 & 7 is needed to maintain system reliability and provide fuel diversity at a reasonable cost for its customers. Specifically, this addition is needed to preserve a balanced, fuel diverse generation portfolio for FPL customers, as well as to maintain an adequate level of generation reserve margin through 2020. The addition of new baseload nuclear generation, as a component of FPL's fuel mix, is even more important given the high likelihood of significant GHG regulation in the near future, including the potential for either federal or state targeted or mandated reductions in emissions being imposed for the relevant planning horizon. The construction of new nuclear generation is necessarily a critical component of any plan to reduce system GHG, including CO_2, emissions.

In summary, Turkey Point 6 & 7 will provide needed baseload generating capacity, improve fuel diversity, reduce Florida's dependence on fuel oil and natural gas, reduce air emissions compliance costs, and contribute to the long-term reliability of the electric grid, and, based on FPL's analysis, will meet these criteria in a cost-effective manner.

Q. What is FPL's current fuel mix and how is it projected to change in the future?

A. In 2006, FPL's fuel mix consisted of natural gas (50%), nuclear generation (21%), coal (18%), fuel oil (9%), and other sources (about 2%). This fuel mix is presented in Exhibit RS-1. If only natural gas-fueled generation were to be added to FPL's system to provide its needs through 2020, the contribution of natural gas would increase to about 75% of total electricity delivered to FPL's customers by 2021, while that of nuclear fuel would decrease to about 16%. As will be discussed in Section 3, having such a high degree of dependence on natural gas would make FPL's system more susceptible to interruptions in the delivery of natural gas and to the type of gas price spikes that have become frequent in recent years.

Alternately, with the proposed addition of Turkey Point 6 & 7, and assuming that the size of each new nuclear unit is 1,100 MW, the share of electricity produced by natural gas would be about 65% in 2021, while that of nuclear generation would be about 27%. These fuel mix projections, both with and without the addition of Turkey Point 6 & 7, are shown in Exhibit RS-2. This

comparison shows how the addition of Turkey Point 6 & 7 begins to remedy what would otherwise be a dramatic long-term imbalance in FPL's fuel mix.

Q. What quantity of firm resources will FPL need by 2020 and what are some of the ways in which those needs may be met taking into account the proposed addition of Turkey Point 6 & 7?

A. In 2011 through 2020, FPL will need about 8,350 MW of total additional firm resources, including approximately 1,610 MW to replace expiring purchase power agreements (PPA), to continue to meet its reliability criteria. FPL estimates that it can offset approximately 1,490 MW of this resource need through energy efficiency and demand side management gains between 2011 and 2020. FPL also projects that about 290 MW of the remaining resource need will be provided from specific renewable resources through new power purchase agreements with existing renewable suppliers that replace expiring contracts, as well as new contracts with all the bidders who proposed firm capacity in response to FPL's April 2007 request for proposals (RFP) for renewable resources. Planned capacity uprates at FPL's four existing nuclear units will contribute about 414 MW. This combination of resources, even if fully achieved, but without the addition of Turkey Point 6 & 7, would only reduce the capacity needed to maintain FPL's 20% reserve margin through 2020 to the 6,156 MW shown on Dr. Sim's Exhibit SRS-1.

The Commission's approval of the proposed Turkey Point 6 & 7 facilities would provide between 2,200 MW and 3,040 MW of nuclear generation,

leaving a remaining capacity need of yet another 3,120 MW to 3,960 MW through 2020. FPL has not yet specified what resources will be implemented in the future to meet this remaining need, and it is anticipated that such need could be met by a combination of future renewable resources, energy efficiency increases, new gas-fueled generation capacity, and other resources, depending on the future availability and the cost-effectiveness of these resources. If actual growth in demand were to be lower than projected, FPL's plan would be adjusted to reduce the amount of new gas-fueled generation to be added. However, neither the opportunity to accommodate additional cost-effective DSM and renewable resources, nor the need for Turkey Point 6 & 7 would be affected. Exhibit RS-3 demonstrates this point graphically, i.e., that with even a lower-than-projected rate of growth in FPL's service territory, there will be more than ample opportunity to continue to pursue additional DSM and renewable resources as part of FPL's energy portfolio, in addition to Turkey Point 6 & 7.

However, based on what we know today, it is anticipated that a significant portion of the 3,120 MW to 3,960 MW remaining resource need would have to be met with new natural gas-fueled generation added by FPL or obtained under power purchase agreements. Furthermore, if the addition of Turkey Point 6 & 7 were not approved, even more natural gas-fueled generation would be the only practical substitute. At present, FPL knows of no other alternative that can cost-effectively, provide the reliable baseload capacity to

meet FPL's customers' future resource needs that would be provided by Turkey Point 6 & 7.

In short, even with the addition of Turkey Point 6 & 7, FPL projects an additional need of at least 3,120 MW to 3,960 MW of capacity, which could accommodate even the more aggressive projections of available DSM and renewable resources, discussed more fully by John Reed in his testimony. Any such additional renewable generation capacity and DSM would reduce the need for even more new natural gas-fueled generation, not the need for Turkey Point 6 & 7. In other words, without Commission approval for Turkey Point 6 & 7 it will not be possible to reduce dependence on natural gas in Florida regardless of whether additional renewable generation capacity or DSM is achieved.

Q. Please describe the extent to which FPL's plan reflects how additional future DSM programs will help avoid some of the need for new generation capacity that you have identified above.

A. As Dr. Sim explains, FPL's generation capacity need projections already reflect all of the cost-effective DSM currently known to FPL, including not only FPL's current DSM Goals, but also significant amounts of additional DSM that FPL has identified since the DSM Goals were approved. It is important to note that, as presented by Mr. Brandt, through 2005 FPL's DSM programs have enabled FPL to avoid the need for more than 4,200 MW of generation capacity, equivalent to about 20% of FPL's 2006 peak load.

Between 2005 and 2011, FPL projects that an additional 710 MW of demand reduction will be achieved through DSM increases. Between 2011 and 2020, FPL currently projects that another 1,490 MW of capacity equivalent DSM demand reduction will have been added for a total cumulative capacity avoidance due to DSM of more than 6,400 MW. To underscore the magnitude of this accomplishment, the avoided capacity achieved through FPL's DSM programs is between two and three times the size of Turkey Point 6 & 7. All the projected DSM additions have been reflected in FPL's current resource plan.

FPL will continue to consider and aggressively pursue new DSM programs to reduce the need for new capacity, and reduce GHG emissions. However, as stated by Dr. Sim and Mr. Brandt, the potential for additional cost-effective DSM is not nearly sufficient to reduce or defer the need for the proposed new baseload nuclear facilities, Turkey Point 6 & 7.

Q. Does FPL's resource plan reflect all currently known potential future contributions from renewable resource alternatives?

A. Yes. FPL's resource plan already reflects contributions from all currently available renewable resources, as well as new renewable resources that have indicated they plan to provide firm generation capacity during this period. These projected contributions include resources that FPL plans to obtain through new power purchase agreement with existing renewable power suppliers to replace expiring contracts, as well as with all bidders that

proposed firm generation capacity using renewable resources in response to FPL's April 2007 RFP. FPL has already initiated discussions with these suppliers.

As shown on Exhibit RS-3, to the extent that additional cost-effective renewable resource alternatives become available in the future, they could be applied to reduce the sizable remaining capacity need described above (between 3,120 MW and 3,960 MW) and incorporated into FPL's resource plan. Unfortunately, the magnitude and timing of additional renewable resources is highly uncertain; thus, their contribution cannot be counted on when considering the need for Turkey Point 6 & 7. Mr. Reed also addresses this in his testimony. But it is important to emphasize that renewable resources will continue to be an important potential resource option to meet FPL's significant needs even beyond those met by the addition of Turkey Point 6 & 7. The potential for future contributions from other renewable resources is discussed further in Section 4 of my testimony.

Q. What would the reserve margin be without the addition of Turkey Point 6 & 7 in 2018 and 2020?

A. First, it is important to understand that if no generation capacity is added between 2011 and 2017, FPL's reserve margin would be about 1%, effectively no reserve margin, by 2018. However, if we start with the premise that FPL will have added sufficient resources to meet its 20% reserve margin reliability criterion through 2017, without the addition of Turkey Point 6 & 7 in 2018

and 2020, FPL's reserve margin would fall to 17.5% in 2018, 15.1% in 2019 and 12.6% in 2020, far less than the reserve margin requirement that FPL and the Commission have agreed is necessary to ensure system reliability. Also, it should be noted that without Turkey Point 6 & 7 a very significant portion of the reserve margin in those years would be provided by DSM rather than generation resources, rendering FPL's system less reliable. Furthermore, without the addition of Turkey Point 6 & 7 in 2018 and 2020, FPL's capacity need would exceed 2,700 MW by 2021, and continue to grow thereafter. For these reasons, pursuing the potential addition of Turkey Point 6 & 7 as FPL has proposed is a critical part of FPL's overall resource plan to maintain system reliability and ensure FPL meets its capacity needs through 2020 and beyond.

Q. Did FPL consider other large baseload alternatives to meet its generation capacity need in 2018 and 2020?

A. Yes. FPL evaluated coal-fired Integrated Gasification Combined Cycle (IGCC) and gas-fired combined cycle (CC) generation in 2018 and 2020 as baseload alternatives to Turkey Point 6 & 7. The results of FPL's evaluation are discussed in detail by Dr. Sim and summarized in Section 5 of my testimony. These results, combined with the advantages provided by the addition of Turkey Point 6 & 7 discussed in Section 6, demonstrate that the addition of Turkey Point 6 & 7 is the best, cost-effective and technically feasible alternative to meet FPL's needs in 2018 and 2020.

Q. Does the addition of Turkey Point 6 & 7 also help reduce system GHG emissions?

A. Yes. Turkey Point 6 & 7 will add up to 3,040 MW of non-GHG emitting generation. Further, because these units will operate at very high capacity factors, FPL's least efficient generating units that emit GHG will operate less and overall system GHG emissions will be significantly reduced. Mr. Kosky and Dr. Sim address this in more detail in their testimonies.

In summary, it is clear that without the addition of Turkey Point 6 & 7 in 2018 and 2020, FPL's customers would be served by a far less fuel-diverse, less reliable system with greater fuel cost volatility and significantly higher GHG emissions. The addition of Turkey Point 6 & 7 is needed to provide adequate electricity at a reasonable cost to FPL's customers.

It is also important to recognize that granting a determination of need is not an irreversible commitment to a specific resource development path. Rather, the determination of need for Turkey Point 6 & 7 is a first, crucial step in a process that, as Mr. Scroggs describes in detail, is equivalent to purchasing an option to maintain the possibility of adding new nuclear generation capacity to FPL's portfolio in 2018 and 2020. FPL will retain substantial flexibility to adjust the future development and construction process in light of additional information that will become available in future years; and the Commission will retain the ability to review and evaluate future decisions regarding the

Project contemporaneously, thus ensuring that the final result is prudent and in FPL customers' long-term best interest.

SECTION 3 – VALUE OF FUEL DIVERSITY

Q. What are the benefits of maintaining fuel diversity in FPL's system?

A. The primary benefits of fuel diversity are greater system reliability and reduced fuel price volatility. An electric system that relies on a single fuel and a single technology to generate all the electricity needed to meet its customers' demand, all else equal, is less reliable than a system that uses a more balanced, fuel-diverse generation portfolio. In addition, greater fuel diversity mitigates the impact of wide or sudden swings in the price of one fuel, as we have witnessed in natural gas markets over the last several years.

Q. Please explain how fuel diversity enhances system reliability.

A. An electric system that relies exclusively on one fuel is inherently more susceptible to events that cause delays or interruptions in the supply of that fuel. Such a system cannot rely on alternative generation facilities that use other fuels to make up for reductions in the constrained fuel.

A generation portfolio that relies upon a fuel-diverse system with adequate generation reserve margin is capable of producing electricity using a number of different fuels and has sufficient redundancy in generation capacity. Such

a system retains the flexibility to offset the reduced availability of one constrained fuel by generating sufficient electricity using other fuels.

Q. Does diversity related to the process of fuel transportation and delivery also improve system reliability?

A. Yes. The ability of a generating system that relies on only one fuel transportation and delivery process to serve its customers can be severely impaired by interruptions in the transportation and delivery of that single fuel to the generating plants. This is particularly true when the generating plants use natural gas, because the reliable operation of these plants depends on uninterrupted, hour by hour delivery of natural gas to the plants. Diversity in fuel transportation and delivery processes enables a utility to mitigate the effects of any such fuel delivery interruptions by limiting the amount of generation that is affected by a single event and makes replacement of unavailable generating capacity more attainable.

Because different fuels usually originate from different geographical areas and are transported and delivered via different processes, having a fuel diverse generation system helps mitigate the effect of interruptions in fuel transportation and delivery, as well as production.

Q. Does diversity, not only in fuel type but in generation technology, also improve reliability?

A. Yes. Occasionally, equipment design or manufacturing problems manifest themselves in the form of systematic failure of the same part in a number of

generating plants that utilize the same part design, or those plants that use parts produced in the same production batch. Having diversity in generation technology is also important because if a generic equipment problem occurs, it would affect a smaller portion of a utility's generation portfolio, making it easier for the utility to mitigate the effect of that problem without adversely affecting service to its customers. Because generating units that use different fuels usually also use different technologies, a fuel diverse system also helps mitigate the effect of equipment problems that affect one specific type of generation technology, such as for example, gas turbines.

Q. Which of the reliability benefits attributed to fuel diversity that you have discussed are applicable to the proposed addition of Turkey Point 6 & 7?

A. All of the benefits I have described above are applicable to the addition of Turkey Point 6 & 7. Adding up to 3,040 MW of nuclear baseload generation to FPL's system would significantly reduce FPL's reliance on natural gas and will enable FPL to more effectively address and offset decreases in natural gas supply. The factors that could affect gas production and transportation would not affect nuclear fuel. In his testimony, Mr. Villard describes how the production, transportation and delivery of nuclear fuel is completely different from the process of production, transportation and delivery of natural gas that is described by Mr. Yupp. Therefore, any events that would affect gas production, transportation and delivery would not similarly affect Turkey Point 6 & 7. Also, the technology to be used in Turkey Point 6 & 7 will be

different from that used in all of FPL's gas-fueled units, so technical problems that may affect the gas units will not affect Turkey Point 6 & 7.

Q. Does Turkey Point 6 & 7 provide additional reliability benefits?

A. Yes. Nuclear generating facilities typically have sufficient fuel in the core to operate at full power for approximately eighteen months without the need for additional fuel. A natural gas-fired generating facility, however, requires that natural gas be delivered through an interstate pipeline to the plant site continuously in order to continue to operate. As explained by Mr. Villard, this is a fuel advantage over natural gas because it provides certainty that the nuclear units will not be affected by future fuel supply interruptions or delays. In addition, nuclear fuel is typically delivered to Turkey Point 6 & 7 at least two months prior to the time the fuel is needed to conduct the refueling of each unit. In effect, at any point in time a nuclear unit has at least sixty days of full power fuel inventory, and as much as twenty months of inventory, compared to natural gas-fueled generation which cannot cost-effectively provide similar on-site fuel inventory capability. In other words, nuclear generation adds significant additional reliability value related to fuel supply and transportation.

In addition, as discussed by Mr. Villard in his testimony, because reserves of uranium in North America are so large, nuclear fuel supply from secure sources is assured for the entire operating life of the plant.

Q. Does fuel diversity offer value other than increased reliability?

A. Yes. This point is also discussed by Mr. Yupp. Fuel diversity helps mitigate the effects of price volatility in one or two fuels on the price of electricity. For example, if a utility relies solely on natural gas to produce all the electricity needed by its customers, any increase or decrease in the market price of natural gas would translate into a direct and comparable increase or decrease in the cost of electricity. Because natural gas prices are projected to be volatile in the future, electricity customers would be subject to significant volatility in the future cost of electricity. Recent history has demonstrated just how volatile natural gas prices can be. Also, as Mssrs. Villard and Yupp testify, the prices of nuclear fuel are low and stable relative to other fuels, and changes in the price of nuclear fuel are not directly linked to changes in the prices of natural gas and fuel oil. Therefore, having a fuel diverse portfolio that includes significant contributions from nuclear fuel would necessarily help dampen the effect of volatility in natural gas prices.

SECTION 4 – RESOURCE PLANS UTILIZED IN ANALYSIS

Q. What resource plans were used by FPL in the economic analysis of Turkey Point 6 & 7?

A. FPL utilized three resource plans in its analysis of Turkey Point 6 & 7. The three plans are presented in Exhibit SRS-4 attached to Dr. Sim's testimony. The three plans are (1) the Plan with Nuclear, that includes Turkey Point 6 &

7 in 2018 and 2020, respectively, and further assumes that the size of each nuclear unit is 1,100 MW, (2) the Plan without Nuclear- CC, that includes the construction of two gas-fueled baseload combined cycle units in 2018 and 2020, respectively, instead of nuclear units, and (3) the Plan without Nuclear-IGCC, that includes the construction of two baseload IGCC units in 2018 and 2020, respectively, instead of nuclear units. All plans include an identical set of new resources through 2017, and the plans differ only slightly after 2020. The objective of the economic analysis is to isolate the addition of Turkey Point 6 & 7 in 2018 and 2020, respectively, and compare it to the effect of adding gas-fueled combined cycle generation instead of nuclear generation, or IGCC generation instead of nuclear generation, in those years.

Q. Is it possible that the other resource additions reflected in the resource plans between 2011 and 2017 would change in the future?

A. Yes. A utility's resource plan is not, and cannot be, static. The objective of the generation additions reflected for the period 2011-2017 and those shown after 2021 in the resource plans presented by Dr. Sim is to provide a reasonable, neutral backdrop against which the proposed addition of Turkey Point 6 & 7 can be fairly compared to other available generation capacity alternatives that FPL could use to meet its future capacity needs in 2018 through 2020 in place of Turkey Point 6 & 7. At this time, FPL is only committed to pursuing those resources that have been specifically outlined in my testimony: that is, the projected DSM increases, the nuclear uprates, the purchase of capacity from renewable resources, and Turkey Point 6 & 7.

Therefore, as the projected need for new resources in the future changes, and as other resource alternatives become available, and as factors that affect some or all of the resource alternatives change, FPL's resource plan would be modified. Nevertheless, these resource plans reflect reasonable choices for meeting FPL's needs between 2011 and 2017, and after 2020, based on what is known today. In summary, they provide appropriate frames of reference within which to assess the need for and viability of Turkey Point 6 & 7.

Q. How many megawatts of new and replacement resources does FPL project it will need for the period 2011 through 2020?

A. As stated previously in my testimony, FPL projects it will need to add approximately 8,350 MW of new and replacement resources from 2011 through 2020. FPL estimates that the equivalent of 1,490 MW, or almost 18% of these needed resources, will be provided by increases in DSM during this period. These resource plans also include 414 MW of additional nuclear generation resulting from uprates of FPL's existing nuclear units and approximately 290 MW of renewable resources. The proposed facility at Turkey Point 6 & 7 will provide between 2,200 MW and 3,040 MW. Natural gas-fueled advanced combined cycle units are included in the plan to provide the remaining 3,120 MW to 3,960 MW of new resources required in this period. As discussed earlier in this testimony, FPL has not committed to these natural gas-fueled additions although, at present, we do not know to what extent other resource alternatives could be developed and implemented to meet this need. Nevertheless, FPL will continue to pursue and encourage

development of such alternatives and would welcome any that could cost-effectively and reliably reduce gas dependence.

Q. What is FPL doing to promote greater renewable development from non-affiliated generators?

A. FPL is committed to promoting greater renewable investment in Florida by working with existing and potential renewable generators and offering for negotiation contract terms that enable developers of renewable resources to choose, from a diverse portfolio of avoided units, the payment profile that is most suitable for their projects while protecting the interest of our customers. In addition, FPL has filed a new standard offer contract for renewable generation consistent with the Commission's new rule on renewable energy. FPL also issued in April 2007 a request for proposals to provide to FPL electric capacity and/or energy produced from renewable resources. On July 2, 2007 FPL received five proposals. Two proposals (combined) offered 100 MW of capacity using biomass. One proposal offered 44 MW from municipal solid waste. One proposal offered 876,000 MWh of annual energy (but no capacity). One proposal expressed interest in developing and implements rooftop photovoltaic technology. FPL is currently evaluating these proposals and will seek to enter into contracts that will benefit FPL's customers, with all bidders that proposed to sell capacity and energy from renewable resources.

Q. Has FPL reflected in its resource plan all of the renewable contract extension opportunities and renewable proposals submitted in response to FPL's request for proposals?

A. Yes. FPL has assumed that all expiring contracts with renewable generators that provide firm capacity will be extended and has counted that capacity as part of its resource plan. FPL also has assumed that all proposals submitted in response to the request for proposals that offered firm capacity from renewable resources will result in contracts and has reflected that capacity in its resource plan. Thus, from the standpoint of the resource plan, FPL has already optimistically assumed that it will be able to contract for all of these renewable projects.

Q. What are FPL's plans regarding the development of additional renewable resources?

A. As noted by Ms. McBee in her testimony, in June 2007 FPL announced the St. Lucie Wind Project, a 3 to 4.5 MW wind generation project that FPL proposes to site near its St. Lucie nuclear generating plant. FPL is currently pursuing the necessary permits, as well as conducting the review of all aspects of this project. FPL will continue to consider additional wind generation opportunities to add to its renewable portfolio. FPL is also developing the 250 kW solar photovoltaic facility in Sarasota that is part of FPL's Sunshine Energy Program and will continue to consider additional solar generation opportunities to add to its portfolio. Additionally, FPL recently announced a major solar energy initiative in Florida which is expected to result in installation of up to 300 MW of solar generation capacity based on a technology that, although unproven, is very promising. As Ms. McBee explains, this initiative will begin with installation of about 10 MW of

capacity, subject to business due diligence and any necessary regulatory approvals. These proposed renewable resource development efforts have not been reflected in the analysis performed by FPL. However, the results would not have been different because the effect of these renewable resources would have been reflected equally in all three resource plans considered in FPL's analyses, in the form reduced use of natural gas and fuel oil to produce electricity. Further, as I explain below, significant amounts of additional renewable resources, were they to become available, could be incorporated into FPL's resource plan without reducing the need for Turkey Point 6 & 7 in 2018 and 2020, respectively.

FPL is also actively involved with Florida Atlantic University's Center of Excellence for Ocean Energy Technology in its effort to develop this non-emitting renewable technology.

Q. Can renewable resources eliminate or defer the need for Turkey Point 6 & 7 in 2018 and 2020?

A. No. The need for Turkey Point 6 & 7, as identified in Dr. Sim's testimony, is in addition to the available renewable resources. Further, as I noted at the outset of my testimony, in addition to Turkey Point 6 & 7, FPL estimates that it will need between 3,120 MW and 3,960 MW of new generation capacity between 2011 and 2020, of which more than 1,600 MW would replace expiring PPAs. Moreover, it is projected that new capacity will be needed to meet additional demand growth beyond 2020.

As Ms. McBee indicates in her testimony, FPL is actively pursuing additional renewable resources. The technology of many of these renewable options is still developing and will not be commercially available in significant quantities during this period, and some of these options (such as wind generation) cannot be counted on to reliably operate during the system peak hours. However, it is not necessary to select between renewable technology and new nuclear generation because to the extent that new reliable, cost-effective renewable resources become available they could be incorporated into FPL's resource plan in place of the uncommitted new generation that would otherwise use natural gas, without affecting the need for Turkey Point 6 & 7.

For these reasons, I believe it would be unreasonable for the Commission to deny a need determination for Turkey Point 6 & 7, based on an assumption that other technologies which, at least in Florida, have not yet demonstrated their ability to provide sufficient firm capacity to meet demand growth or generate large quantities of electricity cost-effectively, may become available in sufficient quantities and may be economically competitive in the future.

Q. Would your answer change if a significant Renewable Portfolio Standard is adopted?

A. No. Turkey Point 6 & 7 will still be needed even if a Renewable Portfolio Standard (RPS) is adopted at the state or federal level. Although FPL will continue to pursue power from both traditional renewable resources such as

wind, solar, biomass, landfill gas, and municipal solid waste, and emerging technologies such as ocean current, with or without an RPS, these sources will not be sufficient to provide all the generation capacity needed to meet the 20% reserve margin reliability criterion through 2017, let alone defer the need for Turkey Point 6 & 7 in 2018 and 2020.

In addition, FPL believes that growing concern with global warming will likely require FPL to significantly reduce its future GHG emissions while continuing to serve growing customer demand. Because new nuclear generation is the most effective means of meeting growing demand while adding no GHG emissions to the atmosphere, the construction of new baseload nuclear generating facilities at Turkey Point 6 & 7 is an essential part of any successful plan to reduce GHG emissions in the future.

Q. How would FPL accommodate additional increases in DSM and/or future renewable resource generation facilities that may be developed in the future?

A. Proceeding with the addition of Turkey Point 6 & 7 will provide the baseload capacity addition necessary to ensure that FPL's customers will continue to receive reliable electric service at reasonable cost, while FPL maintains the flexibility to utilize additional cost-effective renewable resources as they are developed and to facilitate increased customer participation in additional cost-effective DSM programs. As indicated earlier in my testimony and as shown in Exhibit RS-3, the extent these measures are successful, all the incremental

cost-effective DSM that could be implemented and all other renewable generation that could be obtained could be easily incorporated into FPL's resource plan without reducing the need for Turkey Point 6 & 7 in 2018 and 2020.

The only way one could conclude that there is no need for Turkey Point 6 & 7 in 2018 and 2020 would be to assume that the magnitude of additional customer participation in DSM programs and renewable resources available by 2020, above the levels already projected by FPL, would be sufficient to eliminate the need for not only the entire 3,120 MW - 3,960 MW of need that, in the analysis performed for this filing, are assumed to be met by natural gas generation, but also the capacity (between 2,200 MW and 3,040 MW) that Turkey Point 6 & 7 will provide. It would not be prudent to base FPL's resource planning decisions on such a far fetched theory.

Q. What other alternatives exist to new nuclear generation?

A. As a practical matter, at present the only reliable alternative to nuclear generation for meeting FPL's projected capacity need is to add more gas-fueled combined cycle generation. The Commission's recent rejection of the FPL Glades Power Park project shows that FPL cannot expect to add pulverized coal generation. The results of FPL's economic analysis presented as part of this testimony and that of Dr. Sim show that the total cost of IGCC, even without carbon capture and sequestration (CCS), would be significantly greater than both FPL's estimated cost range for new nuclear generation and

new gas-fueled generation. Furthermore, until CCS technology can be effectively implemented, adding IGCC generation would be inconsistent with FPL's objective of reducing GHG emissions in the future. Lastly, the magnitude of FPL's projected future capacity need is so large compared to even the more optimistic reasonable expectations for additional cost-effective DSM and renewable resources, that any increased development in these areas – over and above the aggressive goals already reflected in FPL's resource plan – would only help reduce the need for additional gas-fueled generation.

Furthermore, even in an extremely unrealistic scenario in which much greater amounts of cost-effective DSM and renewable resources than currently estimated were to become available and demand growth were to be much lower than projected, such that such reduced demand could be met by DSM and renewable resources, it would be possible for FPL to adjust the pace of development of Turkey Point 6 & 7 to match the timing of the need. On the other hand, failure to initiate full development of this option, which would be the consequence of the Commission not granting FPL's petition, would irrevocably close off the possibility of new nuclear generation in 2018 and very likely in 2020 as well. The prudent course of action is to grant the determination of need sought in FPL's petition to preserve the option of adding Turkey Point 6 & 7 in 2018 and 2020.

SECTION 5 – RESULTS OF FPL'S EVALUATION

Q. Did FPL perform an economic analysis to compare the cost to customers that would result from adding Turkey Point 6 & 7 by 2018 and 2020, respectively, versus that resulting from adding other forms of generation?

A. Yes. Dr. Sim describes the analysis process in his testimony. FPL calculated the estimated cost, in cumulative net present value revenue requirements (CPVRR), associated with each of the resource plans under 9 different scenarios or combinations of future natural gas and fuel oil price forecasts and environmental compliance cost projections. For each of these scenarios FPL then calculated the capital cost for Turkey Point 6 & 7 that would make the resulting CPVRR for the Plan with Nuclear equal to the CPVRR for the Plan with Gas, and the Plan with Coal, respectively. In other words, this analysis produced a breakeven capital cost for Turkey Point 6 & 7 versus each of the alternate plans was calculated under each of the 9 scenarios. These breakeven capital costs were then compared to FPL's estimated capital cost range for the Project presented by Mr. Scroggs.

To the extent that in any scenario the breakeven capital cost obtained from the analysis is higher than FPL's estimated capital cost range for the Project, the addition of Turkey Point 6 & 7 would result in a lower cost than adding gas-fueled generation or coal-fueled generation.

Q. What were the results of the economic analysis comparing Turkey Point 6 & 7 with other baseload generating resources (IGCC or gas-fired combined cycle generation)?

A. In almost all the scenarios, the breakeven capital costs calculated in FPL's analysis, expressed in dollars per kW in 2007 dollars, are greater than the entire estimated cost range for Turkey Point 6 & 7. Specifically, as shown on my Exhibit RS-4, as well as on Exhibit SRS-8, attached to Dr. Sim's testimony, when the Plan with Nuclear is compared to the Plan without Nuclear-CC, in 8 of 9 scenarios the breakeven capital cost is higher than the entire estimated nuclear cost range; while in the other one scenario the breakeven cost falls within the estimated nuclear cost range. When the Plan with Nuclear is compared to the Plan without Nuclear-IGCC, the breakeven capital cost is higher than the entire estimated nuclear cost range in all 9 scenarios.

In other words, the results of FPL's economic analysis show, based on FPL's estimated capital cost range for the Project, that the addition of Turkey Point 6 & 7 in 2018 and 2020 can reasonably be expected to provide to FPL's customers the many benefits of nuclear generation at a cost that is lower than the cost of adding gas-fueled generation under almost all scenarios, and lower than the cost of adding IGCC under all 9 scenarios.

Moreover, the one scenario in which the cost of adding gas-fueled generation is comparable to that of adding new nuclear generation consists of medium or low gas prices and low CO_2-related costs. If these conditions were to occur, because even with the addition of Turkey Point 6 & 7 natural gas would contribute a significant portion of FPL's electricity, the cost of electricity would be the lowest of all scenarios, so FPL's customers would preserve the benefit of the low gas price and low CO_2-related costs. However, this scenario represents a very small part of the range of possible future market outcomes and, primarily because of the heightened concern regarding GHG emissions it is less likely to occur. On the other hand, under conditions in which FPL's customers would be more vulnerable due to higher natural gas prices and higher CO_2-related costs, the addition of Turkey Point 6 & 7 would result in significant cost savings. Therefore, in order to reject Turkey Point 6 & 7 one would have to be certain that both natural gas prices and CO_2-related costs will be low in the future, and that fuel diversity has very little value.

Q. Will this be the final economic analysis opportunity for the Commission to assess the cost-effectiveness of Turkey Point 6 & 7?

A. No. As discussed by Mr. Scroggs and Ms. Ousdahl, additional analyses will be performed in connection with the annual review process established pursuant to Commission Rule 25-6.0423, the Nuclear Power Plant Cost Recovery Rule. This approach will enable FPL, the Commission and other interested parties additional opportunities to periodically evaluate, at regular intervals throughout the licensing, design and construction process, the

Project's costs and the continuing feasibility of completing the Project based on updated information. If a future analysis demonstrates that continuing the Project would no longer be in the best interests of FPL's customers, the Project could be terminated, postponed or modified with only the costs incurred or irreversibly committed up to that time subject to recovery. Thus, a determination of need in this case will not be the Commission's final word regarding the Project.

Q. Do these analysis results reflect all the benefits of adding new nuclear generation to FPL's portfolio?

A. No. The results of the scenario analysis reflect the economic benefit of adding new nuclear generation under varying natural gas and fuel oil prices and environmental compliance costs, but the analysis does not explicitly factor in any benefit for the nuclear alternative relative to two of the statutory criteria for granting a determination of need: improving fuel diversity and reducing Florida's dependence on natural gas and fuel oil. Accordingly, even in the one scenario where the results of FPL's economic analysis shows rough equality between adding new nuclear generation and adding new gas-fueled generation, it is evident that application of the requirements of sections 366.92(1) and 403.519(4), Florida Statutes, compels selection of Turkey Point 6 & 7 as the preferred alternative.

Q. How would the addition of Turkey Point 6 & 7 in 2018 and 2020, respectively, affect FPL's customers' bills, compared to the effect of adding natural-gas fueled combined cycle units in those years in place of the new nuclear units?

A. In the years preceding the in-service dates of Turkey Point 6 & 7, monthly bills are projected to be higher than with the addition of combined cycle units because, as explained by Mr. Scroggs and Ms. Ousdahl, costs related to the nuclear additions would be recovered during the period of nuclear plant licensing, development and construction, while the fuel and environmental compliance cost benefits would not occur until after the nuclear units are placed in service. However, it should be noted that the ongoing cost recovery process is very effective in mitigating a sudden rate increase when Turkey Point 6 & 7 are placed in service. Moreover, within a relatively short time after the nuclear units have been placed in service it is anticipated that these fuel and environmental compliance benefits will, under almost all future conditions, result in lower monthly bills than with the addition of combined cycle units .

As explained in Dr. Sim's testimony the approximate bill difference has been estimated for the scenario with the Medium Gas Cost and the Environmental Compliance Cost Forecast "ENV II" by dividing the difference in that year's revenue requirement between the Plan with Nuclear and the Plan Without Nuclear-CC by the projected total electricity sales for that year, and

multiplying the result by 1,000 kWh. For the purpose of this calculation it was assumed that the capital cost of Turkey Point 6 & 7 would be $3,800 per kW, about the middle of the estimated overnight capital cost range presented by Mr. Scroggs. The results of this calculation are presented in Dr. Sim's Exhibit SRS-09.

As can be seen from the result presented by Dr. Sim, in 2021, the first full year in which both Turkey Point 6 & 7 are in operation, the effect of adding Turkey Point 6 & 7 is an average cost of electricity that is lower by $0.36/1,000 kWh, compared to adding gas-fueled generation. This benefit will increase in later years.

SECTION 6 - BENEFITS PROVIDED BY TURKEY POINT 6 & 7

Q. Will the addition of Turkey Point 6 & 7 help FPL achieve the benefits of fuel diversity described in Section 3?

A. Yes. The addition of these new baseload nuclear units will contribute significantly to fuel diversity in FPL's system compared to adding combined cycle units, and will therefore have a very beneficial effect on system reliability. In addition, the nuclear additions will rely on a different, more stable fuel supply than that of natural gas, and on a different and separate fuel transportation and delivery process that is less susceptible to interruptions than either a gas-fueled addition or an IGCC addition.

Q. Will the addition of Turkey Point 6 & 7 also provide benefits regarding lower fuel cost and greater fuel cost stability?

A. Yes. Turkey Point 6 & 7 will result in lower system fuel costs and greater fuel cost stability for FPL and its customers, because it will use nuclear fuel which has historically had, and is projected to have in the future, a very low cost, as well as far less volatility than any fossil fuel. As Mssrs. Villard and Yupp state, it is projected that the price of nuclear fuel will continue to be low and stable relative to other fuels. In addition, because Turkey Point 6 & 7 is projected to operate at capacity factors above 90% and will therefore reduce generation from more costly generating units, the addition of these nuclear units will help reduce the volatility in the overall system cost of fuel.

Q. Will the addition of Turkey Point 6 & 7 significantly reduce FPL's use of natural gas?

A. Yes. The electricity that will be produced from nuclear fuel at Turkey Point 6 & 7 will primarily displace natural gas that otherwise would be burned if FPL's generation capacity need beginning in 2018 were to be satisfied by adding natural gas-fired generation. For example, as explained by Mr. Yupp, over the first 19 full years of operation of both new Turkey Point nuclear units, assuming that the size of each nuclear unit is 1,100 MW, FPL will reduce the use of natural gas by almost 2.2 billion MMBtu compared to the amount of natural gas it would use without these nuclear additions. This decrease in natural gas use, which is a measure of the reduction in FPL's reliance on natural gas achieved by the new Turkey Point nuclear units is

equivalent to the total quantity of natural gas FPL used during the last 7 years (2000 through 2006).

Q. How will new nuclear generation at Turkey Point 6 & 7 help reduce GHG emissions?

A. Unlike IGCC and natural gas-fueled generation, nuclear generation does not produce any GHG emissions, including CO_2 emissions. This fact, combined with the large size of the proposed Turkey Point nuclear units and the anticipated high capacity factor of nuclear generation makes Turkey Point 6 & 7 the most effective method of reducing future GHG emissions.

For example, FPL projects that between 2017 (prior to the first nuclear addition) and 2021 (after both nuclear units have been added) annual system GHG emissions will decrease by 1.1 million tons, or almost 2%, despite the fact that total electricity consumption will increase by 16,276 Gigawatt hours (GWh) or 10.3%. If gas-fueled combined cycle generation were to be added in place of Turkey Point 6 & 7, GHG emissions would instead increase by 5.8 million tons, or almost 9%. As Dr. Sim explains, with Turkey Point 6 & 7 GHG emissions will be almost 7 million tons lower in 2021 alone than they would be with gas-fueled additions. These results demonstrate that the addition of Turkey Point 6 & 7 is an integral and necessary part of FPL's plan to achieve GHG emission reductions in the future.

This is a critical consideration, particularly in light of growing concerns with global warming and the expectation that GHG emissions are likely to be regulated in the near future. Reducing future GHG emissions, while continuing to provide reliable electric service to a growing customer base at a reasonable cost, will prove to be an extremely difficult challenge. If all of these important and urgent public policy objectives are to be achieved, it is essential that the construction of new nuclear generation be pursued immediately and diligently. The most significant way for FPL to ensure lower GHG emissions in the current regulatory environment is for the Commission to grant an affirmative determination of need for Turkey Point 6 & 7.

Q. Can generation from renewable resources also help reduce GHG emissions?

A. Only some forms of renewables are non-GHG emitting. Furthermore, as Mr. Reed indicates, despite FPL's continued commitment to renewable generation discussed in my testimony and that of Ms. McBee, there is no credible evidence that would lead a reasonable person to conclude that there will be sufficient new generation from non-emitting renewable resources to reliably meet more than a fraction of the projected growth in electricity demand in Florida, let alone replace any existing generation that emits GHG, especially because other non-emitting renewable resources like wind and solar are intermittent and cannot be counted upon to provide firm generation capacity. Therefore, while FPL agrees that it is important that the role of cost-effective renewable resources be increased, and has sought additional renewable

resources in the market, it is equally important to emphasize that load growth in Florida is such that there will be more than enough "room" for the most optimistic of estimates regarding the future contribution of renewable resources, even with the addition of new nuclear generation. In short, FPL's effort to obtain or develop additional renewable resources does not reduce the importance of adding Turkey Point 6 & 7 to FPL's system. There is an important role for both in meeting the future electricity needs of Floridians.

Q. How does nuclear generation compare with solar generation and wind generation regarding their effectiveness in reducing GHG emissions?

A. If we compare the effect on system GHG emissions of adding the same number of megawatts, nuclear generation would be much more effective in reducing system GHG emissions than either solar or wind generation. This is because the nuclear facility would operate at a very high capacity factor, while the solar plant and the wind turbine would operate at relatively modest capacity factors.

Consider if FPL added 2,200 MW of new nuclear baseload generation and that facility operates at 90% capacity factor, it will generate about 17,345 GWh of electricity per year. Comparably sized solar or wind facilities operating at a maximum capacity factor 20% in Florida would generate only about 3,854 GWh, about 13,490 GWh less than the new nuclear units. Based on these capacity factors, new nuclear baseload generation would reduce about 4.5 times the amount of GHG reduced by addition of the same

megawatts of solar or wind generation. Stated another way, one would have to add solar or wind generation that is 4.5 times the size of nuclear generation, at a much greater total cost, in order to achieve the same reduction in GHG emissions. Thus, of the types of non-emitting generation, new nuclear generation is by far the most important option in helping to achieve a meaningful reduction in GHG emissions on a capacity (MW) basis.

Alternately, if compared on an energy (MWh) basis, nuclear generation provides the same GHG reduction benefit as solar and wind generation, but much more economically and more reliably.

Q. Is the addition of Turkey Point 6 & 7 needed, and is it the best alternative to be added in 2018 and 2020, to maintain system reliability?

A. Yes. Turkey Point 6 & 7 is needed to provide system reliability by helping FPL preserve fuel diversity, as well as maintain an adequate level of generation capacity reserve margin in 2018 and 2020. The addition of Turkey Point 6 & 7 was selected to meet FPL's needs in 2018 and 2020 because it was determined to be the best available resource option. Adding Turkey Point 6 & 7 provides the best means of maintaining fuel diversity in FPL's system. In addition, Turkey Point 6 & 7 is much more effective in reducing all system air emissions, including GHG emissions, than all other generation alternatives, including renewable resources. Moreover, FPL found that the addition of Turkey Point 6 & 7 can provide to FPL's customers all these benefits at a competitive cost, that its reliability would be as good as that of a combined

cycle unit and far better than that of IGCC, and that it has by far the lowest and most stable fuel costs of any generation technology. Based on these findings, FPL has concluded that Turkey Point 6 & 7 is by far the best choice to meet the resource needs of its customers in 2018 and 2020.

SECTION 7 – SUMMARY OF BENEFITS PROVIDED BY FPL's EXISTING NUCLEAR UNITS

Q. Please summarize FPL's experience operating nuclear units.

A. As Mr. Stall testifies, FPL has successfully and safely operated four nuclear units at two nuclear generating stations beginning with the in-service date of Turkey Point Unit 3 in 1972. During that time, FPL's four nuclear units have produced more than 593 million MWh of electricity, which is equivalent to the energy used by all of FPL's four million-plus customers for more than five years.

Q. What fossil fuel savings have FPL's four nuclear units achieved?

A. FPL's use of nuclear generation has economically displaced significant quantities of fuel oil and natural gas. As Mr. Yupp explains, because nuclear fuel costs so much less than fuel oil and natural gas, between January 2000 and July 2007 alone, FPL's nuclear generation has saved FPL's customers approximately $8.7 billion in fuel costs.

Q. What environmental benefits have been provided by FPL's nuclear units?

A. FPL's nuclear units produce zero emissions of SO_2, NO_x, particulate matter, mercury and CO_2 during operation. Therefore, as Mr. Kosky explains, compared to the emissions that would have occurred if FPL's nuclear units had been replaced with generation produced by natural gas, the cleanest of the fossil fuels, in 2006 alone FPL's nuclear units have prevented the emission of 20,100 tons of SO_2, 20,400 tons of NO_x, and 15,282,100 tons of CO_2. Thus, the enormous cost savings and reliability benefits of nuclear generation have been achieved with no adverse emissions impact. In fact, in 2006 FPL's nuclear units reduced overall emissions by 27%.

In summary, FPL's nuclear generating units have had the lowest fuel cost and best environmental performance of all of FPL's generating units, an excellent record which FPL will continue and expand with the addition of Turkey Point 6 & 7.

SECTION 8 – ADVERSE CONSEQUENCES

Q. Would there be any adverse consequences to FPL and its customers if the Commission were not to grant an affirmative determination of need for Turkey Point 6 & 7 in this proceeding?

A. Yes. If a determination of need for Turkey Point 6 & 7 were not granted in this proceeding, FPL would be effectively prevented from pursuing the development of new nuclear baseload generation for the next decade. Taken

together with the Commission's recent decision to deny FPL's application to construct new coal-fired baseload units in FPSC Docket No.070098, FPL's customers would face significant adverse consequences related primarily to the reduced system reliability due to significantly lower fuel diversity for the foreseeable future. As indicated in Exhibit RS-2, without the addition of new nuclear generation at Turkey Point 6 & 7, FPL's growing reliance on natural gas would rise to 75% in 2021. This would make it much more difficult to mitigate the effect of any significant interruption in natural gas supplies on FPL's ability to meet the growing electricity needs of its customers. Also, if a determination of need for Turkey Point 6 & 7 is not granted, other Florida utilities may be less likely to pursue any new nuclear generation. As a consequence, not only FPL but the entire state of Florida would become over dependent on natural gas for the majority of its future generation of electricity. In this situation, a gas supply interruption would severely affect electric service reliability throughout Florida.

Such denial of FPL's petition would also eliminate the best, most cost-effective means of reducing GHG emissions in the future, while continuing to meet the future electricity needs of FPL's customers. In fact, denial of FPL's petition would not be in FPL's customers' best interests.

Q. Why would FPL have to increase natural gas use if nuclear generation is not added?

A. As the Commission is well aware, FPL's recent plan to add new baseload coal generation was not approved. Significant uncertainty exists as to whether any other projects that use coal as a fuel, even with IGCC technology, will be approved for the foreseeable future. In any event, the likelihood that significant reductions in GHG emissions will be required in the future raises questions regarding the practical feasibility of coal-fueled additions in Florida until carbon capture and sequestration becomes readily applicable in Florida. Although FPL will actively continue to pursue cost-effective DSM increases and additional generation from renewable resources, currently available information indicates that that these alternatives will make only a modest contribution compared to the projected need for new resources to meet growth in electricity demand based largely on population growth and to replace expiring power purchases from coal generation. Without nuclear generation, the only alternative that can be counted on to provide sufficient new generation capacity to ensure reliable electric service through 2020 is additional natural gas generation.

Q. What is the economic consequence of not approving new nuclear facilities at Turkey Point 6 & 7?

A. From an economic perspective, greater reliance on natural gas is expected to result in higher electricity costs and greater volatility in the cost of electricity. FPL believes that the effort to avoid GHG emissions will result in greater utilization of natural gas throughout the United States and that this general increase in gas utilization will contribute to higher natural gas prices. Without

additional nuclear generation, because a greater portion of electricity would be generated using natural gas, the price of electricity would be more directly affected by the rising price of natural gas. Similarly, any volatility in natural gas prices will translate very directly in volatility in the price of electricity.

If, on the other hand, if Turkey Point 6 & 7 is added to FPL's system, the effect of rising gas prices would be mitigated. If there are any periods of low natural gas prices in the future, because FPL would continue to utilize very large quantities of natural gas, FPL's customers would still benefit greatly from such possible temporary gas price decreases. In other words, there will be more than sufficient natural gas generation in FPL's portfolio even after the addition of Turkey Point 6 & 7 to capture most of the benefit of a possible decrease in natural gas prices in the future; but without the addition of Turkey Point 6 & 7 there would be little protection for FPL's customers when, as is expected, the price of natural gas increases. It is clear from the perspective of both reliability and price volatility that the risks of not adding Turkey Point 6 & 7 to FPL's generation portfolio are enormous.

SUMMARY

Q. Please summarize your testimony.

A. FPL believes that the addition of Turkey Point 6 & 7 is needed to provide reliable service at reasonable cost in the future. This new nuclear generation

project is the only available cost-effective alternative that can contribute to fuel diversity while enabling FPL to maintain an adequate resource reserve margin to meet FPL's customers' projected electricity demand in 2018 and later years, and is in fact the only alternative that can help reduce GHG emissions in FPL's system while continuing to serve a growing customer demand for electricity that will require FPL add 8,350 MW of new resources between 2011 and 2020. In short, this new nuclear generation addition is the most viable and effective resource option that can contribute to achieving recent legislative objectives codified in sections 366.92(1) and 403.519(4), Florida Statutes.

Fuel diversity contributes to greater system reliability because it helps offset reduced availability of one fuel, be it due to supply constraints or transportation interruptions, and helps mitigate the effect of equipment problems that affect one type of generation technology. With the addition of Turkey Point 6 & 7, nuclear generation would be used to produce 26% of the electricity delivered to FPL's customers in 2021. Conversely, without new nuclear generation, by 2021 nuclear fuel would contribute only 16% while natural gas would contribute 75%. The addition of Turkey Point 6 & 7 also contributes to system reliability by maintaining an on-site fuel inventory of 60 days, as a minimum.

Fuel diversity also helps mitigate the effects of price volatility in one or two fuels on the price of electricity. In FPL's system the addition of Turkey Point 6 & 7 provides an effective price hedge against anticipated increases in the price of natural gas.

Although FPL has included renewable resources and DSM as a significant part of its resource mix, and will continue to encourage future renewable development and participation in cost-effective DSM programs, these alternatives cannot by themselves help FPL maintain a balanced, fuel-diverse system nor can they meet the future resource needs of FPL's customers. Furthermore, one would have to add more than 4.5 times the amount of solar or wind generation capacity, at a much greater cost, to achieve the same GHG reduction that will be achieved by the addition of Turkey Point 6 & 7.

Moreover, FPL's analyses show that the addition of Turkey Point 6 & 7 can provide to FPL's customers all these benefits at a cost that is most likely to be lower than that of adding additional gas-fueled generation under almost all conditions, and lower than adding IGCC, and that its reliability would be as good as that of combined cycle generation and far better than that of IGCC.

It is important to note that an affirmative determination of need for Turkey Point 6 & 7 is a first step, not an irreversible decision because FPL and the Commission will periodically review the Project's benefits on behalf of FPL's

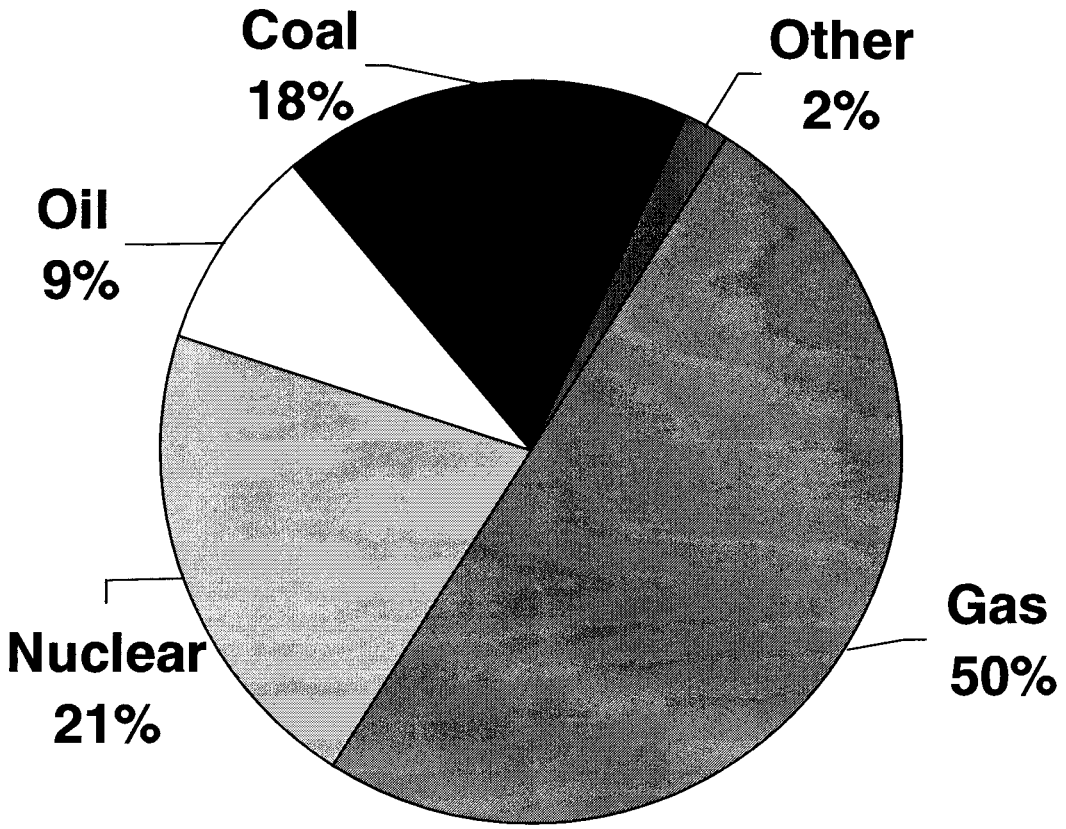
customers in light of new information that may be developed over time. However, granting this petition enables FPL to move forward and maintain the ability to bring the benefits of new nuclear generation to its customers in the 2018-2020 time frame – an extremely valuable option given the analysis results obtained for a wide range of future fuel and environmental scenarios – through a commitment of a comparatively modest level of resources. In contrast, denial of FPL's petition will preclude that option.

For these reasons, FPL believes that it is in the interest of its customers that the Commission grant an affirmative determination of need for the addition of Turkey Point 6 & 7, including the associated electric transmission facilities, with target in-service dates of June 2018 and June 2020, respectively, as well as affirmatively determine that FPL would be prudent to make payments for certain long-lead procurement items, and to characterize such payments made prior to completion of the Project's site clearing work as "pre-construction costs."

Q. Does this conclude your direct testimony?

A. Yes.

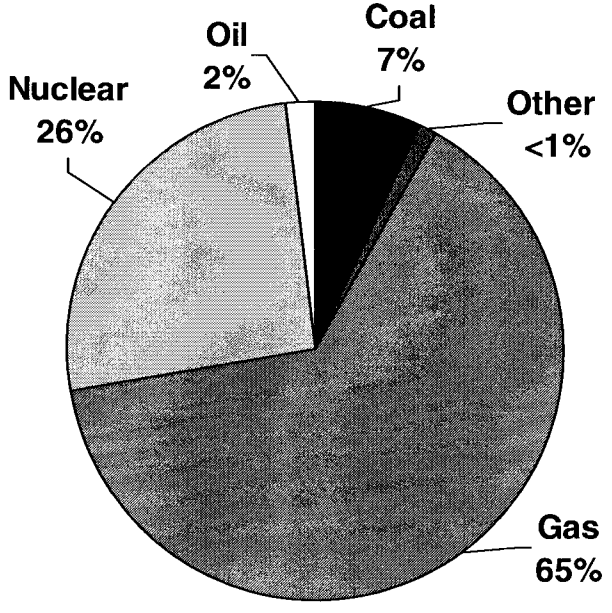
Actual Energy Mix
2006



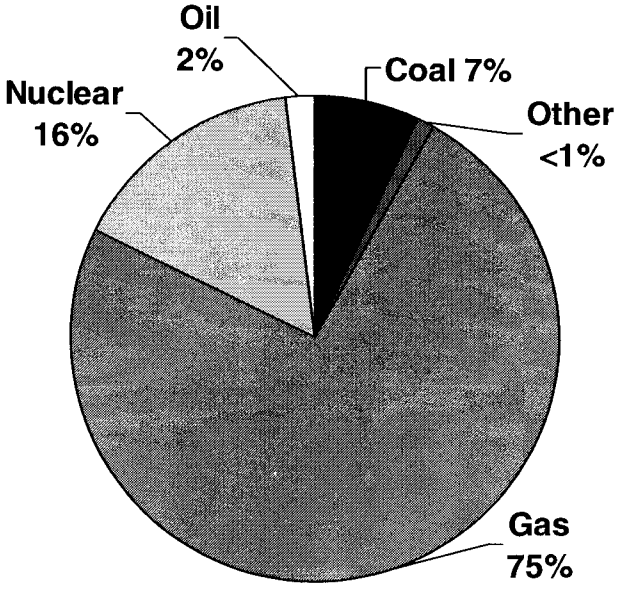
Docket No. 07 _____ - EI
Actual Energy Mix 2006
Exhibit RS–1, Page 1 of 1

Projected Energy Mix
2021

With Turkey Point 6 & 7

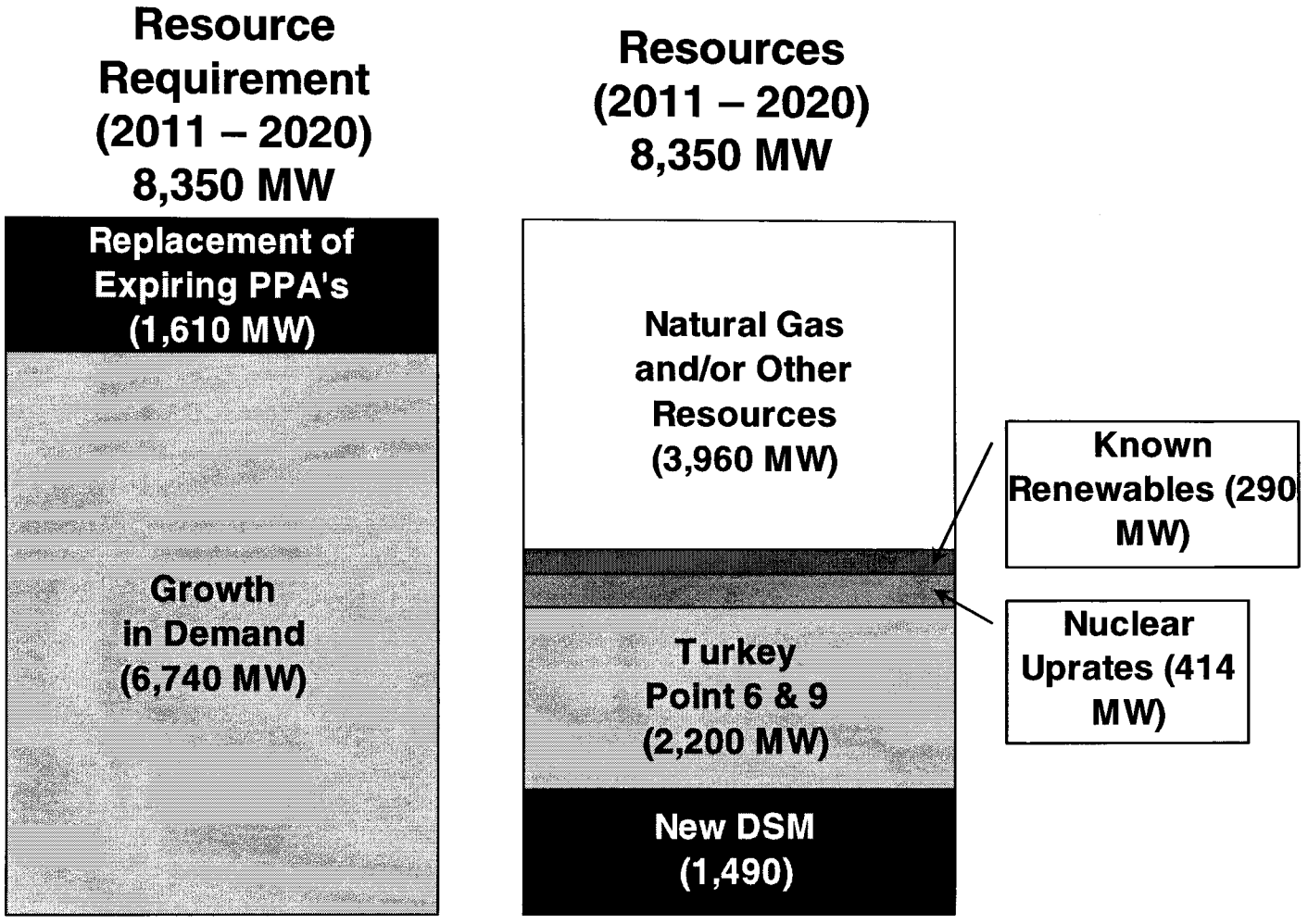


With "All Gas" Additions



Docket No. 07 _____ - EI
Projected Energy Mix 2021
Exhibit RS-2, Page 1 of 1

FPL's Flexibility to Incorporate Increased DSM and Renewable Resources



Docket No. 07 _____ - EI
Resource Need
Exhibit RS–3, Page 1 of 1

Turkey Point 6 & 7

Economic Analysis Results: Breakeven Cost for Nuclear Capital Costs for All Fuel and Environmental Compliance Cost Scenarios

Plan with Nuclear vs. Plan without Nuclear-CC

Breakeven Nuclear Capital Costs ($/kW in 2007$)

Environmental Compliance Cost Forecasts	Fuel Cost Forecasts: High Gas Cost	Medium Gas Cost	Low Gas Cost
ENV I	6,157	4,543	3,206
ENV II	6,701	5,065	
ENV III	6,949	5,327	
ENV IV	7,281	5,680	

Plan with Nuclear vs. Plan without Nuclear-IGCC

Breakeven Nuclear Capital Costs ($/kW in 2007$)

Environmental Compliance Cost Forecasts	Fuel Cost Forecasts: High Gas Cost	Medium Gas Cost	Low Gas Cost
ENV I	6,725	6,212	5,921
ENV II	7,996	7,487	
ENV III	8,630	8,123	
ENV IV	9,450	8,956	

NUCLEAR COMPARED TO CC

In 8 of 9 outcomes (bold) the breakeven cost is above the entire nuclear cost range, so almost every outcome is favorable to nuclear generation

In the one remaining outcome the breakeven cost is within the nuclear cost range, so here nuclear is competitive with gas generation; but if this scenario were to occur, it would result in the lowest cost to customers, whether adding nuclear or gas generation

NUCLEAR COMPARED TO IGCC

All 9 outcomes (bold) have a breakeven cost that is significantly above the nuclear cost range, so all outcomes are favorable to nuclear generation

Note: The nuclear cost range is estimated between $3,108/kW and $4,540/kW

Docket No 07_____-EI
Economic Analysis Results: Breakeven Cost for Nuclear Capital Costs
Exhibit RS-4, Page 1 of 1