

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition to determine need for Turkey Point Nuclear Units 6 and 7 electrical power plant, by Florida Power & Light Company.      DOCKET NO. 070650-EI  
ORDER NO. PSC-08-0237-FOF-EI  
ISSUED: April 11, 2008

The following Commissioners participated in the disposition of this matter:

MATTHEW M. CARTER II, Chairman  
LISA POLAK EDGAR  
KATRINA J. McMURRIAN  
NANCY ARGENZIANO  
NATHAN A. SKOP

APPEARANCES:

R. WADE LITCHFIELD, MITCHELL S. ROSS, JOHN T. BUTLER, BRYAN S. ANDERSON, ANTONIO FERNANDEZ, JESSICA A. CANO, ESQUIRES, 700 Universe Boulevard, Juno Beach, Florida 33408-0420; STEPHEN HUNTOON, ESQUIRE, 801 Pennsylvania Avenue, Suite 220, Washington, D.C. 20004; and KENNETH A. HOFFMAN, ESQUIRE, Rutledge, Ecenia, Purnell & Hoffman, P.A., 215 South Monroe Street, Suite 420, P.O. Box 551, Tallahassee, Florida 32302-0551  
On behalf of Florida Power & Light Company (FPL).

BOB and JAN M. KRASOWSKI, 1086 Michigan Avenue, Naples, Florida 34103-3857  
Appearing pro se (Krasowski).

FREDERICK M. BRYANT and DANIEL B. O'HAGAN, ESQUIRES, 2061-2 Delta Way (32303), P.O. Box 3209, Tallahassee, Florida 32315-3209  
On behalf of Florida Municipal Electric Association and Florida Municipal Power Agency (FMEA and FMPA).

BRUCE PAGE, ESQUIRE, 117 West Duval Street, Suite 480, Jacksonville, Florida 32202 and SUZANNE S. BROWNLESS, ESQUIRE, 1975 Buford Blvd., Tallahassee, Florida 32308  
On behalf of JEA.

ROY C. YOUNG, ESQUIRE, Young van Assenderp, P.A., 225 South Adams Street, Suite 200, Tallahassee, Florida 32301 and ZOILA PUIG EASTERLING, ESQUIRE, Orlando Utilities Commission, 500 South Orange Avenue, Orlando, Florida 32802  
On behalf of Orlando Utilities Commission (OUC).

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FPSC-COMMISSION CLERK

VICKI GORDON KAUFMAN, ESQUIRE, Anchors Smith Grimsley, 118 North Gadsden Street, Tallahassee, Florida 32301 and WILLIAM T. MILLER, ESQUIRE, Miller, Balis & O'Neil, P.C., Suite 700, 1140 19<sup>th</sup> Street N.W., Washington, D.C. 20036

On behalf of Seminole Electric Cooperative, Inc. (Seminole).

CHARLIE BECK, ESQUIRE, Deputy Public Counsel, c/o The Florida Legislature, 111 W. Madison Street, Room 812, Tallahassee, Florida 32399-1400

On behalf of the Citizens of the State of Florida (OPC).

KATHERINE E. FLEMING, JENNIFER S. BRUBAKER, and CAROLINE KLANCKE, ESQUIRES, Florida Public Service Commission, 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399-0850

On behalf of the Florida Public Service Commission (Staff).

FINAL ORDER GRANTING PETITION FOR DETERMINATION OF NEED  
FOR PROPOSED NUCLEAR POWER PLANTS

BY THE COMMISSION:

BACKGROUND

On October 16, 2007, Florida Power & Light Company (FPL) filed a petition for a determination of need for Turkey Point Nuclear Units 6 and 7 (Turkey Point 6 and 7), pursuant to Section 403.519, Florida Statutes (F.S.), and Rule 25-22.080, Florida Administrative Code (F.A.C.). FPL's proposal consists of two nuclear-fueled generating units with in-service dates of 2018 and 2020. FPL is considering two different design alternatives for the nuclear units: the Westinghouse AP1000 (Westinghouse) and the General Electric Economic Simplified Boiling Water Reactor (GE). The Westinghouse design has a nominal output of approximately 1,100 mega-watts (MW) per unit, while the GE design has a nominal output of 1,520 MW per unit. Depending on the technology selected, the proposed unit additions will contribute between 2,200 and 3,040 MW of new generation to FPL's system.

Intervention was granted to the following parties: (1) Office of Public Counsel (OPC),<sup>1</sup> (2) Florida Municipal Electric Association (FMEA),<sup>2</sup> (3) Florida Municipal Power Agency (FMPPA),<sup>3</sup> (4) JEA,<sup>4</sup> (5) Orlando Utilities Commission (OUC),<sup>5</sup> (6) Seminole Electric Cooperative, Inc. (Seminole),<sup>6</sup> and (7) Bob and Jan Krasowski (Krasowski).<sup>7</sup>

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<sup>1</sup> Order No. PSC-07-0965-PCO-EI, issued December 4, 2007.

<sup>2</sup> Order No. PSC-08-0059-PCO-EI, issued January 28, 2008.

<sup>3</sup> Order No. PSC-08-0060-PCO-EI, issued January 28, 2008.

<sup>4</sup> Order No. PSC-08-0062-PCO-EI, issued January 28, 2008.

<sup>5</sup> Order No. PSC-08-0058-PCO-EI, issued January 28, 2008.

<sup>6</sup> Order No. PSC-08-0057-PCO-EI, issued January 28, 2008.

<sup>7</sup> Order No. PSC-07-1019-PCO-EI, issued December 28, 2007.

### Public Testimony

In addition to the prefiled testimony submitted by the applicants, we received mailed comments and heard live testimony from public witnesses. Public testimony was first heard at a service hearing in Miami on January 9, 2008. In addition, the public was provided the opportunity to provide testimony preceding the formal administrative hearing in Tallahassee on January 30, 2008. A number of topics of interest voiced in the public testimony portion of the hearing are addressed elsewhere in this order. These topics include system reliability and integrity; fuel diversity; environmental compliance costs; conservation, demand side management (DSM), and renewables; and cost-effectiveness.

Other areas of interest that were discussed during the public testimony phase of the hearing focused on subjects beyond the scope of this proceeding as established by Section 403.519, F.S., or this Commission's jurisdiction under its authorizing statutes. The concerns voiced by the public about the environment,<sup>8</sup> health,<sup>9</sup> safety,<sup>10</sup> and economic development<sup>11</sup> were all outside the Commission's jurisdiction.

Section 403.519, F.S., authorizes us to examine FPL's projected costs for environmental controls necessary to meet current state and federal environmental requirements. The public testimony regarding environmental concerns and health issues falls under the Department of Environmental Protection's (DEP) jurisdiction, and to a limited extent the Department of Health.

While our ability to address all issues raised in the public testimony is limited by the scope of Section 403.519, F.S., and other statutes which establish our jurisdiction, these other concerns may be relevant in the certification proceedings before DEP, the Division of Administrative Hearings, and the Governor and Cabinet, sitting as the Siting Board.

### Stipulation

A formal administrative hearing was held on January 30 through February 1, 2008. During the hearing, we discussed and approved a stipulation to Issue 7, stated below, between FPL and FMEA, FMFA, JEA, OUC, and Seminole.

FPL has had initial discussions with FMEA, FMFA, and OUC regarding any mutual benefits that may accrue from joint participation in Turkey Point Units 6 & 7. No later than July 1, 2009, FPL will continue its good faith discussions with FMEA, FMFA, and OUC, and will also commence good faith discussions of joint participation in Turkey Point Units 6 & 7 with JEA and Seminole. FPL will report the status of such ongoing status discussions to the FPSC every quarter thereafter. The results of these ongoing status discussions shall be reported to the FPSC as part of a docket which will be opened by the FPSC pursuant to its

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<sup>8</sup> Witnesses Lee, Shirreffs, Oncavage, Roff, Smith, Rock, Ehat, Gilbert, Messer, Showen, Parsons, and Draper.

<sup>9</sup> Witnesses Olsen, Smith, Wilansky, Gilbert, Showen, Parsons.

<sup>10</sup> Lee, Olsen, Sipp, Roff, Smith, McGonigle, Wilansky, Johnson, Rice, Showen, Flint, Parsons.

<sup>11</sup> Rodriguez, Knowles, Griemsman, Johnson, Jacobs, and Redlich.

authority under the Grid Bill as codified in the Florida Statutes, in order to provide the parties with such rights and remedies as may exist to the extent of the FPSC's jurisdiction thereunder. FPL, FMPA, FMEA, JEA, OUC and Seminole each agree that such docket to be opened by the Commission pursuant to its Grid Bill authority is the sole forum for raising issues concerning joint participation in Turkey Point 6 and 7. FMPA, FMEA, JEA, OUC and Seminole each agree not to intervene or otherwise participate directly or indirectly in section 366.93, Florida Statutes, cost recovery proceedings for the purpose of addressing joint participation in Turkey Point 6 and 7. Nothing in this stipulation is intended to imply that ongoing status discussions necessarily will lead to an agreement among any of the parties for joint participation in Turkey Point 6 and 7 or that any party is obligated to enter into any such agreements.

As a result of the stipulation, FMEA, FMPA, JEA, OUC, and Seminole were excused from the hearing. On February 15, 2008, post-hearing briefs were filed by FPL, OPC, the Krasowskis, JEA, and Seminole. Briefs were not filed by FMPA, FMEA, or OUC. We note that OPC and the Krasowskis were not parties to this stipulation; thus, it remained a viable issue as to those parties, and is addressed subsequently in this Order.

#### Factors for Consideration

Pursuant to Section 403.519(4), F.S., the Commission is the sole forum for the determination of need for new nuclear power plants. In making our determination, we must take into account the need for electric system reliability and integrity, the need for fuel diversity and supply reliability, the need for base-load generating capacity, the need for adequate electricity at a reasonable cost, and whether the proposed plant is the most cost-effective alternative available. We must also expressly consider whether renewable energy sources or conservation measures taken by or reasonably available to the utility might mitigate the need for the proposed plant.

This Order reflects our decision and serves as our report under the Power Plant Siting Act, as required by Section 403.507(4)(a), F.S.

### FINDINGS

#### Need for Electric System Reliability and Integrity

There is a need for Turkey Point 6 and 7, taking into account the need for electric system reliability and integrity, as this criterion is used in Section 403.519(4), F.S.

FPL argues that there is a need for Turkey Point 6 and 7 because overall system demand is expected to grow by 40%. FPL further contends that without Turkey Point 6 and 7, the reserve margin would fall below 20% and FPL would have to rely more heavily on DSM, which would render FPL's system less reliable. In addition, FPL asserts that even if FPL's forecasted customer growth was lower than anticipated, the growth rate would only slightly reduce the amount of generation that will be needed in addition to Turkey Point 6 and 7. Finally, FPL

argues that by adding Turkey Point 6 and 7, the reliability of the system will be enhanced due to the fuel diversity benefits that will be realized by adding nuclear generation to its system.

OPC did not file a brief with respect to this issue. JEA and Seminole contend that there is a need for the proposed Turkey Point 6 and 7, taking into consideration the need for electric system reliability and integrity. JEA further argues that FPL has projected a need for either 6,156 MW of new capacity or approximately 5,130 MW of new DSM to meet its 20% reserve margin requirement by 2020. Furthermore, JEA maintains Turkey Point 6 and 7 will supply 2,200 to 3,040 MW of the needed capacity.

The Krasowskis contend that the use of more renewable technologies and generous net metering/distributive energy programs along with the investments in ocean current technologies offer a greater potential for realizing reliability and integrity for energy supply. The Krasowskis also argue that the current and future power needs of FPL customers can be met with the use of more efficient hardware; thus, there is not a need for Turkey Point 6 and 7.

We reviewed FPL's forecast assumptions, regression models, and the projected system peak demands, and find that they are appropriate for use in this docket. The forecast assumptions were drawn from independent sources which we have relied upon in prior cases. The regression models used to calculate the projected peak demands conform to accepted economic and statistical practices. Finally, the projected peak demands produced by the models appear to be a reasonable extension of historical trends.

After the load forecast was established, the utility determined the timing of needed generation based upon established reliability criteria. FPL uses dual reliability criteria for generation expansion planning: loss of load probability (LOLP) and a summer reserve margin. Each criterion targets different aspects of the electric system. The reserve margin criterion examines the peak hour of each year, while the LOLP value takes into account daily peak hours of the year. If either criterion is exceeded, this situation would indicate that additional generation is needed at that particular time. For many years, FPL's reliability requirements have been driven by the reserve margin criterion. The same scenario existed in FPL's 2006-2007 reliability assessment of its projected resource needs.

During the hearing, the Krasowskis raised several questions with regard to the issue of reliability. The Krasowskis posed a question on the reliability of water, specifically nuclear's dependency on the uninterrupted hour-by-hour delivery of water. Witness Silva testified that water is definitely an issue with every form of generation; however, to his knowledge, water has never been an issue that affected the reliable operation of any of FPL's plants, including its existing nuclear plants. In addition, the Krasowskis questioned how FPL could project 8,350 MW of need for the period 2011-2020, even with Florida's population growth rate slowing. Witness Silva testified that FPL studied the average growth over several cycles of growth, and its forecast of 8,350 MW for the 2011-2020 period is an adequate forecast. Witness Green testified that Florida is experiencing a slow-down in customer and population growth; however, this change reflects a cycle of increases and decreases in growth since the 1990s. In addition, witness Green testified that if there were a slow-down in population growth, there would still be a need

for energy, although maybe not at the same magnitude. As such, even with the population growth decreasing, the evidence shows that a need still exists for Turkey Point 6 and 7.

Our staff performed its own analysis of customer growth to examine sensitivities of variations in growth rate, then discussed the results with witness Green. In the most extreme case, a customer growth rate of zero was assumed for the next five years (2008-2012), followed by one year of growth at 50% of the forecasted growth. The years 2014 to 2020 remained at 100% of the forecasted growth. Witness Green agreed with our staff's assessment that under such a scenario, although very unlikely, FPL would have a reserve margin of only 13.9% and still need 1,395 MW of additional capacity to achieve a 20% reserve margin by the year 2018.

The record shows from the period 2011 through 2020, FPL projects a need for 8,350 MW. Much of this need is driven by continued customer growth (6,740 MW) and the expiration of some existing purchased power agreements (1,610 MW). FPL's plans to satisfy this need are comprised of new DSM (1,899 MW), nuclear uprates (414 MW), renewable generation (287 MW), Turkey Point 6 and 7 (2,200-3,040 MW), and natural gas combined cycle capacity (2,710-3,550 MW). Before the Turkey Point units come online in 2018 and 2020, FPL intends to meet its need through uncertified new natural gas fueled generation in 2011, 2015, 2016, and 2017.

Even if customer growth was assumed to be 0% for five years, the evidence indicates that FPL would be able to avoid the new natural gas generation, but would still have a reliability need for additional generation capacity by the year 2016. The table below summarizes the projected reserve margins for each of these scenarios:

<b>Estimated Impact on FPL's Summer Reserve Margin</b>			
Year	Reserve Margin w/ TP 6 and 7 <sup>12</sup>	Reserve Margin w/o TP 6 and 7 <sup>14</sup>	Reserve Margin No Growth in 2008-2012 <sup>13</sup>
2015	23.6%	23.6%	28.3%
2016	20.6%	20.6%	19.3%
2017	21.2%	21.2%	16.5%
2018	22.9%	18.6%	13.9%
2019	20.4%	16.2%	11.4%
2020	21.9%	13.7%	8.8%

Based on the foregoing, we find that FPL's capacity need projections are reasonable. We note that no party took issue with the load forecast.

FPL's need was determined after taking into account 1,899 MW of additional DSM, all other currently committed supply projects, 414 MW of recently approved nuclear capacity

<sup>12</sup> Includes previously certified nuclear uprates in 2012 and 2013 as well as new uncertified gas CC units in 2011, 2015, 2016, and 2017.

<sup>13</sup> Includes previously certified nuclear uprates in 2012 and 2013, but no new gas units.

uprates,<sup>14</sup> and 287 MW of renewable generation, although none are yet contracted, from 2 biomass projects and 3 municipal waste-to-energy projects. FPL's need for additional capacity to meet rising electricity demands cannot be satisfied with additional purchased power from renewable generation. Additional DSM programs and renewables are not capable of deferring the need for additional capacity.

In conclusion, the evidence shows that FPL has a need for 8,350 MW of additional capacity beginning in the 2011 through 2020 period. Turkey Point 6 and 7 will provide only a portion of FPL's need for capacity. New nuclear capacity has a long lead time before in-service due to lengthy regulation and construction timelines. Because of the long lead times associated with a new nuclear plant, many details of the project may be unknown at the time a utility files for a determination of need. As such, FPL has filed its determination of need over one year prior to filing for certification with DEP. Because Turkey Point 6 and 7 will not be in-service until the years 2018 and 2020, FPL has planned several natural gas combined cycle plants (2011, 2015, 2016, and 2017) to fulfill a portion of its need for capacity until the nuclear units come online. If FPL's load forecast dramatically declines or the amount of DSM or renewable generation available substantially increases, the most likely result will be the cancellation of some gas-fired combined cycle plants that have not yet been certified. Based on this record, FPL has shown that it has a reliability need for either the 1,100 MW or 1,520 MW units in 2018 and 2020.

#### Need for Fuel Diversity

There is a need for the Turkey Point nuclear power plants, taking into account the need for fuel diversity, as this criterion is used in Section 403.519(4), F.S.

FPL argues that the addition of Turkey Point 6 and 7 will significantly enhance fuel diversity and reduced reliance on natural gas in the state of Florida. FPL contends that by adding nuclear generation to its system, it will provide better system reliability and reduced price volatility. With the addition of Turkey Point 6 and 7, FPL asserts that it will be able to avoid continued and increased reliance on natural gas and reduce fuel price volatility for the benefit of its customers.

OPC did not file a brief with respect to this issue. JEA and Seminole contend that there is a need for Turkey Point 6 and 7 taking into consideration the need for fuel diversity. JEA further argues that with the addition of Turkey Point 6 and 7, it is projected that FPL's system will supply approximately 27% of its energy with nuclear, 65% with natural gas, and 7% with coal/petroleum coke. Furthermore, JEA maintains that if natural gas is used to meet FPL's 2018-2020 capacity needs, the percentage of natural gas on FPL's system will increase to approximately 75% in 2021 and nuclear fuel will decrease to approximately 16%.

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<sup>14</sup> Order No. PSC-08-0021-FOF-EI, issued January 7, 2008 in Docket No. 070602-EI, In Re: Petition for determination of need for expansion of Turkey Point and St. Lucie nuclear power plants, for exemption from Bid Rule 25-22.082, F.A.C., and for cost recovery through the Commission's Nuclear Power Plant Cost Recovery Rule, Rule 25-6.0423, F.A.C.

The Krasowskis argue that there is no need for Turkey Point 6 and 7 because the generation of thermal and photovoltaic solar with solar gas capture are alternative methods for establishing fuel diversity.

In September 2005, a significant number of natural gas production facilities in the Gulf of Mexico were shut down as a result of Hurricanes Katrina and Rita. FPL incurred approximately \$88 million in costs to replace a portion of the firm gas that was curtailed as a result of the storms. If FPL continues its heavy reliance on natural gas, FPL ratepayers may experience higher rates in the future with the majority of costs to be recovered through FPL's fuel adjustment charge. Pursuing nuclear generation will help FPL maintain a balanced fuel supply which will result in less volatile total fuel costs over time.

We have considered the need for fuel diversity in our evaluation of utility generation expansion plans as part of our annual Ten-Year Site Plan review process. In 2006, the Florida Legislature amended Section 403.519, F.S., to require us to specifically consider the need for fuel diversity on a utility's system when evaluating a petition for need. In addition, as part of the Florida Energy Act of 2006, the Florida Legislature made changes to the siting process for a nuclear-fueled power plant in order to facilitate the construction of new nuclear generation in the state. The legislation included specific provisions to provide greater assurances pertaining to cost-recovery and adapting the Nuclear Cost Recovery Clause (NCRC). Finally, Governor Charlie Crist signed Executive Order No. 07-127, which targets reductions in the level of greenhouse gas emissions.

The primary benefits of a more balanced fuel mix provided by the addition of Turkey Point 6 and 7 are better system reliability and reduced price volatility. The evidence shows that Turkey Point 6 and 7 are the only available non-carbon emitting alternatives that could lead to fuel diversity. During 2006, approximately 21% of the energy produced by FPL was generated using nuclear fuel. Without Turkey Point 6 and 7, the percentage of nuclear-fueled generation would decrease to approximately 16% by 2021. In contrast, adding nuclear capacity via Turkey Point 6 and 7 would contribute to FPL's system by supplying 27% of its energy with nuclear fuel by 2021. Likewise, with the new nuclear plants, FPL's natural gas mix would increase from 50% to 65%. Replacing Turkey Point 6 and 7's capacity with equivalent combined-cycle units would result in a supply of energy of approximately 16% nuclear, about 75% natural gas, and about 7% coal/petroleum coke. By the year 2021, regardless of the addition of Turkey Point 6 and 7 or natural gas, FPL's generation from coal would drop to approximately 7% generation reliance due to the replacement of a purchased power contract with Southern Company (165 MW of coal capacity) and a purchased power agreement with JEA for power from the St. John's River Power Park (381 MW of coal capacity).

FPL witness Silva testified that 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, witness Silva testified that greater fuel diversity mitigates the impact of wide or sudden swings in the price of one fuel. Moreover, when multiple fuels are used to produce electricity, the impact of price increases in any one fuel is lessened when that particular fuel does not make



up a significant percentage of the total fuel mix. Thus, a more balanced fuel portfolio will result in less volatile total fuel costs over time. FPL asserts that pursuing new nuclear capacity will provide fuel diversity which will result in lower greenhouse gas emissions.

Two main components of retail rates are base rates and fuel costs. Base rates are relatively stable. Fuel costs are passed through to retail customers through FPL's fuel adjustment clause. Since fuel costs are more volatile, they are adjusted annually to reflect actual costs. The table below highlights FPL's retail rates compared to the percentage of generation from natural gas.

<b>Comparison of FPL's Retail Rate to % Generation by Gas</b>					
	1998	2000	2002	2004	2006
Total Retail Rate ¢/kW	7.16	6.89	7.36	8.42	11.22
Base Rate %	59.4%	55.6%	49.3%	42.2%	31.2%
Fuel Costs %	26.5%	30.7%	36.5%	44.4%	54.9%
Generation by Gas %	24.2%	24.6%	32.7%	37.0%	49.4%

If FPL continues its heavy reliance on natural gas, FPL ratepayers may experience higher rates in the future with the majority of costs to be recovered through FPL's fuel adjustment charge; consequently, having a more diverse fuel mix could serve as a hedge against fuel price volatility.

In conclusion, the addition of nuclear generation will maintain FPL's fuel diversity and security. In 2006, FPL generated approximately 50% of its power from natural gas, approximately 21% from nuclear power, and 18% from coal. Without the addition of Turkey Point 6 and 7, FPL's fuel mix is projected to climb to approximately 75% from natural gas while the amount of nuclear generation would drop to approximately 16%. The addition of 2,200 to 3,040 MW of capacity associated with Turkey Point 6 and 7 would increase nuclear generation to approximately 26% and natural gas to 65% by the year 2021, the first full year of operation for both units. With or without Turkey Point 6 and 7, FPL's generation from coal would drop to approximately 7% due mostly from the replacement of a purchased power contract with the Southern Company (165 MW of coal capacity) and a purchased power agreement with the JEA for power from the St. John's River Power Park (381 MW of coal capacity).

#### Need for Base-load Generating Capacity

There is a need for Turkey Point 6 and 7, taking into account the need for base-load generating capacity, as this criterion is used in Section 403.519(4), F.S.

FPL asserts that Turkey Point 6 and 7 will help meet its growing needs for additional base-load capacity. FPL argues that most renewable generation resources cannot provide base-load capacity; thus, nuclear generation, such as Turkey Point 6 and 7, is an option which is needed in order to keep up with increasing demand. FPL further argues that Turkey Point 6 and 7 is needed not only for system reliability and integrity, but also to enable FPL to take advantage of more renewable energy sources that are not always available. Finally, FPL contends that because Turkey Point 6 and 7 will provide base-load capacity that will operate at very high capacity levels, and FPL's least efficient generating units that emit CO<sub>2</sub> will, therefore, be able to operate less, Turkey Point 6 and 7 will significantly reduce CO<sub>2</sub> emissions on FPL's system.

OPC did not file a brief with respect to this issue. JEA and Seminole contend that there is a need for Turkey Point 6 and 7 taking into account the need for base-load capacity. JEA further argues that Turkey Point 6 and 7 are base-load units designed to be available continuously.

The Krasowskis argue that there is no need for Turkey Point 6 and 7 because sufficient base-load already exists. Furthermore, the Krasowskis contend that future base-load and current base-load can be provided incrementally and replaced by efficiency and cleaner renewable alternatives. The evidence in this proceeding supports that efficient and renewable technologies currently available cannot satisfy FPL's demand for base-load capacity.

While natural gas-fired generation may still be required in the future, the addition of nuclear power provides a non-carbon emitting source of base-load power to satisfy the continued growth of FPL's energy needs. Nuclear generation will help FPL maintain a balanced fuel supply which will result in less volatile total fuel costs over time. By 2010, FPL will have approximately 15,235 MW of existing or certified base-load generation capacity which consists of coal (902 MW), gas-fired combined cycle (10,979 MW), and nuclear generation facilities (3,354 MW). As previously discussed, FPL's peak load is expected to increase by over 6,000 MW by the year 2020. FPL's base-load needs are also projected to increase by approximately the same amount. Even with the addition of Turkey Point 6 and 7, FPL's base-load needs will continue to be met primarily with natural gas-fired combined cycle generators. As discussed previously, if load forecasts were to dramatically drop or the amount of DSM or renewable generation available were to substantially increase, the likely result would be the deferral or avoidance of some natural gas-fired power plants which have not been certified to date, rather than the deferral or avoidance of new nuclear base-load generation.

The evidence reflects that the high capacity factor of FPL's nuclear units means that these units would represent a substantial amount of base-load capacity on its system. In addition, new nuclear base-load capacity provided by Turkey Point 6 and 7 is needed to maintain system reliability and provide fuel diversity at a reasonable cost for its customers. FPL asserts that there is no cost-effective alternative to Turkey Point 6 and 7 that would provide the reliable base-load capacity to meet its customers' future resource needs. Turkey Point 6 and 7 will add between 2,200-3,040 MW of nuclear-fueled base-load generating capacity which is needed to keep pace with the increasing demand for reliable power and steady population growth in Florida. Some renewable generation resources available today such as wind and solar cannot provide base-load

capacity. Florida has limited capacity for wind power. With respect to using solar energy, price and availability are impediments that cause this form of generation to be a less reliable source of base-load capacity. At best, solar is only available twelve hours per day and weather can cause the power produced by solar energy to be intermittent. The record indicates that renewable generation available today or in the near future cannot provide enough base-load capacity to avoid the need that would be met by the addition of Turkey Point 6 and 7.

During the hearing, the Krasowskis questioned whether FPL has ever investigated medium-sized solar plants as a means of providing base-load capacity. Witness Silva testified that FPL has investigated solar in various forms and has not been convinced that the capability exists to make solar a base-load type of generation. FPL has taken on a solar initiative that will result in the installation of up to 300 MW of solar energy. This amount would not be sufficient to displace the need for Turkey Point 6 and 7.

In conclusion, by 2010 FPL will have approximately 15,235 MW of existing or certified base-load generation capacity which consists of coal (902 MW), gas-fired combined cycle (10,979 MW), and nuclear generation facilities (3,354 MW). As mentioned previously, FPL's peak load is expected to increase by over 6,000 MW by the year 2020. FPL's base-load needs are also projected to increase by approximately the same amount. Even with the addition of Turkey Point 6 and 7, FPL's base-load needs will continue to be met primarily with natural gas-fired combined cycle generators. If load forecasts were to dramatically drop or the amount of DSM or renewable generation available were to substantially increase, the likely result would be the deferral or avoidance of some natural gas-fired power plants, which have not been certified to date but that are currently planned for the 2011-2016 time frame.

#### Need for Adequate Electricity at a Reasonable Cost

There is a need for Turkey Point 6 and 7, taking into account the need for adequate electricity at a reasonable cost, as this criterion is used in Section 403.519(4), F.S.

FPL asserts that Turkey Point 6 and 7 will provide adequate electricity at a reasonable cost due to the significant fuel savings and environmental compliance cost savings that will be realized by its customers. FPL contends that nuclear fuel costs are projected to be lower than fossil fuel costs and that the use of nuclear fuel will mitigate against fuel price volatility. FPL further contends that the use of nuclear technology will minimize the uncertainty and the amount of potential future environmental compliance costs associated with CO<sub>2</sub> emissions. Finally, FPL argues that even in the unlikely case that there is no future compliance cost associated with CO<sub>2</sub> emissions, significant fuel savings would still be realized by FPL's customers.

OPC did not file a brief with respect to this issue. JEA and Seminole contend that there is a need for Turkey Point 6 and 7, taking into account adequate electricity at a reasonable cost. JEA further argues that FPL adequately evaluated alternative technologies under a variety of fuel price and air emission compliance cost scenarios.

The Krasowskis argue that adequate electricity already exists. The Krasowskis further contend that reasonable costs have not been established based on efficiencies and conservation programs. In addition, the Krasowskis argue that water costs, including the cost of waste storage, are still questionable. Finally, the Krasowskis argue that the economic cost of an unforeseen event has not been considered by FPL. Our analysis with respect to the water and nuclear waste storage costs is addressed below.

FPL's analysis assumed overall costs of capital of 8.40% for generation-related capital costs and 8.30% for all other capital costs. These rates of return are based on a capital structure consisting of 55.8% equity at a cost rate of 11.75% and 44.2% debt at a cost rate of 6.43%. A different discount rate was used for generation-related capital costs because the application of the federal production tax credit for new generation units results in a different effective tax rate for generation-related capital costs compared to other capital costs. FPL used the same financial and economic assumptions for Turkey Point 6 and 7, such as the escalation rates, cost of capital, and allowance for funds used during construction (AFUDC) rates, that were used in FPL's need determination filing for capacity uprates at its four existing nuclear units approved in Order No. PSC-08-0021-FOF-EI.<sup>15</sup> There was no evidence presented in the record that disputed the reasonableness of FPL's financial assumptions. Based on this review, we find that the financial assumptions used for this evaluation are reasonable.

When comparing site-specific conditions, Turkey Point 6 and 7 are projected to have higher in-service capital and lower operating costs than comparable CC and IGCC units. In addition, the emission rates for Turkey Point 6 and 7 are zero compared to comparable CC and IGCC units. FPL sets variable Operation and Maintenance (O&M) costs for nuclear as zero because nuclear fuel costs are generally characterized as fixed O&M costs or capital replacement costs, and are not analyzed on a variable basis as one would look at certain consumable costs that are common with IGCC or CC technology.

### Capital Cost Estimates

Turkey Point 6 and 7 will increase the amount of FPL's nuclear-fueled generation, eventually displacing large amounts of higher cost fossil fuel and purchased power generation with associated fuel savings for its customers. In addition, Turkey Point 6 and 7 are considered "non-emitting" technologies for greenhouse gas (GHG) emissions, which will result in reduced environmental compliance costs. The process for creating a new nuclear project cost estimate differs from fossil or renewable generation projects due to a lack of a similar level of relevant market-based information and recent experience base.

To evaluate the cost-effectiveness of the proposed units, FPL developed a non-binding cost estimate range. The primary source of this non-binding cost estimate range is an

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<sup>15</sup> Order No. PSC-08-0021-FOF-EI, issued January 7, 2008, in Docket No. 070602-EI, In re: Petition for determination of need for expansion of Turkey Point and St. Lucie nuclear power plants, for exemption from Bid Rule 25-22.082, F.A.C., and for cost recovery through the Commission's Nuclear Power Plant Cost Recovery Rule, Rule 25-6.0423, F.A.C.

interagency study conducted by an industry consortium led by the Tennessee Valley Authority (TVA) in coordination with the U.S. Department of Energy (DOE), published in August of 2005 (the TVA Study). FPL determined a capital cost range of \$3,108/kw-\$4,540/kw to be reasonable for Turkey Point 6 and 7. No evidence was presented in the record to dispute the reasonableness of FPL's financial assumptions.

When compared to the combined cycle alternative, nuclear generation has higher capital cost; however, this cost is offset by nuclear's low fuel and environmental costs. When compared to the IGCC alternative, economic benefits of nuclear increase because IGCC would still have some emissions, while nuclear has none. We find that FPL's capital cost estimates are reasonable. No evidence was presented that challenged the cost estimates.

#### Transmission Costs

Construction of any electrical generation plant requires additional transmission infrastructure to connect the new generation source to the state's electric grid. A primary consideration is the capacity to be added. The transmission system must be capable of sustaining the loss of the single largest generator without violating reliability standards. FPL's preliminary studies determined that a new generation plant with capacity under 1,200 MW would not adversely impact the grid. If the 1,520 MW units were chosen, transmission interconnection and integration would require more detailed studies to determine the specific impacts and mitigation alternatives.

In conducting its cost analysis, FPL's estimate of transmission interconnection and integration costs ranged from \$664 to \$959 per kW, or \$1.5 billion to \$2.1 billion for two 1,100 MW units. The estimate range for two 1,520 MW units was \$2.0 billion to \$2.9 billion. These costs were included in FPL's cost estimate. An estimate of \$500 million for transmission costs was used for both the CC or IGCC alternatives.

We find that FPL's transmission cost estimates are reasonable. No evidence was presented that challenged FPL's transmission cost estimates.

#### Environmental Costs

In assessing the environmental compliance costs associated with FPL's petition for need, we considered whether FPL included a reasonable level of environmental compliance costs associated with the proposed nuclear generation units and whether FPL's cost-effectiveness analysis of the selected generation alternative vis-a-vis other generating alternatives (CC and IGCC) include reasonable levels of environmental compliance costs.

FPL witness Kosky testified that FPL has identified a variety of environmental controls and associated costs for the proposed nuclear unit. FPL further asserted that its environmental compliance strategy for these units will meet, or exceed, the applicable environmental requirements.

FPL maintains that its cost-effectiveness analysis of the selected generation alternative vis-a-vis other generating alternatives (CC and IGCC) include reasonable levels of environmental compliance costs. Each of FPL's three alternative resource plans has different pollutant emission profiles resulting from the utilization of different fuels. In this need determination petition, the environmental compliance costs of four pollutants are considered: sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), carbon dioxide (CO<sub>2</sub>), and mercury (Hg). In order to incorporate the range of uncertainty in its environmental cost estimates regarding future environmental requirements, FPL and its consultants analyzed the possible future environmental compliance costs based upon a report prepared by ICF International titled "U.S. Emission and Fuel Markets Outlook, 2006 edition" (2006 ICF Report). FPL relied upon this report as the starting point of its environmental compliance costs forecasts.

In its report, ICF International reviewed the U.S. Congress bills and the international market trends regarding GHG emission regulations. ICF then analyzed the emission allowance markets for all four pollutants and presented a set of allowance pricing projections for 2006 through 2030. Each projection corresponds to a specific bill or the international market trend. ICF also provided a reference case, which was a weighted summation of all the other projections. FPL adopted three ICF projections as a framework to form FPL's environmental forecasts: ENV I (mild case, based on ICF Bingaman projection), ENV II (medium case, based on ICF reference case), and ENV III (stringent case, based on ICF McCain projection). FPL extrapolated ICF's projections through 2060. To address the potential for higher CO<sub>2</sub> costs, FPL developed an additional forecast, ENV IV, in which the annual CO<sub>2</sub> values were 130% of the corresponding costs appearing in ENV III. These environmental forecasts are presented in Appendix F of the Need Study.

In its evaluation of resource options in this case, FPL combined its three fuel cost forecasts (high, medium, and low) with its four environmental compliance cost forecasts to form a matrix of twelve initial scenarios. After further analysis, nine scenarios were selected and utilized in performing both the economic and non-economic analyses to evaluate FPL's three resource plans. FPL eliminated three scenarios (Low Gas Cost ENV II, Low Gas Cost ENV III, and Low Gas Cost ENV IV) because FPL believes that an assumption of medium-to-high environmental compliance costs for CO<sub>2</sub> is incompatible with an assumption of low natural gas prices. In support of this determination, FPL witness Yupp notes that one of the drivers for oil and gas prices is "the impact upon worldwide energy consumption of various factors including worldwide environmental legislation and politics." Witness Yupp also indicates that FPL's fuel price forecasts do not reflect a constant difference in coal and gas prices due to potential environmental legislation. In addition, he indicates that medium to high environmental compliance costs are incompatible with the assumption of low natural gas prices. He also testified that, if future environmental regulations were to impose high compliance costs on carbon emissions, the demand for natural gas would most likely increase. Moreover, Yupp testified that it is a reasonable assumption that, if environmental compliance costs are higher, gas prices will go up.

FPL claims that the selection of nuclear technology is the best available alternative for base-load generation from an environmental perspective consistent with maintaining fuel

diversity. Using nuclear generating technology will help FPL reduce the total CO<sub>2</sub> emissions from its system. The estimated amount of emissions that will be avoided by the proposed nuclear units over a 40-year period of operation are 14,200 to 75,400 tons of SO<sub>2</sub>, 21,300 to 49,200 tons of NO<sub>x</sub>, and 266 million to 700 million tons of CO<sub>2</sub>. The estimated cumulative 40-year CO<sub>2</sub> compliance costs for alternative generation could range from \$6 billion to \$28 billion or more for CC generation, and \$17 to \$73 billion or more for IGCC generation. The cumulative 40-year compliance costs of the other three emissions would likely be on the order of \$120 million to \$150 million for CC and \$0.8 billion to \$1.2 billion for IGCC.

During the week prior to the hearing in this docket, FPL witness Kosky received an updated ICF report titled "U.S. Emission and Fuel Markets Outlook 2007, Volume II, Emission Markets, Winter 2007/2008" (Updated ICF Report). In this report, the projections of CO<sub>2</sub> pricing were increased to reflect new GHG legislation proposals. At the hearing, OPC requested that FPL recalculate its CO<sub>2</sub> compliance costs using the updated report. Witness Kosky testified that upon reviewing the resulting updated values, he concluded that the updated CO<sub>2</sub> compliance costs data provides further evidence that the range of CO<sub>2</sub> compliance costs that FPL had presented and relied upon in its economic studies were reasonable. FPL stated that if future CO<sub>2</sub> costs are higher than the level of costs it estimated in its resource plans (as the new ICF data indicates), due to recently proposed or future legislation, such additional costs would favor the selection of nuclear generating capacity over other generating resource options.

During the hearing, our staff requested a late-filed exhibit that contained updated environmental compliance costs data for the remaining three emissions appearing in FPL's Appendix F of its need petition, SO<sub>2</sub>, NO<sub>x</sub>, and Hg, with the forecasts ending at 2030, the same projection horizon as used in the updated ICF report. FPL filed an updated Appendix F, identified as Exhibit 103, based on the updated ICF Report. FPL agreed that as CO<sub>2</sub> allowance prices increase above FPL's forecasted future CO<sub>2</sub> allowance price levels, the allowance prices for other pollutants could decrease. However, FPL argued that decreases in other pollutants' compliance costs would not have much of an effect on overall environmental compliance costs. Thus, as CO<sub>2</sub> allowance prices increase, overall environmental costs would be expected to increase above FPL's current projections.

We believe FPL has appropriately identified the requisite environmental controls and associated costs for the proposed nuclear units in its need petition. It appears that FPL's environmental compliance strategy for these units will meet or exceed the applicable environmental requirements, given existing and potential future environmental legislation.

We believe that adding new nuclear units to FPL's base-load generation would significantly reduce GHG as well as other emissions on FPL's system, compared with adopting alternative base-load units (CC or IGCC). Nuclear generation is considered a "non-emitting" technology for GHG emissions. FPL has provided persuasive evidence that FPL's selection of nuclear generation will avoid significant environmental compliance costs associated with other generating alternatives' pollutant emissions. We believe FPL has substantiated this point by quantifying the expected cost impacts of CO<sub>2</sub> emission regulations, the existing SO<sub>2</sub> regulations, Phase II Clean Air Interstate Rule (CAIR) NO<sub>x</sub> regulations, Clean Air Mercury Rule (CAMR)

Hg regulations. Based on the environmental compliance costs shown in Appendix F of Exhibit 96 and Exhibit 103 for CC and IGCC, the emission displacement associated with the nuclear generating option should provide significant savings to FPL and its ratepayers.

We reviewed the 2006 ICF Report and the Updated ICF Report and note that the emission allowance pricing projections developed by ICF are based upon a detailed study of the compliance cost markets for all four pollutants, nationally and internationally, and careful review of various existing or proposed emission regulations proposed by national and worldwide legislative bodies. We believe the methodology and the underlying data used by FPL for preparing its environmental compliance cost forecasts are reasonable. We find that FPL has included a reasonable level of environmental compliance costs in its resource plans for the purpose of evaluating the suitability of adding the nuclear units.

We considered whether FPL's decision to eliminate three scenarios from further use in its economic analysis in this need case is appropriate. It is reasonable to conclude that medium to high environmental compliance costs are incompatible with the assumption of low natural gas prices. Therefore, we find that it was reasonable for FPL to eliminate from its cost-effectiveness analysis the three scenarios in question.

We find it appropriate to give greater weight to the analysis outcomes resulting in the Medium Gas Cost ENV II scenario for three reasons. First, FPL's basic fossil fuel forecasts were the medium price forecasts. FPL developed one fuel price forecast for distillate and residual fuel oil, solid fuel, and natural gas which is the medium price forecast. To develop the high and low forecasts for distillate and residual fuel oil, solid fuel, and natural gas, FPL did not separately conduct high price and low price forecasts but, instead, derived the high and low forecasts by applying factors (137% and 69%) to the medium price forecast. Therefore, among FPL's three fuel forecasts the basic fossil fuel forecasts are its medium fuel price forecasts. Second, the pollutants' emission cost projections of ENV II were developed and designated as the expected case by the well-known independent consulting firm ICF International. ICF formed its environmental compliance cost projections based upon extensive market studies and reviewing the emission regulation-related legislation as discussed above. The expected case was further created by means of weighted summation, corresponding to forecasting time, of various projections. In view of these, we find that the expected case (i.e. ENV II) represents a more reasonable prediction compared with its forecast counterparts. Third, the same scenario was presented in the Glades Power Park case, and it compared well with the middle scenario for emissions costs presented in that case.<sup>16</sup> Consequently, it is reasonable to place greater weight on the outcomes derived from the Medium Gas ENV II scenario when evaluating the overall economic analysis results. We agree with FPL, however, in its decision to not apply specific probabilities to the scenarios it developed for analyzing resource options. FPL is correct in its conclusion that there are too many uncertainties with regard to future environmental compliance costs and fuel costs as well as in the interaction between them to assign probabilities to specific forecasts.

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<sup>16</sup> Order No. PSC-07-0557-FOF-EI, issued July 2, 2007, in Docket No. 070098-EI, In re: Petition for determination of need for Glades Power Park Plants Units 1 and 2 electrical power plants in Glades County, by Florida Power and Light Company.



We calculated the incremental environmental compliance costs associated with the Medium Gas Cost ENV II scenario based on the Updated ICF Report's allowance prices and a static level of FPL's system emissions data for the three generation options. We performed this analysis to determine whether the updated compliance cost forecast improved the economics of the nuclear generation option. The emissions compliance costs were calculated for a period from 2018, when the first proposed nuclear unit would be placed in service, through 2030, the final year of ICF's updated forecast. The results of this analysis are shown below, in Table 1, Incremental Change in FPL System's Environmental Compliance Costs Based on the Updated ICF Forecast, 2018 to 2030. As shown, the revised SO<sub>2</sub> and Hg compliance costs decrease to a certain extent, due to the interaction between the markets of different emission compliance allowances, but the amount of reduction in SO<sub>2</sub> and Hg compliance costs does not nearly offset the incremental increase of the CO<sub>2</sub> and NO<sub>x</sub> compliance costs. Given the more recent environmental cost data contained in the updated ICF report, the environmental costs associated with alternatives to the proposed nuclear units (CC and IGCC) would be higher than the costs reflected in FPL's need petition, while the cost of nuclear generation would remain unchanged.

	<b>CC</b>	<b>IGCC</b>	<b>Nuclear</b>
Incremental CO <sub>2</sub> costs:	\$312,306,000	\$790,497,000	\$0
Incremental SO <sub>2</sub> costs:	-\$652,271	-\$12,339,000	\$0
Incremental NO <sub>x</sub> costs:	\$1,651,936	\$120,901,442	\$0
Incremental Hg costs:	0	-\$24,291,320	\$0
Sum of Incremental Compliance Costs	\$313,957,284	\$874,768,122	\$0

During the hearing, the Krasowskis presented their concerns regarding the amount of life cycle emissions of Turkey Point 6 and 7 compared to oil, gas, and coal alternative fuels. The evidence shows that the amount of the life-cycle GHG emissions associated with a nuclear plant is less than that associated with an oil plant or a coal plant: 30 lb CO<sub>2</sub> equivalent/MWH for nuclear compared with 110 lb CO<sub>2</sub> equivalent/MWH for CC. The evidence presented in this case shows that the nuclear generation option bears the lowest amount of life-cycle emissions compared to other generating technology available in Florida. Moreover, life-cycle emissions for nuclear generation are low compared to non-emitting renewables and are equivalent to wind generation and are three times lower than solar generation.

In conclusion, FPL has included an appropriate level of environmental compliance costs in its estimated costs for Turkey Point 6 and 7. We find that FPL's forecasted costs of environmental compliance between the nuclear generation alternative compared to competing options (CC and IGCC generation technologies) are reasonable. No evidence was presented that challenged the environmental cost estimates.

### Water Costs

Steam based plants (including nuclear technology) require more cooling water than combined cycle technology. FPL estimates that a range of 60 million to 90 million gallons of water per day would be required for the operation of the proposed Turkey Point 6 and 7. FPL included capital costs of approximately \$250 million to \$300 million for cooling water.

FPL conducted a preliminary screening to determine the availability and feasibility of water resources capable of providing cooling water to the proposed Turkey Point 6 and 7. FPL claims that multiple viable alternatives of cooling water supply are available and will be fully investigated to determine which source or sources meet technical, environmental, and economic objectives. Five supply sources are currently under review by FPL: reclaimed water from the Miami-Dade Water and Sewer Department, groundwater from the lower Floridian aquifer, groundwater from the boulder zone, marine water taken from the surface through a remnant canal intake system, and a marine source that would be taken subsurface through a rainy well system. A final decision regarding the site certification application process to develop the alternatives as well as identify which is the best option for the facility is targeted for March 2009.

FPL contends that it has included an appropriate allocation for water supply in its cost estimate range based on FPL's significant experience in this area. In response to OPC's concern whether the use of reclaimed water would cost more or less than the use of groundwater, witness Scroggs testified that the cost for the reclaimed water option would be approximately the same as the groundwater option based on FPL's discussions with the Miami-Dade Water and Sewer Department. FPL also indicated that its cost estimates include the capital costs to build the infrastructure necessary to deliver the water as well as the cost of pumping the water.

FPL's witness Scroggs testified that the source of the water to be used has not yet been determined. However, FPL believes that its cost estimate range would be sufficient to cover costs reasonably expected for any of the alternatives based on FPL's extensive knowledge of different opportunities. Witness Scroggs also testified that there is a significant margin above the current cost estimate range that could be tapped to support water supply projects while maintaining the cost-effectiveness of Turkey Point 6 and 7.

In conclusion, we believe that FPL's costs for cooling water supply were appropriately included in the economic analyses of the three resource plans and represent a range of potential costs outcomes based upon its selection of a water supply for Turkey Point 6 and 7. We believe that the various water supply options available to FPL are readily available for the life of the proposed nuclear units.

### Fuel Storage Costs

Additional costs related to spent fuel storage are exclusive to nuclear generation. Witness Villard testified that new nuclear plant designs have a spent fuel storage capacity of over ten years. The Department of Energy (DOE) is statutorily and contractually obligated to dispose of nuclear fuel. Further, DOE assesses FPL one mill per kilowatt hour as payment for the disposal

of nuclear fuel. FPL included such costs in its economic evaluation for this need determination. Witness Villard further testified that dry cask storage is a proven safe and environmentally sound on-site storage option.

DOE has had problems commencing operation of the Yucca Mountain nuclear waste repository, and Yucca Mountain is currently the only option; however, witness Villard testified that the industry will solve the problem of long-term storage of spent nuclear fuel within the next 20 years. He contends that the problem is not a technical one. Further, witness Villard testified that he believes that the costs of dry cask storage are included in the economic evaluation for this need determination. In the United States, the policy for disposal of spent nuclear fuel is final disposal as opposed to reprocessing.

In conclusion, we believe the cost estimate information presented in the record is appropriate. Accordingly, we find that construction of Turkey Point 6 and 7 will not only provide adequate electricity, but also ensure the most reasonable costs to ratepayers.

#### No Mitigating Renewable Energy Sources and Technologies or Conservation Measures

There are no renewable energy sources and technologies or conservation measures taken by or reasonably available to FPL which might mitigate the need for Turkey Point 6 and 7.

FPL argues that neither renewable resources nor conservation and DSM can mitigate the need for Turkey Point 6 and 7. FPL asserts that its projected resource need already takes into account all reasonably achievable, cost-effective DSM and renewable energy resources known to FPL. FPL asserts that because DSM and renewable energy resources represent resource options so inherently different from Turkey Point 6 and 7 (in terms of base-load capacity, contribution to fuel diversity, and ability to reduce system-wide CO<sub>2</sub> emissions), they cannot be seen as true alternatives. FPL contends that it continues to aggressively pursue DSM opportunities, as well as the purchase and development of substantial amounts of energy from renewable resources. As a result, although FPL asserts that additional DSM, renewable energy resources, and new nuclear generation should all be pursued because each resource is needed, it is evident that DSM and renewable energy cannot mitigate the need for Turkey Point 6 and 7.

OPC did not file a brief with respect to this issue. JEA and Seminole contend that there are no additional renewable energy sources and technologies and conservation measures available that could mitigate the need for Turkey Point 6 and 7. JEA further argues even if renewable resources and conservation were achieved at levels greater than projected, FPL would still need Turkey Point 6 and 7. Seminole contends it is not aware of any such sources, technologies, or measures currently available.

The Krasowskis argue that there are renewable energy sources and technologies and conservation measures available that could mitigate the need for Turkey Point 6 and 7. In addition, the Krasowskis contend there are enormous opportunities for efficiency and conservation measures. Moreover, the Krasowskis assert that only a fraction of energy efficiencies available through DSM are realized and would become available by raising Florida's

minimal standards. The Krasowskis did not provide any specific conservation measures or renewable technologies that would mitigate the need for Turkey Point 6 and 7. The Krasowskis argue that additional conservation could be achieved through mandatory participation in utility conservation programs; however, such a mandate would require legislation or amendments to the building code.

According to witness Brandt, FPL used a multi-step process to develop its current DSM goals. FPL identified a total of 329 DSM measures for screening. All selected measures were screened for cost-effectiveness utilizing the Rate Impact Measure (RIM) test with the assumption of no incentives. The assumption of no incentives gives each measure the highest probability of passing the RIM test. Each measure that passed the RIM test was then tested using the Participant test. For those measures that were found to be cost-effective as determined by both the RIM and Participant tests, annual market acceptance rates, and the achievable potential were identified. The results of this analysis produced the most cost-effective DSM portfolio for FPL's customers. The energy savings from these programs were added to FPL's integrated resource planning (IRP) process. FPL's current DSM plan to meet its 2005-2014 goals was approved in Order Nos. PSC-05-0162-PAA-EG<sup>17</sup> and PSC-06-0025-FOF-EG.<sup>18</sup>

From 1980 through 2006, FPL has implemented approximately 3,659 MW of savings from its DSM programs. During this same time period FPL has completed over 2,360,000 energy audits of customers' homes and businesses. In 2004, FPL received Commission approval of DSM goals that will add 802 MW (at the generator) of additional DSM from 2006 through 2014. FPL plans to achieve additional demand reduction beyond the current DSM goals time frame such that an additional summer demand reduction of 1,899 MW at the generator will be achieved by 2020.

Despite FPL's efforts, an additional 5,130 MW of cost-effective, incremental DSM would be needed to meet FPL's demand needs. FPL witness Sim stated that it is unrealistic to assume the existence of this amount of cost-effective, incremental DSM. We agree, in part, because the availability of cost-effective DSM measures has been declining. FPL witness Brandt identified several areas where DSM-related technologies are reaching market saturation, which directly impact FPL's ability to increase participation in many of its DSM programs. For example, in 1982 the Florida Energy Code was changed to require all new homes to have at least R-19 levels of ceiling insulation. As a consequence, the eligible market has shrunk as more pre-1982-built homes participate in the program. In 2006, the minimum efficiency standards for Heating Ventilation and Air Conditioning (HVAC) equipment were increased. For example, the minimum standards for residential type air conditioners were increased significantly from a minimum season energy efficiency rating (SEER) of 10 to 13. FPL's load forecast includes a 1,256 MW reduction to account for the effect of the new energy efficiency standards mandated by the 2005 Energy Policy Act. When building code or appliance efficiency levels become the same as the utility's program, then the impact of the utility program is greatly diminished

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<sup>17</sup> Order No. PSC-05-0162-PAA-EG, issued February 9, 2005, in Docket No. 040029-EG, In re: Petition for approval of numeric conservation goals by Florida Power & Light Company.

<sup>18</sup> Order No. PSC-06-0025-FOF-EG, issued January 10, 2006, in Docket No. 040660-EG, In re: Petition for approval of modifications to BuildSmart Program by Florida Power & Light Company.

because the baseline energy efficiency level is raised. Furthermore, FPL has projected that the amount of annual load management capability is close to the maximum usable amount.

In addition to DSM, FPL's load forecast assumes successful contracting for and delivery of 144 MW of renewable firm capacity bid in response to its 2007 request for proposals for renewable energy, and successful extension of 143 MW of renewable firm capacity from three expiring municipal waste-to-energy contracts.

Most renewable resource options are unable to meet base-load generating needs, but are better positioned as intermediate and peaking resources that enable a utility to replace its gas and oil-fired generation. Even with a greater emphasis on the development of renewable resources in Florida, the realities of land use economics, a relatively low level of renewable resources available, and the incompatibility of renewables that involve combustion or incineration with GHG reduction targets, make it very unlikely that the state can count on renewables to meet the bulk of its incremental power supply needs or be the principal means of providing significant reductions in GHG levels over the next ten to twenty years.

In closing, witness Sim testified that a reduction in peak load demand or an increase in renewable generation would likely result in the deferral of uncertified natural gas units. The more immediate effect of such a change would be that the capacity need and, therefore, the capacity options that FPL would select to meet that need in the years prior to 2018 would change.

Based on the record, we find that there are no additional cost-effective conservation measures available that might mitigate FPL's need for Turkey Point 6 and 7. FPL has identified an incremental increase of 1,899 MW of DSM summer peak demand reduction by the year 2020, as well as over 280 MW of renewable energy from purchased power contracts. As previously discussed, FPL has demonstrated a reliability need in excess of these values for the years 2018 through 2020. A reduction in peak demand or an increase in renewable generation would likely result in the deferral of uncertified natural gas units. In addition, it is unrealistic to assume that FPL could achieve the amount of energy savings through DSM in ten years, that took 26 years to accomplish. As such, we find that there are no additional renewable energy sources or conservation measures which could effectively mitigate FPL's need for Turkey Point 6 and 7.

#### Most Cost-Effective Source of Power

Turkey Point 6 and 7 will provide the most cost-effective source of power, as this criterion is used in Section 403.519(4), F.S.

In a more traditional need determination proceeding for a fossil-fuel generating unit, cost-effectiveness would be measured by comparing various present value revenue requirement scenarios with and without the proposed generating unit. The revenue requirements would include the capital costs of the proposed generating plant as well as the system fuel costs. The difference between competing alternatives would indicate which generation alternative was the most cost-effective.

As previously discussed, FPL prepared a capital cost estimate for new nuclear generation of \$3,108/kw-\$4,540/kw. However, due to the lack of recent cost information for nuclear power plant construction, FPL departed from a traditional revenue requirement analysis and performed a break-even analysis. For analysis purposes, FPL compared a present value revenue stream assuming no capital costs for the nuclear units to a traditional present value revenue stream which includes capital and system fuel costs for a CC or IGCC as a replacement for the nuclear units. The results of this analysis show the highest capital costs at which nuclear generation would still be cost-effective compared to CC and IGCC alternatives.

As with prior need determination filings, FPL performed this analysis under a wide range of scenarios which combined varying fuel forecasts (low, medium, and high) and environmental compliance cost projections, ENV I-IV. ENV I represents a low compliance cost scenario while ENV IV represents a much higher compliance cost scenario. Nine different fuel/environmental scenarios were analyzed for each alternative to Turkey Point 6 and 7, resulting in a total of 18 scenarios. The projected present value savings over the study period for each scenario was then used to calculate a break-even capital cost estimate of what the nuclear units could cost and still produce net savings over the study period when compared to either CC (Table 6-1) or an IGCC (Table 6-2). Each break-even value was then compared to the capital cost range of \$3,108/kw-\$4,540/kw to determine the likelihood of the nuclear project producing a net savings over the study period. If the break-even values are higher than the current capital cost-estimates, then the nuclear plants would provide net savings over the life of the units compared to alternative base-load units. We believe that FPL's approach in performing this analysis is reasonable.

Tables 6-1 and 6-2 illustrate that all but one of the break-even capital costs produced from FPL's analysis is above the current cost estimate range of \$3,108/kw-\$4,540/kw. These results indicate that Turkey Point 6 and 7 are projected to produce savings in 17 of the 18 scenarios. In addition, Table 6-1 shows that the only scenario which does fall between the cost estimate range is the ENV I/Low Gas scenario. However, if this scenario were to occur, the overall cost of electricity to FPL's customers would be the lowest due to the significant amount of existing natural gas-fired generation on FPL's system.

**Table 6-1**

Breakeven Nuclear Capital Costs Compared to Gas Combined-Cycle (\$/kw in 2007\$)				
		High Gas Cost	Medium Gas Cost	Low Gas Cost
Environmental	Env I	6,157	4,543	3,206
Compliance	Env II	6,701	5,065	
Cost	Env III	6,949	5,327	
Forecasts	Env IV	7,281	5,680	

FPL capital cost estimates \$3,108/kw-\$4,540/kw

**Table 6-2**

Breakeven Nuclear Capital Costs Compared to Coal IGCC (\$/kw in 2007\$)				
		High Gas Cost	Medium Gas Cost	Low Gas Cost
Environmental	Env I	6,725	6,212	5,921
Compliance	Env II	7,996	7,487	
Cost	Env III	8,630	8,123	
Forecasts	Env IV	9,450	8,956	

FPL capital cost estimates \$3,108/kw-\$4,540/kw

The high initial capital costs of Turkey Point 6 and 7 are offset by the relatively low operational costs of the proposed plants. During cross examination, witness Sim testified that Turkey Point 6 and 7 will produce fuel savings of over \$1 billion dollars in 2021 when compared to a combined cycle alternative. Witness Sim further testified that this value increases over time resulting in a savings of about \$94 billion over the life of the units. These statements were made using FPL's medium gas cost projections. Overall savings can be seen as early as 2024 when compared to a combined cycle alternative. The evidence shows that because nuclear fuel costs are low, the Turkey Point 6 and 7 would still produce considerable savings with or without CO<sub>2</sub> legislation. As shown in Tables 6-1 and 6-2, as environmental compliance costs increase, the break-even capital cost for Turkey Point 6 and 7 increases. Nuclear generation is considered a "non-emitting" technology for GHG emissions; therefore, the higher the environmental compliance costs, the greater the benefits associated with Turkey Point 6 and 7. Nuclear power plants have an initial licensed operating life of 40 years with the potential to renew the operating license for another 20 years. Thus, the fuel and environmental benefits of Turkey Point 6 and 7 could continue beyond the analysis presented in this proceeding.

No nuclear power plants have been constructed in Florida since FPL placed St. Lucie 2 in service in 1983. The state as a whole relied on the construction and purchase of coal-fired generation through the 1980s, turning to low cost natural gas fired generation throughout the 1990s up until the present. Much has been done at the federal and state level to promote the development of new nuclear generation. The Energy Policy Act of 2005 provided three programs to benefit new nuclear plant development. If the nuclear project meets specific

development and construction milestones, the utility may be eligible for a form of “risk insurance” to cover some construction delays, a loan guarantee program to reduce lending costs, and production tax credits that would become effective upon commercial operation. The licensing process at the Nuclear Regulatory Commission (NRC) has been streamlined to consider standardized designs and combined the approval of a construction and operating license. Even with the streamlined procedure, the NRC process can take up to five years to complete and costs in excess of \$150 million. In an effort to mitigate the economic risks associated with the long lead time and high capital costs associated with nuclear power plants, the Florida Legislature enacted Sections 366.93 and 403.519(4), F.S., during the 2006 legislative session. Section 366.93(2), F.S., requires this Commission to establish alternative cost recovery mechanisms for the recovery of costs incurred in the siting, design, licensing, and construction of a nuclear power plant. Such cost recovery mechanisms should promote utility investment in nuclear power plants and allow for the recovery in rates of all prudently incurred costs. Sections 366.93(3) and (5), F.S., allow a utility to request recovery of costs after a need determination has been granted and requires annual cost information to be filed with this Commission. Finally, if a utility elects not to continue with the construction of a new nuclear plant, Section 366.93(6), F.S., allows the utility to recover costs incurred up to the date of termination.

FPL contends that Turkey Point 6 and 7 are projected to provide the most cost-effective source of power, taking into account all the factors listed in Section 403.519(4), F.S. FPL asserts that its cost estimate range for Turkey Point 6 and 7 includes a reasonable range for all costs, including costs associated with water supply and treatment, as well as spent fuel storage and handling. FPL maintains that it developed its cost estimate range by combining information provided by an interagency study, conducted by an industry consortium in coordination with the DOE, as well as with FPL’s own extensive construction experience in Florida. The non-binding cost estimate range for Turkey Point 6 and 7 in 2007 dollars is \$3,108 to \$4,540 per kilowatt.

OPC asserts that although uncertainty exists about future fuel prices and emissions costs, this Commission must still make judgments about future prices and costs in order to determine the cost-effectiveness of Turkey Point 6 and 7. In addition, OPC maintains that the medium forecast is FPL’s best estimate of future fuel prices and believes we should give the greatest weight to the medium fuel and environmental price forecasts when considering cost-effectiveness of the proposed plants.

JEA and Seminole contend that Turkey Point 6 and 7 will provide the most cost-effective source of power. Furthermore, JEA argues that FPL adequately evaluated alternative technologies under a variety of fuel price and air emission compliance cost scenarios and determined that Turkey Point 6 and 7 is the most cost-effective alternative available to meet its identified capacity needs for the 2018-2020 period.

The Krasowskis argue that Turkey Point 6 and 7 will not provide the most cost-effective source of power. In addition, the Krasowskis contend that the cost of Turkey Point 6 and 7 should be compared with an equal amount of analysis to a renewable/efficiency option. Furthermore, the Krasowskis believe that the Turkey Point 6 and 7 timeline extends over a period that would allow monies dedicated to the project to be used to provide energy needs



through efficiency programs, elevated standards of power usage, and investments in clean energy technologies, without the costly issues related to toxic waste management.

FPL's projected future costs of compliance with CO<sub>2</sub> regulations, as well as the potential future compliance costs for other air emissions currently regulated under the Clean Air Act (i.e., SO<sub>2</sub>, NO<sub>x</sub>, and Hg), were developed using projected costs from ICF International's report, "U.S. Emission & Fuel Markets Outlook, 2006 edition." FPL adopted three ICF projections as a framework to form FPL's environmental forecasts: ENV I (mild case, based on ICF Bingaman projection), ENV II (medium case, based on ICF reference case), and ENV III (stringent case, based on ICF McCain projection). The ICF report provided the projected air emissions compliance costs through 2030. Beyond 2030, the ICF compliance costs for all air emissions were projected forward by FPL, based on a review of recent assessments related to the growing interest in CO<sub>2</sub> regulation and expected compliance costs. To address higher potential CO<sub>2</sub> costs, FPL further developed another forecast ENV IV in which the annual CO<sub>2</sub> values were 130% of the corresponding numbers in ENV III. OPC contends that the emission costs derived from ENV II are the most likely scenario.

Given FPL's estimated CO<sub>2</sub> compliance costs, the 40-year compliance costs could range from \$6 billion to \$28 billion or more for combined cycle generation, and \$17 billion to \$73 billion for IGCC generation. The 40-year compliance costs for SO<sub>2</sub>, NO<sub>x</sub>, and mercury would be much less, due to the quantity (tonnage) of pollutants emitted, than the compliance costs for CO<sub>2</sub> and would likely be in the order of \$120 million to \$150 million for a natural gas combined cycle generation and \$0.8 billion to \$1.2 billion for IGCC. We find that FPL's environmental compliance cost forecasts are reasonable for purposes of evaluating Turkey Point 6 and 7.

Recently, FPL received the 2007 edition ICF Internationals report, in which the projections of CO<sub>2</sub> pricing were updated to reflect new GHG legislation proposals. FPL filed an updated Appendix F, for years 2008-2030, based on the newly released ICF report. FPL witness Sim noted that the break-even analysis utilizing the updated Appendix F values would increase the cost-effectiveness of Turkey Point 6 and 7. No party contested the results of the updated CO<sub>2</sub> compliance costs.

The development of FPL's forecasted natural gas, residual fuel oil, solid fuel (coal and petcoke), and distillate fuel oil prices used in the economic evaluation of Turkey Point 6 and 7 were supported by FPL witness Yupp. These forecasts, along with the nuclear fuel price forecast, appear in the Appendix E of the Need Study. Witness Yupp notes that the differential between fuel prices is a key driver in the overall economic outcome of each expansion plan. It is the differential in fuel prices that results in the \$1 billion dollar annual savings in the first year of operation of Turkey Point 6 and 7.

FPL used a medium gas forecast methodology. The natural gas and oil price forecasts through 2020 are based on the forward curve for commodity prices and projections from PIRA Energy Group. After 2020, the prices are escalated based on real price changes from the Energy Information Administration (EIA). Transportation costs are added to the commodity prices. For solid fuel, FPL used commodity price forecasts from JD Energy and added marine and rail

transportation and terminal charges. All prices are converted to nominal dollars using the 2.5% annual escalation rate.

For residual fuel oil, natural gas, and solid fuel, FPL developed high and low price forecasts based on its experience with these commodities during January 2000 to April 2007. Witness Yupp testified that this method accounts for the uncertainty in fuel price forecasts and ensures that the evaluation of the resource plans is reasonable.

FPL witness Villard forecasted the price of nuclear fuel. He identified four steps in fabricating nuclear fuel: uranium mining, conversion, enrichment, and fabrication. For each step, FPL forecasted the price based on inputs from nuclear fuel market experts. In general, FPL expects the demand for nuclear fuel to increase with the planned construction of new nuclear units. FPL projects that nuclear fuel supply will be adequate based on the shorter lead time for construction of new nuclear fuel mining and fabrication capacity compared to the time for constructing a nuclear plant. Unlike the forecasts for fossil fuel, only a single nuclear fuel forecast was used to evaluate FPL's expansion plans. The record reflects that the historical and anticipated price variability is small compared to the variability of fossil fuel prices and that no reasonable change in nuclear fuel prices would affect the fact that the units are expected to operate at full availability.

As previously discussed, OPC contends that this Commission should give the greatest weight to the medium fuel price forecasts when considering cost-effectiveness of the proposed plants. We believe that FPL's fuel price forecasts are reasonable for the purpose of evaluating Turkey Point 6 and 7. Although FPL did not compare its fuel forecasts to published forecasts, the evidence supports that its forecasts are based on recognized, independent sources of forecast information. FPL used an escalation rate, 1.14%, from the EIA forecast to forecast long term natural gas prices. In addition, forecasted fuel prices beyond the year 2030 are not available. As such, we find that FPL used reasonable assumptions for its fuel price forecasts because the banded approach of high, low, and medium price forecasts presented a reasonable range of price scenarios.

Much has been done at the federal and state level to promote the development of new nuclear generation. In an effort to mitigate the economic risks associated with the long lead time and high capital costs associated with nuclear power plants, the Florida Legislature enacted Sections 366.93 and 403.519(4), F.S. to promote utility investment in nuclear power plants and allow for the recovery in rates of all prudently incurred costs.

The results of FPL's break-even analysis indicate that Turkey Point 6 and 7 are projected to produce savings in 17 of the 18 scenarios considered. Such results indicate a high likelihood of FPL's ratepayers realizing net benefits over the life of the project. Turkey Point 6 and 7 are projected to produce annual fuel savings of over \$1 billion dollars starting in 2021 and about \$94 billion over the life of the units when compared to a combined cycle alternative. As environmental compliance costs increase, so do the benefits associated with Turkey Point 6 and 7 because nuclear generation is considered a "non-emitting" technology for GHG emissions. Nuclear power plants have an initial licensed operating life of 40 years with the potential to

renew the operating license for another 20 years. Therefore, the fuel and environmental benefits of Turkey Point 6 and 7 could continue beyond the analysis presented in this proceeding.

FPL shall provide a long-term feasibility analysis as part of its annual cost recovery process which, in this case, shall also include updated fuel forecasts, environmental forecasts, break-even costs, and capital cost estimates. In addition, FPL should account for sunk costs. Providing this information on an annual basis will allow us to monitor the feasibility regarding the continued construction of Turkey Point 6 and 7.

Compliance with Section 403.519(4)(a)5, F.S., and Rule 25-22.081, F.A.C.

We find that FPL has complied with the requirements of Section 403.519(4)(a)5, F.S., and Rule 25-22.081, F.A.C.

Section 403.519(4)(a)5, F.S., provides that an applicant's petition shall include:

[i] information on whether there were any discussions with any electric utilities regarding ownership of a portion of the nuclear or integrated gasification combined cycle power plant by such electric utilities.

Furthermore, Rule 25-22.081(2)(d), F.A.C., specifies that an applicant's petition shall contain, "[a] summary of any discussions with other electric utilities regarding ownership of a portion of the plant by such electric utilities."

We approved a stipulation, as previously discussed, on this issue between FPL, FMEA, FMPPA, JEA, OUC, and Seminole. As a result of the stipulation, FMEA, FMPPA, JEA, OUC, and Seminole were excused from the remainder of the hearing. OPC and the Krasowskis were not parties to the stipulation; thus, this issue remained viable as to those parties.

In its petition, FPL states that the company has held preliminary discussions regarding potential ownership with several Florida utilities who have expressed interest in the plant. FPL argues that its petition, as well as witness Scroggs' testimony, address the ownership discussions that have taken place; thus, on its face, the requirements of 403.519, F.S., and Rule 25-22.081, F.A.C., have been met.

OPC did not file a brief with respect to this issue. The Krasowskis assert that the petition does not contain a summary of discussions regarding ownership. In addition, the Krasowskis contend that others and ratepayers from other Florida utilities may have wanted to participate in this docket but were not given adequate information about discussions concerning joint ownership.

We find that FPL met the requirements of Section 403.519(4)(a)5, F.S., and Rule 25-22.081, F.A.C. Witness Scroggs testified that FPL has discussed the potential for ownership participation with utilities who have expressed an interest. FPL has held discussions with FMPPA and OUC and received an expression of interest from Seminole subsequent to this filing. No evidence was presented to the contrary. Based on the stipulation of this issue between FPL and

the parties mentioned previously, FPL will continue negotiations with interested parties as deemed appropriate.

### Conclusion and Additional Requirements

FPL argues that the record shows that Turkey Point 6 and 7 is the best available base-load option to enhance fuel diversity and help FPL achieve reductions in CO<sub>2</sub> emissions. FPL contends that the evidence demonstrates that Turkey Point 6 and 7 is the preferred alternative in nearly all future fuel cost and environmental compliance cost scenarios. Accordingly, FPL argues that based on the record evidence, the Commission should grant its petition to determine the need for Turkey Point 6 and 7.

OPC did not file a brief with respect to this issue. JEA and Seminole contend that the Commission should grant FPL's petition to determine the need for Turkey Point 6 and 7 based on the resolution of the foregoing issues.

The Krasowskis argue that FPL's petition should not be granted. Instead, the Krasowskis contend that they expect the Commission will continue to pursue innovative energy efficiency and conservation strategies, and develop programs to increase the use of clean renewable generating options.

We hereby approve FPL's petition for determination of need for Turkey Point 6 and 7 for the following reasons:

First, FPL demonstrated a need for additional capacity by 2018. Turkey Point 6 and 7 will add 2,200-3,040 MW of nuclear fueled base-load generating capacity which is needed to keep pace with the increasing demand for reliable power and the steady population growth in the State of Florida.

Next, Turkey Point 6 and 7 represents a critical component in FPL's efforts to develop fuel diversity and reduce dependence on natural gas. A more balanced fuel portfolio will result in less volatile total fuel costs over time.

In addition, relatively stable nuclear fuel costs will shield ratepayers against volatile price fluctuations. Similarly, the lack of emissions during operation will guard against future environmental compliance costs.

The evidence shows that despite FPL's proposed incremental increase of an additional 1,899 MW, more than 5,000 MW of cost-effective incremental DSM would still be needed to meet FPL's demand needs.

Lastly, FPL's analysis illustrates a high probability of customer savings during the life of Turkey Point 6 and 7. Additional analyses requested by our staff illustrated reasonable probability of customer savings within 20 years of commercial operation of Turkey Point 6 and

7. Therefore, the fuel and environmental benefits of Turkey Point 6 and 7 could continue beyond the analysis presented in this proceeding.

Based on the foregoing, we find that FPL has demonstrated a need for Turkey Point 6 and 7. FPL shall provide a long-term feasibility analysis as part of its annual cost recovery process which, in this case, shall also include updated fuel forecasts, environmental forecasts, break-even costs, and capital cost estimates. In addition, FPL should account for sunk costs. Providing this information on an annual basis will allow us to monitor the feasibility regarding the continued construction of Turkey Point 6 and 7.

#### Advance Forging Reservation Payments

FPL seeks concurrence from this Commission that it should proceed with making advance forging reservation payments to Japan Steel Works, either directly or indirectly, prior to the completion of the Rule 25-6.0423, F.A.C., cost recovery proceeding in 2008. According to FPL, in this proceeding, we should acknowledge the necessity for FPL to make such payments in order to mitigate the risks associated with the overall project schedule. FPL proposes that the prudence of the commercial arrangement itself, i.e. contractual terms, including price terms, portability, or other compensatory aspects should be determined in the ordinary course of the annual cost recovery proceeding. FPL further clarifies that the effect of our decision would prevent further review and consideration of whether that commitment should have been made in the time frame contemplated. Finally, FPL witness Olivera stated that FPL is seeking our approval for FPL to engage in such payment commitments in order to meet the timeline of the project. FPL also states that it is not seeking a determination of the prudence of the commercial arrangements, including the contractual terms, including price terms, portability, or other compensatory aspects as part of this proceeding.

Advance forging reservation payments must be made years in advance of producing the ultra-heavy forgings for nuclear reactor plant components. FPL asserts that it would have to make the forging reservation payments in June 2008, after reactor design selection is complete, in order to maintain the proposed 2018 and 2020 in-service dates. Japan Steel Works holds an effective monopoly for such forgings. FPL witness Scroggs stated that the commercial arrangements for the advance forging reservations are still being negotiated. It is unclear whether payments will be remitted to a reactor designer, either Westinghouse or General Electric, or directly to Japan Steel Works. Westinghouse's current negotiations with Japan Steel Works, conducted on behalf of FPL, indicate that FPL's reservation payments for the forgings for two AP1000 reactors would be \$8 to \$12 million, in 2007 dollars. FPL estimates the forging reservation payments for Turkey Point 6 and 7 would be \$16 million. The estimate is based on the addition of \$3 million to the \$12 million estimate, as determined by FPL witness Scroggs, to account for uncertainties in both the underlying estimate and the ultimate reactor design chosen, and an additional \$1 million due to price escalation and rounding.

Forging reservation payments could possibly be tradable. Forging reservation payments have been made in the past by FPL for other power plant forgings, but the forging reservation

payments considered in this instance require significantly longer lead times and higher payment amounts.

FPL witness Scroggs stated that it is possible, but a very low probability, that FPL would make an advance forging reservation payment to Westinghouse, but then later opt for the General Electric reactor design, thereby causing FPL to have to make another advance forging reservation payment to General Electric, essentially doubling the payment from \$16 million to \$32 million. Witness Scroggs stated that if FPL were to make a final technology decision and then determined to make the advance forging reservation payment to a particular vendor, FPL would be very certain to remain with that project. Witness Scroggs also indicated that for a double payment event to occur, there would have to be no remarket value for the payment made to Westinghouse and the forging reservation contract would have to exclude terms allowing for the application of the Westinghouse reservation payment to the General Electric forgings in the unlikely event that FPL found it necessary to switch its choice of reactor designer to General Electric.

FPL witness Scroggs indicated that FPL makes its request for a prudence determination of FPL's decision to enter into advance forging reservation payments in this proceeding because FPL's decision must take place in advance of the cost recovery process established in Rule 25-6.0423, F.A.C. He noted that formal Commission decisions on nuclear power plant cost recovery will not be rendered until as late as October 1, 2008, but the decision to make the payments must be rendered by June 2008.

The Krasowskis assert that the matter should be addressed as provided in Rule 25-6.0423, F.A.C., in general, and Rule 25-6.0423(5), F.A.C., specifically, rather than addressed in this docket. The Krasowskis argue that FPL does not require a determination in this docket to act on making a reservation for its place in line for the forging work.

OPC contends that it is appropriate for FPL to make a commitment of approximately \$8 million to \$16 million either directly to Japan Steel Works or through intermediaries Westinghouse or General Electric for an advance forging reservation to preserve the potential for 2018-2020 in service dates; however, the prudence of all aspects of the commercial arrangement itself should be determined in the ordinary course of the annual cost recovery proceeding.

OPC argues that, if we grant FPL's petition to determine the need for this proposal, the high level of costs associated with the construction of the proposed power plants will be funded by the state's consumers of electricity. OPC contends that delays which will inflate these costs should be avoided. Thus, it is appropriate for FPL to take into account advance payments for long lead procurement items to preserve the potential for 2018-2020 in-service dates.

Nuclear power plant construction is an essential component of meeting the state's long term electric reliability requirements, as reflected in Section 366.93, F.S. FPL should take all reasonable steps to meet the proposed in-service dates. We agree with FPL and OPC that careful scheduling of the construction of the components of a nuclear power plant is essential in order to maximize the potential for achieving the proposed in-service dates of the units. A critical part of

the scheduling is to secure large forgings manufacturing space, which FPL has shown requires advance reservation payments to be made, either directly or indirectly, to the sole supplier of such forgings, Japan Steel Works.

During the hearing, concerns were raised that it was premature for the Commission to address this issue in the need determination process. FPL witness Scroggs was asked several questions regarding the necessity for approval of FPL's decision to enter into the advanced forgings reservation payments at this time. Witness Scroggs responded that the expenditure will fall out of the sequence of the normal prescribed cost recovery process (the NCRC proceeding). It was also noted that there are other expenses that will be incurred prior to the NCRC proceeding which the utility will deem to be reasonable and necessary, but FPL has not asked for pre-approval of those expenses. Additional questions arose as to why it was necessary for the Commission to approve or direct the reservation payments if there is remarket value associated with the reservations. Additionally, further concerns were expressed about the possibility of double payments for advanced forging reservation payments which may be required under certain circumstances.

We believe that there is a substantial basis for concluding that the advanced forging reservation payments for the proposed nuclear power plant may be considered during the NCRC proceeding. Witness Scroggs indicated that the lead times for forging reservation payments for the proposed nuclear units were significantly longer than the lead times for similar reservation payments which had been paid by FPL in the past for conventional plant steam turbines and generators. The reservation payments are also unique in that there is only one supplier, Japan Steel Works, with the capability to manufacture the ultra-heavy forgings required for the proposed nuclear units. While reservation payments may hold remarket value, and thus mitigate to some extent the risks of making such payments, it is uncertain whether FPL would be capable of trading the forging reservation payments. Additionally, FPL has shown that it is necessary to enter the queue for forging reservations as early as possible due to the growing worldwide demand competing for limited supply of manufacturing space for large forgings. Furthermore, we expect FPL to take all reasonable actions to meet the proposed in-service dates, which may include committing to other expenditures critical to the construction process prior to the conclusion of the NCRC proceeding.

While the issues related to the costs associated with a nuclear power plant would normally be addressed in the context of the NCRC proceedings, in this instance, FPL's decision to engage in the payments is reasonable, subject to the review of detailed contract provisions in NCRC proceedings. The unusually long lead times associated with the reservation payments prior to the actual manufacture of the forgings, and the criticality of the reservations to the overall project, differentiate this commitment from other more traditional contractual commitments.

No nuclear power plants have been constructed in Florida since FPL placed the St. Lucie 2 nuclear generating unit into service in 1983. The state as a whole relied on the construction and purchase of coal-fired generation through the 1980s turning to low cost natural gas fired generation throughout the 1990s up until the present. Much has been done at the federal and

state level to promote the development of new nuclear generation. Because of the high risk nature of construction of a nuclear power plant, it is imperative that FPL take all necessary steps to maintain the planned project schedule, including advance forging reservation payments. FPL is seeking some measure of certainty regarding the construction of its next nuclear power plant. We believe it is reasonable for FPL to seek assurances for the first nuclear power plant it has built in several decades.

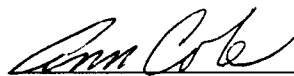
We are in agreement with both FPL and OPC that all specific contractual terms, including price, portability, and other compensating aspects of such payments shall remain subject to our full prudence review in future NCRC proceedings. While the evidence in the record indicates that advance forging reservation payments ultimately required for Turkey Point 6 and 7 may range between \$8 million to \$16 million based on current negotiations, we will weigh all evidence available at the time of the NCRC proceedings in determining the overall prudence of the price paid for the reservations rather than selecting an acceptable range of payment at this time.

Based on the foregoing, it is

ORDERED by the Florida Public Service Commission that Florida Power & Light Company's petition for determination of need for Turkey Point Nuclear Units 6 and 7 is granted. It is further

ORDERED that this docket shall be closed if no appeal is filed within the time permitted for filing an appeal of this Order.

By ORDER of the Florida Public Service Commission this 11th day of April, 2008.



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ANN COLE  
Commission Clerk

( S E A L )

KEF



NOTICE OF FURTHER PROCEEDINGS OR JUDICIAL REVIEW

The Florida Public Service Commission is required by Section 120.569(1), Florida Statutes, to notify parties of any administrative hearing or judicial review of Commission orders that is available under Sections 120.57 or 120.68, Florida Statutes, as well as the procedures and time limits that apply. This notice should not be construed to mean all requests for an administrative hearing or judicial review will be granted or result in the relief sought.

Any party adversely affected by the Commission's final action in this matter may request:

- 1) reconsideration of the decision by filing a motion for reconsideration with the Office of Commission Clerk, 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399-0850, within five (5) days of the issuance of this order in the form prescribed by Rule 25-22.060, Florida Administrative Code; or
- 2) judicial review by the Florida Supreme Court in the case of an electric, gas or telephone utility or the First District Court of Appeal in the case of a water and/or wastewater utility by filing a notice of appeal with the Office of Commission Clerk, and filing a copy of the notice of appeal and the filing fee with the appropriate court. This filing must be completed within thirty (30) days after the issuance of this order, pursuant to Rule 9.110, Florida Rules of Appellate Procedure. The notice of appeal must be in the form specified in Rule 9.900(a), Florida Rules of Appellate Procedure.