BEFORE THE FLORIDA
PUBLIC SERVICE COMMISSION

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DOCKET NO. 08_____-EI
FLORIDA POWER & LIGHT COMPANY

IN RE: FLORIDA POWER & LIGHT COMPANY'S PETITION TO DETERMINE NEED FOR CONVERSION OF CAPE CANAVERAL PLANT

IN RE: FLORIDA POWER & LIGHT COMPANY'S PETITION TO DETERMINE NEED FOR CONVERSION OF RIVIERA PLANT

DIRECT TESTIMONY & EXHIBITS OF:

DR. STEVEN R. SIM

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

FLORIDA POWER & LIGHT COMPANY

DIRECT TESTIMONY OF DR. STEVEN R. SIM

DOCKET NO. 08_____ - EI

APRIL 30, 2008

Q. Please state your name and business address.

A. My name is Steven R. Sim, and my business address is 9250 West Flagler Street, Miami, Florida 33174.

Q. By whom are you employed and what position do you hold?

A. I am employed by Florida Power & Light Company (FPL) as Senior Manager of Integrated Resource Planning in the Resource Assessment & Planning Business Unit.

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

A. I supervise and coordinate analyses that are designed to determine the magnitude and timing of FPL's resource needs and then develop the integrated resource plan with which FPL will meet those resource needs.

Q. Please describe your education and professional experience.

A. I graduated from the University of Miami (Florida) with a Bachelor's degree in Mathematics in 1973. I subsequently earned a Master's degree in Mathematics from the University of Miami (Florida) in 1975 and a Doctorate in Environmental Science and Engineering from the University of California at Los Angeles (UCLA) in 1979.

While completing my degree program at UCLA, I was also employed full-time as a Research Associate at the Florida Solar Energy Center during 1977 - 1979. My responsibilities at the Florida Solar Energy Center included an evaluation of Florida consumers' experiences with solar water heaters and an analysis of potential renewable resources including photovoltaics, biomass, wind power, etc., applicable in the Southeastern United States.

In 1979 I joined FPL. From 1979 until 1991, I worked in various departments including Marketing, Energy Management Research, and Load Management, where my responsibilities concerned the development, monitoring, and cost-effectiveness of demand side management (DSM) programs. In 1991 I joined my current department, then named the System Planning Department, where I held different supervisory positions dealing with integrated resource planning. In late 2007 I assumed my present position.

Q. Are you sponsoring any exhibits in this case?

A. Yes. I am sponsoring Exhibits SRS-1 through SRS-9, which are attached to my testimony:

Exhibit SRS-1 FPL's Ten Year Power Plant Site Plan 2008-2017;

Exhibit SRS-2 Projection of FPL's Capacity Needs: 2008-2017;

Exhibit SRS-3 Resource Plans Utilized in the Analyses;

Exhibit SRS-4 Comparison of Two Resource Plans: Projection of Annual Summer Reserve Margins 2010-2017;

Exhibit SRS-5	Economic Evaluation Results for Two Resource Plans – Generation System Costs Only;
Exhibit SRS-6	Economic Evaluation Results for Two Resource Plans - All Costs;
Exhibit SRS-7	Comparison of Two Resource Plans: Projection of System Emissions 2010-2017;
Exhibit SRS-8	Comparison of Two Resource Plans: Projected 2017 System CO_2 Emission Levels; and,
Exhibit SRS-9	Comparison of Two Resource Plans: Projected System Oil and Natural Gas Usage: 2013-2017.

Q. What is the scope and purpose of your testimony?

A. My testimony addresses seven main points. First, I briefly discuss FPL's resource planning process. Second, I discuss how FPL determines what its future resource needs are projected to be. I also discuss FPL's projection of additional resource needs for the 2008-2017 time period. Third, I discuss FPL's DSM efforts. Fourth, I briefly discuss the resource option, conversion of two existing FPL plants, which is the focus of the FPL's analyses that are presented in this filing. Then I present and discuss the two resource plans that were developed in order to analyze the conversion option. Fifth, I present the results of FPL's economic analyses of the two resource plans. Sixth, I present the results of a non-economic analysis that examined the two resource plans from three perspectives. Seventh, I summarize the results of the economic and non-economic analyses of the two resource plans. The conclusion I draw from this information is that approval for the conversion of two of FPL's existing plants is the best, most cost-effective option and its approval is in the best interests of FPL's customers.

Q. Please summarize your testimony.

A. In FPL's resource planning work in late 2007 and early 2008, one of the focal points was the possibility of a conversion of various existing FPL plants. This conversion basically involves taking the existing generating unit(s) at each plant out-of-service, removing the unit(s), and building a new 3x1 G combined cycle (CC) unit at the plant. The new 3x1 G CC unit would be virtually identical to those CC units being constructed at FPL's West County Energy Center (WCEC) site. FPL's analysis identified that the best candidates for conversion were the generating units at the Cape Canaveral plant; Cape Canaveral units 1 & 2, and the generating units at the Riviera plant; Riviera units 3 & 4. (In the remainder of my testimony I will generally refer only to the Cape Canaveral and Riviera plants.)

In order to analyze these conversions, FPL developed two resource plans. One of these, the Resource Plan with Conversions, featured the conversions of the two plants. The Cape Canaveral plant is projected to be taken out-of-service in September 2010 with completion of the conversion at the plant in 2013. The Riviera plant is projected to be taken out-of-service in April 2011 with completion of the conversion at the plant in 2014. Therefore, the existing capacity at the two plants would be permanently removed from the FPL system and replaced with two new 3x1 G CC units, one new CC at each of the two plants.

The other resource plan, the Resource Plan without Conversions, did not include any conversions. All new generating units in this resource plan were assumed to be new 3x1 G CC units at new, "Greenfield" sites, including a new 3x1 G CC unit projected to be added in 2014.

FPL then analyzed the two resource plans from both an economic and a non-economic perspective. In the economic analysis, the cumulative present value of revenue requirements (CPVRR) were calculated for each resource plan and compared. In the non-economic analysis, three perspectives were taken. First, system annual emissions of sulfur dioxide (SO_2), nitrogen oxides (NO_x), and carbon dioxide (CO_2) emissions were projected for each of the resource plans and directly compared. Second, the CO_2 projections for 2017 for each resource plan were compared in light of Governor Crist's Executive Order No. 07-127 that calls for significant CO_2 reductions to be reached by that year. Three, the two resource plans were directly compared in regard to projections of FPL system annual usage of oil and natural gas.

The economic analysis results showed that the Resource Plan with Conversions results in an economic savings to FPL's customers of $457 million CPVRR compared to the Resource Plan without Conversions.

The non-economic analysis found that the Resource Plan with Conversions, compared to the Resource Plan without Conversions, is projected to result in an average during the 2013 through 2017 time period of approximately 4,600 tons per year less of SO_2 emissions, 3,900 tons per year less of NO_x emissions, and 960,000 tons per year less of CO_2 emissions once the conversions have been completed. During the life of the conversion plants, the total emission reductions are projected to be approximately 60,300 tons of SO_2, 55,300 tons of NO_x, and 15.7 million tons of CO_2. In regard to CO_2 emissions in the year 2017 (the year targeted in the Governor's Executive Order), the Resource Plan with Conversions is projected to result in approximately 900,000 tons less of CO_2 emissions compared to the Resource Plan without Conversions. The Resource Plan with Conversions is also projected to achieve significant reductions in the FPL system annual usage of oil and natural gas, once the conversions are completed. This outcome is primarily driven by the fact that the Resource Plan with Conversions is projected to result in an improvement of approximately 1.1% in FPL's system average heat rate compared to the Resource Plan without Conversions.

Consequently, the Resource Plan with Conversions is the best choice for FPL's customers from both an economic and a non-economic perspective. Consequently, FPL's petition for a determination of need to convert its existing Cape Canaveral and Riviera plants should be granted.

I. FPL'S RESOURCE PLANNING PROCESS

Q. What is the objective of FPL's resource planning process?

A. FPL's integrated resource planning (IRP) process was developed in the early 1990s and has been used since that time to determine three things: 1) the timing of when new resources are needed, 2) the magnitude (MW) of the needed resources, and 3) the type of resources that should be added. The type of resources that should be added is primarily based on a determination of the resources that result in the lowest average electric rates for FPL's customers. It should be noted that when only power plants or power purchases are the resources in question, the determination can be made on the basis of lowest total costs. The lowest total cost perspective in these cases is the same as the lowest average electric rate perspective, because the number of kilowatt-hours over which the costs are distributed does not change, as would be the case when DSM resources are being examined.

Q. Please provide an overview of this resource planning process.

A. The IRP process has four main tasks. These four tasks are as follows:

- Task 1: Determine the magnitude and timing of FPL's new resource needs.
- Task 2: Identify the resource options and resource plans that are available to meet the determined magnitude and timing of FPL's resource needs (i.e., identify the available competing options and resource plans).

- Task 3: Evaluate the competing resource options and resource plans in regard to system economics and non-economic factors.
- Task 4: Select a resource plan from which FPL management will commit, as needed, to the nearer-term options.

As previously mentioned, FPL has used this basic resource planning approach for its major resource decisions since the early 1990s. Additional information regarding FPL's IRP process appears in FPL's Ten Year Power Plant Site Plan 2008-2017 that is presented as Exhibit SRS-1. This document also provides a variety of additional information regarding the FPL system.

Q. Was this resource planning approach used to analyze the conversion option?

A. Yes. The IRP process outlined above describes the basic approach that FPL takes in its major resource planning efforts, including the analysis presented in this filing.

In regard to the analysis work conducted for this filing, each of the four tasks outlined above was performed. Once the timing and magnitude of FPL's resource needs were established, FPL then identified resource options that could meet those needs. These options included the conversion of the existing Cape Canaveral and Riviera plants, and a 3x1 G combined cycle (CC) unit at a Greenfield site. FPL then developed two resource plans that included these competing resource options. System economic and non-economic analyses were then conducted and a decision was made as to the best resource plan and associated resource option for FPL's customers.

II. FPL'S PROJECTION OF RESOURCE NEEDS FOR 2008-2017

Q. How does FPL decide whether it needs additional future resources?

A. FPL uses two analytical approaches in its reliability analyses to determine the timing and magnitude of its future resource needs. The first approach is to make projections of reserve margins both for winter and summer peak hours for future years. A minimum reserve margin criterion of 20% is used to judge the projected reserve margins. The 20% reserve margin criterion is based on the reliability planning standard that FPL currently believes is the appropriate criterion, and that FPL committed to maintain and the Commission approved in Order No. PSC-99-2507-S-EU.

The second approach is a Loss-of-Load-Probability (LOLP) evaluation. Simply stated, LOLP is an index of how well a generating system may be able to meet its demand (i.e., a measure of how often load may exceed available resources). In contrast to the reserve margin approach, the LOLP approach looks at the daily peak demands for each year, while taking into consideration the probability of individual generators being out of service due to scheduled maintenance or forced outages. LOLP is typically expressed in units of "numbers of times per year" that the system demand could not be served.

FPL's LOLP criterion is a maximum of 0.1 days per year. This LOLP criterion is generally accepted throughout the electric utility industry.

For a number of years now, FPL's projected need for additional resources has been driven by the summer reserve margin criterion. This again was the case in FPL's reliability analysis that was the basis for FPL's projected resource needs for 2008-2017.

Q. In making its projection of FPL's future resource needs, what were the assumptions used?

A. The assumptions used in making the projection of resource needs were identical to the assumptions used in the revised projection of resource needs presented in FPL's most recent need filing for the West County Energy Center unit 3 (WCEC 3). The identical assumptions include:

- All cost-effective DSM currently approved by the Commission through 2014 as FPL's DSM Goals, additional DSM through 2014 identified by FPL after the DSM Goals were established, plus a projection of continued DSM implementation after 2014 at a rate commensurate with currently projected annual implementation rates for the years immediately preceding 2014;
- 414 MW of new capacity from the uprates at FPL's four existing nuclear units;
- FPL's February 2008 load forecast that includes the Lee County Electric Cooperative (Lee County) load. (This load forecast was

also referred to as the Revised Load Forecast in the WCEC 3 determination of need filing);

- No new units after the addition of WCEC units 1 & 2 in 2009 and 2010, respectively;
- No additional modifications/enhancements to FPL's existing generating units;
- 143 MW of capacity from assumed contract extensions and/or new contracts with renewable energy (waste-to-energy) facilities currently under contract but whose current contracts are set to expire in the 2010 – 2012 time period; and,
- 126 MW of additional renewable firm capacity as a "placeholder" for renewable capacity that would be provided by new renewable purchases and/or FPL's renewable development efforts.

Q. What was the magnitude and timing of the projection of resource needs?

A. The incremental resource need projection for 2008-2017 is as follows: no resource need for 2008-2012; a need of 301 MW (Supply) or 251 MW (DSM) for 2013; an additional need of 1,232 MW (Supply) or 1,027 MW (DSM) for 2014; an additional need of 632 MW (Supply) or 526 MW (DSM) for 2015; an additional need of 1,996 MW (Supply) or 1,663 MW (DSM) for 2016; and an additional need of 683 MW (Supply) or 569 MW (DSM) for 2017. These incremental annual resource need values add to a cumulative need value for 2011-2017 of 4,844 MW if the resource need is to be met by supply options, or 4,037 MW if the resource need is to be met by DSM.

The significant increases in the 2014 and 2016 needs are primarily due to the two factors. First, FPL will begin serving the entire Lee County load beginning in 2014 as discussed in FPL witness Dr. Rosemary Morley's testimony. Second, in 2016 two significant power purchases are projected to no longer be providing capacity and energy to FPL. One of these is a 931 MW power purchase agreement with the Southern Company that expires at the end of 2015. The other is a 381 MW power purchase from the St. Johns River Power Park (SJRPP). Due to Internal Revenue Service regulations, FPL will no longer be able to receive capacity and energy from the SJRPP agreement once a certain amount of energy has been received. FPL currently estimates that this point will be reached in the first half of 2016. Because the loss of capacity from these two power purchases is projected to occur in 2016, and the decision years in this filing are 2013 and 2014, the loss of these power purchases are not a factor in this filing.

This projection of resource needs to meet the summer reserve margin criterion for 2008–2017, if the resource needs are to be met by Supply options, are shown in Exhibit SRS-2. This document also shows that, if these levels of Supply additions are added to meet the summer needs, these additions will also satisfy the lower resource needs to meet the winter reserve margin criterion.

III. DEMAND SIDE MANAGEMENT (DSM)

Q. When did FPL begin its DSM efforts, and how have they progressed over time?

A. FPL has a long history of identifying, developing and implementing DSM resources to avoid or defer the construction of new power plants. FPL first began offering DSM programs in the late 1970s with the introduction of its Watt-Wise Home Program. An increasing number of additional DSM programs were offered throughout the 1980s and 1990s, and continues in this decade. These programs have included both conservation and load management programs, targeting the residential, commercial, and industrial markets.

FPL's portfolio of DSM programs has evolved over time. FPL continually looks for new DSM opportunities in its research and development activities. When a new DSM opportunity is identified and projected to be cost-effective, FPL attempts either to implement a new DSM program or to incorporate this DSM opportunity into one or more of its existing DSM programs. In addition, FPL has modified DSM programs over time in order to maintain the cost-effectiveness of the programs. This allows FPL to continue to offer the most cost-effective programs available. On occasion, FPL has also terminated DSM programs that were no longer cost-effective and could not be modified to become cost-effective.

Q. How effective has FPL been in implementing DSM, and what are the resulting impacts of these efforts?

A. FPL has been very successful in cost-effectively avoiding or deferring new power plant construction using DSM. Since the inception of its programs through the end of 2007, FPL has achieved 3,961 MW (at the generator) of summer peak demand reduction, 2,913 MW (at the generator) of winter peak demand reduction, and 42,301 GWh (at the generator) of energy savings. FPL has also completed more than 2,537,600 energy audits of customers' homes and facilities.

After accounting for reserve margin requirements, the 3,961 MW of summer peak demand reduction from FPL's DSM efforts equates to 4,753 MW (= 3,961 x 1.20) of new generation facilities that otherwise would have been needed. Stated another way, this amount of summer peak demand reduction has eliminated the need for the equivalent of 12 power plants of 400 MW capacity each. Most importantly, FPL has achieved this level of demand reduction without penalizing customers who are non-participants in its DSM programs. FPL has been able to avoid penalizing non-participating customers by offering only DSM programs that are designed to reduce electric rates for all customers, DSM participants and non-participants alike.

Q. How do FPL's DSM efforts compare to those of other utilities?

A. The U.S. Department of Energy (DOE) reports annually on the effectiveness of utility DSM efforts through its Energy Information Administration. DOE separately measures both conservation and load management. Based on the most current comparative data available, which is for the year 2006, FPL is ranked number one nationally for cumulative conservation (i.e., energy efficiency) achievement and number three in load management.

Q. Has FPL continued to refine and improve its DSM programs, including looking for additional cost-effective DSM opportunities?

A. Yes. FPL continually seeks ways to refine, improve, and expand its portfolio of cost-effective DSM programs through its on-going program monitoring work as well as its research and development activities.

Q. What is FPL's current DSM projection?

A. Column (5) in Exhibit SRS-2 shows FPL's current projection of DSM (summer MW reduction) through August 2017. This amount of DSM reflects FPL's DSM Goals that were approved by the Commission in Order No. PSC-04-0763-PAA-EG, additional cost-effective DSM that was identified by FPL subsequent to the establishment of FPL's DSM Goals, and a projected continuation of DSM implementation for 2015-2017 at implementation rates commensurate with those for the years immediately preceding 2014.

Q. Do FPL's projections of resource needs take into account all DSM found to be cost-effective and approved by the Commission?

A. Yes. FPL's projection of resource needs for 2008-2017 presented in Exhibit SRS-2 already account for all of the reasonably achievable, cost-effective DSM identified by FPL and approved by the Commission. And, as mentioned above, the amount of DSM included in FPL's projection of resource needs also includes additional DSM found to be cost-effective after FPL's DSM Goals were established, plus an assumed continuation of DSM implementation for 2015-2017 at annual implementation rates commensurate with planned DSM implementation rates in the years immediately preceding 2014.

IV. THE RESOURCE OPTIONS AND RESOURCE PLANS ANALYZED

Q. Briefly describe the resource options that were considered in FPL's analyses.

A. The resource options that were considered in FPL's analyses are gas-fired combined cycle (CC) options. There are two reasons for this. First, to date, none of the new advanced technology coal generating units for which recent approval has been sought by electric utilities in Florida has received both need and permitting approval. In addition, even if need and permitting approval were possible, the longer construction time required for new coal-fired units makes it very unlikely that such units could be added in the decision years of 2013 and 2014 in this filing. Even longer construction times are true for new nuclear units. Therefore, only gas-fired generating unit additions are feasible new construction options in this time frame.

Second, in regard to the two types of gas-fired generating options, CC and combustion turbine (CT) units, FPL's analyses over the years have consistently shown that, due to the substantial load growth on FPL's system, CC units are more economical generating options than are CT units. The much greater fuel efficiency of CC units, which results in much higher capacity factors and system fuel savings of CC units, more than offset the lower capital cost of CT units. These considerations led to an evaluation of 3x1 G CC units; i.e., the same technology chosen for WCEC units 1, 2, and 3.

FPL then considered two different "paths" to take in adding new 3x1 G CC capacity. One path is to continue to build 3x1 G CC units at new, Greenfield sites. Each 3x1 G CC unit at a Greenfield site is assumed to provide 1,219 MW (summer). The second path is to "convert" existing plants. In a conversion, an older, less efficient generating unit(s) at the plant would be taken out of service, removed from the plant, and replaced with a new 3x1 G CC unit.

After considering a number of potential conversion options, FPL determined that its Cape Canaveral and Riviera plants were the best choices for a conversion path to adding new capacity.

The Cape Canaveral plant is projected to be taken out-of-service in September 2010 with completion of the conversion at the plant in June 2013. The Riviera plant is projected to be taken out-of-service in April 2011 with completion of the conversion at the plant in June 2014. Therefore, the existing capacity at the two plants would be permanently removed from the FPL system and replaced with two new 3x1 G CC units, one new CC unit at each of the two plants.

In the conversion option, the existing capacity at the Cape Canaveral plant, 792 MW (summer), and the existing capacity at the Riviera plant, 565 MW (summer), would be removed. At each plant, a new 3x1 G CC unit would be added. The projected capacity of the new 3x1 G CC units is 1,219 MW (summer) at the Cape Canaveral plant and 1,207 MW (summer) at the Riviera plant.

Consequently, the conversion of both plants will result in a net summer capacity addition of 427 MW (= 1,219 – 792) at the Cape Canaveral plant and 642 MW (= 1,207 – 565) at the Riviera plant. Together, the net summer capacity addition from the conversion path will be 1,069 MW (= 427 + 642). While the net summer capacity addition from the conversion path is slightly less (150 MW) than from a Greenfield 3x1 G CC unit (= 1,219 – 1,069), the conversion path will result in a significant improvement in FPL's system average heat rate as will be discussed later in my testimony.

Q. How did FPL analyze these two paths to adding the required new capacity?

A. Using the resource need projection presented in Exhibit SRS-2, and the previously discussed assumptions used in making that need projection, FPL developed two resource plans for use in its economic and non-economic analyses. One of these, the Resource Plan with Conversions, featured the conversions of the Cape Canaveral and Riviera plants. The other resource plan, the Resource Plan without Conversions, did not include any conversions and, instead, included a new 3x1 G CC unit in 2014 at a Greenfield site.

Q. Please describe these two resource plans.

A. The two resource plans are presented in Exhibit SRS-3. The two resource plans contain a number of similarities and a number of differences. The similarities can be summarized as follows:

- FPL's summer reserve margin criterion is met each year;
- The WCEC 3 unit is added in 2011;
- The nuclear uprates are added in 2011 and 2012;
- Two new 3x1 G CC units are added in 2016;
- The new nuclear units, Turkey Point 6 & 7, are added in 2018 and 2020, respectively; and,
- For the 2021-2040 time period, the required annual numbers of 2x1 F CC filler units are added.

The two plans differ primarily in the 2010-2017 time period and these differences can be summarized as follows:

For the Resource Plan with Conversions:

- The existing generating capacity is taken out-of-service at the Cape Canaveral plant in September 2010, and at the Riviera plant in April 2011. Consequently, all of the existing generating capacity at the two plants has been taken out of service by summer 2011;
- A new 3x1 G CC unit with a capacity of 1,219 MW (summer) at the Cape Canaveral plant is brought into service in 2013.
- A new 3x1 G CC unit with a capacity of 1,207 MW (summer) at the Riviera plant is brought into service in 2014; and,
- A five-month 500 MW firm power purchase is added in 2019 and a five-month 250 MW firm power purchase is added in 2020. (Both of these assumed purchases are from currently unspecified sources.)

For the Resource Plan without Conversions:

- A new 3x1 G CC with a capacity of 1,219 MW (summer) at a Greenfield site is added in 2014; and,
- A five-month 345 MW firm power purchase is added in 2019. (The assumed purchase is from a currently unspecified source.)

The Resource Plan without Conversions is identical to Resource Plan 1 in FPL's recent determination of need filing for WCEC 3.

Q. Are there differences in the summer reserve margins projected for the two resource plans?

A. Yes. Part of the information presented in the tabular format of Exhibit SRS-3 is a projection of annual summer reserve margins for each resource plan starting in 2010. Exhibit SRS-4 graphically displays the same summer reserve margin values for the 2010 through 2017 time period.

As shown in the graph, the projected reserve margins are identical for 2010, then differ significantly for the next two years as the Cape Canaveral and Riviera plants are taken out of service by the summer of 2011 in the Resource Plan with Conversions. The removal of this capacity in the Resource Plan with Conversions results in projected reserve margins of 21.7% in 2011 and 20.0% in 2012, compared with 27.9% in 2011 and 26.0% in 2012 for the Resource Plan without Conversions. Therefore, the projected difference in reserve margins is approximately a 6.0% lower reserve margin for the Resource Plan with Conversions. (For 2011: 27.9% - 21.7% = 6.2%; and for 2012: 26.0% - 20.0% = 6.0%.)

The projected summer reserve margins for the two resource plans become more comparable starting in 2013 as the first of the conversions (Cape Canaveral) comes in-service. The projected difference in reserve margins for

2013 is a 0.6% lower reserve margin for the Resource Plan with Conversions. This difference is maintained through the year 2017.

In summary, the summer reserve margins for the two resource plans differ for each year starting in 2011 (the first year in which there is a difference in the resource plans) through 2017, with the Resource Plan with Conversions having a lower reserve margin. In addition, for the years 2011 and 2012, the Resource Plan with Conversions has a significantly lower reserve margin.

Q. What costs were included in the economic analysis?

A. The economic analysis consisted of two steps. In the first step, for each resource plan, FPL evaluated the generator capital, capital replacement, and operation and maintenance (O&M) costs, transmission interconnection and integration capital costs, system emission costs, startup costs, firm gas transportation costs, project fuel costs, and system fuel costs. These costs are referred to in FPL's resource planning work as the Generator System costs and the values were derived using the P-MArea production costing model and FPL's Fixed Cost Spreadsheet Model; the same models that were used in FPL's last several determination of need filings. Through the use of P-MArea, the impacts that each new CC unit being evaluated would have on the dispatch of FPL's existing generating units located in Southeastern Florida were also captured.

In the second step of the economic analysis, the costs due to transmission losses were calculated and added to the Generator System costs.

In FPL's economic evaluation of resource plans, additional costs for transmission integration, upstream gas pipeline impacts, and cost of capital impacts are typically considered. In this analysis, the transmission integration costs were already accounted for in the Generator System costs. Likewise, the firm gas transportation costs included in the Generator System costs already addressed all upstream gas pipeline costs. Therefore, there were no additional upstream gas pipeline costs. Also, there were no additional impacts to FPL's cost of capital. All of the FPL self-build options were assumed to be constructed with a capital structure of 55.8% equity / 44.2% debt so there was no impact from any of the self-build options on FPL's target adjusted capital structure of 55.8% equity / 44.2% debt. In addition, the assumed power purchases that appear in both resource plans are assumed to be short-term (five-month) purchases for which there are no cost of capital impacts.

Q. **Why is it appropriate to perform economic analyses based on multi-year resource plans?**

A. It is not only appropriate to do this, but also necessary if one is to capture and fairly compare all of the impacts that competing generation options with different capacity amounts, terms-of-service, heat rates, types of fuel, and costs will have on FPL's system.

For example, assume we are comparing Option A and Option B that both offer the same amount of capacity. Option A has a heat rate of 7,000 Btu/kWh and is offered to FPL for 15 years. Option B has an 8,000 Btu/kWh heat rate and is offered for 20 years. Evaluating these options from a resource plan perspective allows one to capture the economic impacts of both the heat rate and term-of-service differences. The lower heat rate of Option A will allow it to be dispatched more than Option B, thus reducing the run time of FPL's existing units more than will Option B. This results in greater production cost savings for Option A. However, Option B's longer term-of-service means that it defers the need for future generation for a longer period. Therefore, Option B will provide capacity avoidance benefits for more years.

Only by taking a multi-year resource plan approach to the evaluation can factors such as these be captured and effectively compared. In the economic analyses, the resource plans created addressed the FPL system through the year 2040.

Q. Why are "filler" units needed in a resource plan evaluation?

A. The "filler" units are needed in a multi-year resource plan analysis as a proxy resource added to meet FPL's capacity needs for 2021–2040 (i.e., after the Turkey Point 6 & 7 new nuclear units are added in 2018 and 2020, respectively. In this way the resource plans being compared all meet FPL's reliability criteria for each year in the analysis period, ensuring both that the resource plans are comparable and that the results of the evaluation are meaningful.

V. THE RESULTS OF THE ECONOMIC ANALYSES

Q. What fuel cost and environmental compliance cost forecasts were used in the economic analysis?

A. In the economic analysis, FPL used fuel cost and environmental compliance cost forecasts developed using the most current information available through March 2008 regarding fuel costs and environmental compliance costs. The updated fuel cost and environmental compliance cost forecasts represent medium-level natural gas costs and medium-level CO_2 compliance costs.

FPL witness Heather Stubblefield discusses the fuel cost forecast in her testimony and FPL witness Kennard Kosky discusses the environmental compliance cost forecast in his testimony.

Q. Are these updated fuel costs and environmental compliance costs different from those used in FPL's analyses presented in the WCEC 3 determination of need filing?

A. Yes. The analyses performed in regard to the WCEC 3 determination of need filing used forecasts that were based on the most current information available regarding fuel costs and environmental compliance costs in mid-December

2007 when FPL's Request for Proposals (RFP) was issued. These forecasts were officially updated in the first quarter of 2008.

Q. Compared to the assumptions used in the analysis for the recent WCEC 3 determination of need filing, were there any other changes in assumptions used in the analysis for this filing?

A. Yes. Several other assumptions changed from those used in WCEC 3 analysis. That analysis used assumptions that were current at or near the December 13, 2007 issuance date of FPL's RFP. The analysis discussed in this filing used several other updated assumptions in addition to the fuel cost and environmental compliance cost forecasts previously mentioned.

FPL updated its cost of debt assumption from 6.43% to 6.60%. The discount rate also changed from 8.40% to 8.35%. The change in the discount rate assumption is due partly as a result of the change in the cost of debt assumption and partly because FPL no longer assumes that the federal manufacturing tax credit would likely apply to new generating units built in the time frame discussed in this analysis. This latter assumption change also resulted in the same discount rate (8.35%) being applied to both generation and non-generation costs in the analyses presented in this filing.

In addition, the projected capital cost of future Greenfield 3x1 G CC units has increased, and the projected firm gas transportation costs for future 3x1 G CC units has increased, compared to the assumptions used in the WCEC 3 filing.

Q. What were the results of the first step of the economic analysis of the resource plans?

A. As previously discussed, the first step of the economic analysis was to determine the Generator System costs. The results of the first step analysis are presented in Exhibit SRS-5.

At this stage of the economic analysis, the Resource Plan with Conversions is the most economical plan with an economic advantage of $362 million CPVRR compared to the Resource Plan without Conversions.

Q. How did the economic analysis results change in the second step of the economic analysis which adds the costs of transmission system losses?

A. Exhibit SRS-6 presents the results when the costs of transmission system losses are included in the analysis. These additional costs address both peak hour capacity losses and annual energy losses. In calculating the cost of these losses, the costs are presented in terms of relative costs to those of the Resource Plan with Conversions.

As shown in Exhibit SRS-6, the economic advantage of the Resource Plan with Conversions is increased to $457 million CPVRR compared to the Resource Plan without Conversions. The results presented in Exhibit SRS-6 represent the total system costs for the two resource plans.

Therefore, from an economic perspective, the Resource Plan with Conversions is clearly the economic choice. Therefore, the conversions of the existing Cape Canaveral and Riviera plants represent the best, most cost-effective choice for FPL's customers.

Q. **You explained earlier that FPL used a medium-level natural gas cost forecast and a medium-level CO_2 compliance cost forecast in its analyses. Would the conversion option still be the economic choice if FPL had used a high natural gas cost forecast and/or a high CO_2 compliance cost forecast?**

A. Yes. FPL conducted a sensitivity economic analysis that used an updated high CO_2 compliance cost forecast. The use of this compliance cost forecast increased the economic advantage of the Resource Plan with Conversions from $457 million CPVRR to $890 million CPVRR. FPL also conducted another sensitivity economic analysis in which it combined the updated high natural gas cost forecast with a high CO_2 compliance cost forecast. In this analysis, the economic advantage of the Resource Plan with Conversions increased further to $1,221 million CPVRR.

Consequently, if natural gas costs and/or environmental compliance costs turn out to be higher than the medium-level forecasted values used in FPL's economic analysis, the conversions of the two plants will provide even greater benefits to FPL's customers than those presented in this filing.

VI. THE RESULTS OF THE NON-ECONOMIC ANALYSIS

Q. What different perspectives of the FPL system were considered in the non-economic analysis?

A. The non-economic analysis focused on three perspectives in regard to the two resource plans. The first perspective is a direct comparison of projected system SO_2, NO_x, and CO_2 emissions for the years 2010 through 2017 for the two resource plans. The second perspective was a comparison of what the projected level of system CO_2 emissions would be for each resource plan in the year 2017 because one of the Executive Orders issued by Governor Crist in 2007 calls for significant CO_2 emission reductions by 2017. The third perspective is a direct comparison of projected system oil and natural gas usage for the two resource plans for the years 2015-2017; i.e., in the years immediately after the conversions would have been completed.

Q. What were the results of the Non-Economic Evaluation from the first perspective, a comparison of system emissions for the two resource plans?

A. In regard to the first perspective, a direct comparison of projected system emissions for each resource plan is presented in Exhibit SRS-7. As shown in this exhibit, the Resource Plan with Conversions is projected to result in lower annual system SO_2, NO_x, and CO_2 emissions than the Resource Plan without Conversions beginning in 2013; i.e., once the conversions have been completed. The annual average system emission reduction advantage of the Resource Plan with Conversions for the years 2013 through 2017 is approximately 4,600 tons for SO_2, 3,900 tons for NO_x, and 960,000 tons for CO_2. Over the life of the analyses (i.e., through 2040), the Resource Plan with Conversions is projected to save approximately 60,300 tons of SO_2, 55,300 tons of NO_x, and 15.7 million tons of CO_2, compared to the Resource Plan without Conversions.

Q. What were the results of the Non-Economic Evaluation from the second perspective, a comparison of system CO_2 emissions for the two resource plans in 2017, the year in which significant CO_2 emission reductions are called for by the Governor's Executive Order?

A. Exhibit SRS-8 presents the projected system CO_2 emissions in the year 2017 for the two resource plans in 2017. As shown in this exhibit, the projected system CO_2 emissions are approximately 62.7 million tons for the Resource Plan with Conversions and approximately 63.6 million tons for the Resource Plan without Conversions.

Q. What is the significance of these projected CO_2 emission values in light of the CO_2 emission reductions called for in the Governor's Executive Order?

A. By comparing this value to the projected values of 62.7 million tons in 2017 for the Resource Plan with Conversions, and the 63.6 million tons in 2017 for the Resource Plan without Conversions, it is clear that the Resource Plan with Conversions is projected to lower FPL's system CO_2 emissions by approximately 900,000 tons in 2017. This is a truly significant difference in annual CO_2 emissions that is attributable to the plant conversions. Therefore, the plant conversions will contribute significantly towards achieving the targets reflected in Governor Crist's Executive Order 07-127, and whatever specific legal requirements may be implemented as a result of that Order or pursuant to federal law.

Q. What were the results of the Non-Economic Evaluation from the third perspective, a comparison of FPL system usage of oil and natural gas for the two resource plans?

A. Exhibit SRS-9 presents the results of this comparison for the years 2013-2017; i.e., the years immediately following the conversions. The Resource Plan with Conversions is projected to reduce FPL's annual system oil usage by an average of approximately 9.6 million mmBTU, and to reduce FPL's annual system natural gas usage by an average of approximately 2.1 million mmBTU, compared to the Resource Plan without Conversions. This result is primarily driven by the fact that the Resource Plan with Conversions will result in a system average heat rate of 8,040 BTU/kwh by 2015 compared to 8,127 BTU/kwh in 2015 for the Resource Plan without Conversions, or an improvement of approximately 1.1%.

VII. CONCLUSIONS

Q. Would you please summarize the results of the economic and non-economic analyses?

A. Yes. The economic analysis results showed that the Resource Plan with Conversions is projected to result in an economic savings to FPL's customers of at least $457 million CPVRR compared to the Resource Plan without Conversions.

The non-economic analysis found that the Resource Plan with Conversions, compared to the Resource Plan without Conversions for the years 2013-2017, is projected to result in an average of approximately 4,600 tons per year less of SO_2 emissions, 3,900 tons per year less of NO_x emissions, and 960,000 tons per year less of CO_2 emissions. Over the life of the analyses (i.e., through 2040), the Resource Plan with Conversions is projected to save approximately 60,300 tons of SO_2, 55,300 tons of NO_x, and 15.7 million tons of CO_2, compared to the Resource Plan without Conversions. In addition, the Resource Plan with Conversions is projected to lower CO_2 emissions by more than 900,000 tons in 2017, the year addressed in the Governor's Executive Order. The Resource Plan with Conversions is also projected to significantly lower FPL system usage of oil and natural gas once the conversions are completed, a result that is driven by an improvement of approximately 1.1% in FPL's system average heat rate due to the conversions.

The Resource Plan with Conversions is clearly the best choice for FPL's customers from both an economic and a non-economic perspective. Consequently, FPL's petition for a finding of a determination of need to convert its existing Cape Canaveral and Riviera plants should be granted.

Q. Does this conclude your testimony?

A. Yes.

FPL

Ten Year Power Plant Site Plan

2008-2017

Submitted To:

***Florida Public
Service Commission***

***Miami, Florida
April 2008***

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Overview of the Document

Chapter 186, Florida Statutes, requires that each electric utility in the State of Florida with a minimum existing generating capacity of 250 megawatts (MW) must annually submit a Ten Year Power Plant Site Plan. This plan includes an estimate of the utility's electric power generating needs, a projection of how those needs will be met, and disclosure of information pertaining to the utility's preferred and potential power plant sites. This information is compiled and presented in accordance with rules 25-22.070, 25-22.071, and 25-22.072, Florida Administrative Code (F.A.C.).

This Ten Year Power Plant Site Plan (Site Plan) document is based on Florida Power & Light Company's (FPL) integrated resource planning (IRP) analyses that were carried out in 2007 and that were on-going in the first quarter of 2008. The forecasted information presented in this plan addresses the 2008–2017 time frame.

Site Plans are long-term planning documents and should be viewed in this context. A Site Plan contains tentative information, especially for the latter years of the ten-year time horizon, and is subject to change at the discretion of the utility. Much of the data submitted is preliminary in nature and is presented in a general manner. Specific and detailed data will be submitted as part of the Florida site certification process, or through other proceedings and filings, at the appropriate time.

This document is organized in the following manner:

Chapter I – Description of Existing Resources

This chapter provides an overview of FPL's current generating facilities. Also included is information on other FPL resources including purchased power, demand side management, and FPL's transmission system.

Chapter II – Forecast of Electric Power Demand

FPL's load forecasting methodology, and its forecast of seasonal peaks and annual energy usage, is presented in Chapter II.

Chapter III – Projection of Incremental Resource Additions

This chapter discusses FPL's integrated resource planning (IRP) process and outlines FPL's projected resource additions, especially new power plants, based on FPL's IRP work in 2007 and early 2008.

Chapter IV – Environmental and Land Use Information

This chapter discusses environmental information as well as preferred and potential site locations for additional electric generation facilities.

Chapter V – Other Planning Assumptions and Information

This chapter addresses twelve "discussion items" which pertain to additional information that is to be included in a Site Plan filing.

FPL
List of Abbreviations
Used in FPL Forms

Reference	***Abbreviation***	***Definition***
Unit Type	BIT	Bituminous Coal
	CC	Combined Cycle
	CT	Combustion Turbine
	GT	Gas Turbine
	IC	Internal Combustion
	NP	Nuclear Power
	ST	Steam Unit
Fuel Type	UR	Uranium
	BIT	Bituminous Coal
	FO2	#1, #2 or Kerosene Oil (Distillate)
	FO6	#4,#5,#6 Oil (Heavy)
	NG	Natural Gas
	No	None
	Pet	Petroleum Coke
Fuel Transportation	No	None
	PL	Pipeline
	RR	Railroad
	TK	Truck
	WA	Water
Unit/Site Status	OT	Other
	P	Planned Unit
	T	Regulatory approval received but not under construction
	U	Under construction, less than or equal to 50% Complete
	V	Under construction, more than 50% Complete

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Executive Summary

Florida Power & Light Company's (FPL) 2008 Ten Year Power Plant Site Plan (Site Plan) presents FPL's current plans to increase its electric generation capability (owned or purchased) as part of its efforts to meet its projected incremental resource needs for the 2008-2017 time period. By design, the primary focus of this document is on supply side additions; i.e., electric generation capability. The supply side additions discussed in this document are resources projected to be needed after accounting for FPL's extensive demand side management (DSM) additions.

The resource plan that is presented in FPL's 2008 Site Plan contains some similarities to the resource plan presented in FPL's 2007 Site Plan, especially for the early years of the ten-year period. However, there are also some significant changes in the current resource plan.

I. Similarities to the Resource Plan Presented in the 2007 Site Plan:

There are two key similarities in the current resource plan presented in this document compared to the resource plan presented in the 2007 Site Plan. One similarity is the addition of new generating units in 2009 and 2010. In each of these years, FPL will be adding one 1,219 MW (Summer) combined cycle (CC) unit in western Palm Beach County. The site for these units is named the West County Energy Center (WCEC) and these units are identified as West County Energy Center Units 1 and 2 (WCEC 1 and 2). Both of these CC units were approved by the Florida Public Service Commission (FPSC) in June 2006. FPL's applications for site certification for these units under the Florida Electric Power Plant Siting Act were approved by the Governor and the Cabinet serving as the Siting Board in December 2006.

The other key similarity to the resource plan presented in the 2007 Site Plan is FPL's continuing significant efforts to implement cost-effective demand side management (DSM). These efforts include meeting FPL's approved DSM Goals through 2014, implementing additional cost-effective DSM through 2014 that was identified by FPL after the DSM Goals were established, and a projection of continued DSM additions in 2015 through 2017 at an annual implementation rate commensurate with that in the years leading up to 2014. These DSM efforts are projected to add approximately 1,539 MW of cost-effective DSM from August 2006 through August 2017. These 1,539 MW of additional DSM will avoid the need for approximately 1,847 MW of additional generating capacity that otherwise would be needed to continue to meet FPL's 20% reserve margin planning criterion. Through these DSM efforts FPL will continue to build upon its industry-leading position in both energy efficiency DSM programs and overall DSM achievement, as reported annually by the U.S. Department of Energy.

II. Changes From the Resource Plan Presented in the 2007 Site Plan:

There are three primary factors that caused FPL to change its resource plan from the one presented in the 2007 Site Plan. These three factors, and the changes in the resource plan that result from these factors, are briefly described below and are addressed in more detail in Chapters II and III of this document.

The first factor that is driving changes in the current resource plan is FPL's new load forecast. FPL now projects a lower rate of population growth than forecasted in the 2007 Site Plan for the next several years. However, FPL's current load forecast also reflects its plan to serve a portion of the load and energy requirements of Lee County Electric Co-Operative (Lee County) starting in 2010, and to serve the full load and energy requirements of Lee County starting in 2014. FPL's current projection of peak loads compared to that presented in the 2007 Site Plan is for lower peaks through 2013, but higher peaks for 2014 through 2017.

Although the timing of growth in peak load has changed, significant growth in both peaks and annual energy is still projected through 2017 and this growth will necessitate significant increases in generating capacity. In addition, because of the slower growth in peak load projected for the earlier years, FPL will have an opportunity to consider upgrades to its existing generating units, including the possible repowering of one or more units.

The second factor is that new advanced coal technology power plants are no longer seen as viable options in Florida over the ten-year reporting period for this Site Plan. Concerns over greenhouse gas emissions have resulted in advanced technology coal power plants being removed from FPL's list of generation options currently under consideration. The primary consequence is that the only type of generating unit that can be considered as a large-scale resource option to meet the growing needs of FPL's customers in the ten year reporting period is a natural gas-fired combined cycle unit.

The third factor that is driving change in FPL's resource plan is the Executive Orders issued by Florida's Governor Crist in July 2007 that, in part, called for a significant reduction in greenhouse gas emissions in Florida and for an increase in the amount of energy provided by renewable, non-emitting sources. The consequence of this factor is to reinforce FPL's on-going efforts to increase the production of electricity from nuclear energy and renewable energy options in the future, and to seek to increase the efficiency of its non-nuclear generating units.

The development of the resource plan presented in this document has taken these three factors, and other concerns, into account. As a result, the current resource plan has changed from the resource plan presented in the 2007 Site Plan in the following ways:

- **Increased Nuclear Generating Capacity:** On January 7, 2008, the Florida Public Service Commission approved FPL's request to uprate, by 414 MW, the generating capacity of FPL's four existing nuclear generating units – Turkey Point Nuclear Units 3 & 4 and St. Lucie Nuclear Units 1 & 2. The capacity of each unit will increase between 103 or 104 MW. The in-service dates for the uprates are: December 2011 for St. Lucie 1, May 2012 for Turkey Point 3, June 2012 for St. Lucie 2, and December 2012 for Turkey Point 4. In addition, although not specifically presented in this document due to the fact that the reporting period ends in 2017, FPL has filed with the FPSC for a Determination of Need for two new nuclear units at its existing Turkey Point power plant site. One of these units is projected to come in-service in 2018 and the other is projected to come in-service in 2020. The FPSC voted to approve the need for these two new nuclear units on March 18, 2008 and the FPSC is expected to issue the final order by mid-April 2008. Increased nuclear capacity is projected to result in economic savings to FPL's customers while making significant contributions to both greater system fuel diversity and lower greenhouse gas emissions.

- **Increased Renewable Energy Contribution:** FPL issued a renewable energy-only Request for Proposals (RFP) in 2007 and will be issuing another one in April 2008. FPL is also directly pursuing renewable energy through several other efforts. FPL's plans include building a wind energy generation facility totaling up to approximately 13.8 MW at FPL's existing St. Lucie nuclear power plant site. The wind energy facility is expected to go in-service starting in 2009. In addition, several FPL solar thermal and/or photovoltaic (PV) facilities are being evaluated that could go in-service in the 2009 – 2012 time frame. FPL is also currently assuming, for planning purposes, that contract extensions and/or new contracts will be reached with several existing renewable energy suppliers whose contracts with FPL are set to expire within this ten-year period. In addition, FPL's resource plan reflects its intent to obtain additional capacity and/or energy from the Renewable RFP solicitations or its own renewable energy development efforts.

For purposes of this planning document, FPL is assuming that 269 MW of firm capacity from renewable facilities will be added to FPL's system in the ten-year reporting period. It is currently assumed that other renewable energy additions will likely be added and that these additions would serve FPL's customers as intermittent, as-available energy resources, not as resources that provide firm capacity. As actual operating data at system peak hours for these renewable energy facilities becomes available, the potential of these renewable facilities to provide firm capacity will be better known. Any cost-effective renewable resources that FPL can add to its system will help FPL increase fuel diversity and reduce greenhouse gas emissions.

- **2011 Addition of WCEC 3:** FPL issued a capacity Request for Proposals (RFP) in December 2007 that solicited firm capacity proposals with in-service dates in the June 2011 to June 2012 time frame. A total of 3 proposals were received in response to the RFP. These proposals have been compared to FPL's next planned generating unit, a three-on-one combined cycle unit at the West County Energy Center (WCEC) site that is identical in technology and size to the WCEC 1 & 2 units. After an evaluation of these options by FPL and an Independent Evaluator, the WCEC 3 unit, proposed to be placed in-service in June 2011, was selected as the best option for FPL and its customers. FPL plans to submit a petition to the FPSC in April 2008 for approval of a Determination of Need for WCEC 3. Not only will the addition of WCEC 3 in 2011 result in significant economic savings to FPL's customers, its addition in June of 2011 also provides an opportunity for FPL to consider repowering one or more of its existing plants.

In fact, adding WCEC 3 in 2011 is necessary for FPL to have the option of repowering one or more of its existing plants by 2013 or 2014 in place of adding new generation at a "greenfield" site in that timeframe. Repowering could effectively transform as much as approximately 1,400 MW of relatively inefficient, existing steam generation into 2,438 MW of new, highly efficient, state-of-the-art, environmentally benign advanced combined cycle units. It is anticipated that such repowerings would result in economic savings to FPL's customers and reduced system emissions, including CO_2 emissions. As a result, repowering these plants by 2013 or 2014 could enable FPL to comply with the 2017 CO_2 emission targets proposed in 2007 by Governor Crist. FPL has initiated a thorough evaluation of this repowering alternative to determine its costs and quantify its benefits relative to those of other alternatives before it can make a decision to proceed with repowering. However, because repowering existing plants would initially require removal of approximately 1,400 MW of existing generating capacity from service in 2011, it is necessary to add WCEC 3 in 2011 to offset the loss of existing capacity and maintain a 20% reserve margin, thereby preserving the repowering option.

Finally, for long-term planning purposes, this document shows unsited combined cycle units similar in technology and design to those being added at the WCEC site being added to meet capacity needs for 2014 through 2017. However, no decision regarding these capacity options needs to be made, or has been made, at this time.[1]

As previously mentioned, the reduction of greenhouse gas emissions, particularly carbon dioxide (CO_2), has become a major factor in FPL's resource planning work. FPL already has a relatively low CO_2 emission rate (CO_2 tons per MWh generated) compared to other utilities due to its four existing nuclear units, the high efficiency of its combined cycle generating units, a number of renewable capacity and energy contracts, and its strong on-going DSM efforts. In addition, changes in FPL's 2008 resource plan, compared to that presented in its 2007 Site Plan, will result in a further lowering of FPL's CO_2 emission rate. Specifically, the nuclear capacity uprates, the addition of new, highly efficient combined cycle units, potential renewable resource additions, and significant on-going DSM efforts are projected to not only lower FPL's CO_2 emission rate, but also temporarily lower FPL's total annual CO_2 emissions.

However, despite this reduction in FPL's system CO_2 emission rate, significant load growth driven primarily by projected increases in population will cause total annual CO_2 emissions to increase at least until the two proposed new nuclear units at Turkey Point come in-service in 2018 and 2020, respectively.

As previously mentioned, FPL's peak load is projected to continue to increase at a still significant pace over the ten-year period. At present, FPL projects that it will need 3,625 MW of additional capacity through 2017 after the proposed addition of WCEC 3. Consequently, FPL's total generation capability is projected to significantly increase during the 2008-2017 time period as shown in Table ES.1. The table reflects FPL's current planned changes to existing generation units (due to scheduled unit overhauls, etc.), projected changes in the delivered amounts of purchased power, assumed capacity increases from certain renewable facilities, the capacity uprates of its existing nuclear units, and the planned additions of new generating units. Note that this table focuses solely on changes in capacity purchases and generating units. As such, it does

[1] Repowering at existing FPL sites remains an alternative to construction at new sites and FPL will continue to examine this option. In addition, both other generating options and DSM options will continue to be evaluated. FPL will be filing for approval of new DSM Goals in 2009 that will address DSM for the time frame of 2010 through 2019.

not directly address FPL's significant DSM efforts, but these DSM contributions have been incorporated prior to making a projection of new generating unit additions. Likewise, because FPL will be projecting the contribution of a number of new renewable resources as non-firm, energy-only resources at least until actual operating data at the facilities' specific sites are available, a number of the new renewable resources currently being considered, as discussed above and in Chapter III, are not included in Table ES.1.

FPL's ongoing resource planning efforts will continue to be influenced by the three driving factors discussed above (i.e., a new load forecast, advanced coal technology no longer being a viable option, and the Governor's Executive Orders)and by several other items FPL refers to as system concerns. These system concerns include: (1) maintaining/enhancing fuel diversity in the FPL system and (2) maintaining a balance between load and generating capacity in Southeastern Florida. In addition, FPL's resource planning work will seek opportunities to further enhance the operating efficiency of its existing generation fleet.

Table ES.1: Projected Capacity Changes and Reserve Margins for FPL

Projected Capacity Changes and Reserve Margins for FPL (1)					
		Net Capacity Changes (MW)		FPL Reserve Margin (%)	
		Winter (2)	Summer (3)	Winter	Summer
2008	Changes to Existing Units	41	14	28.4%	23.0%
	Changes to Existing Purchases (4)	(836)	—		
2009	West County Unit #1 (5)	—	1,219	25.0%	24.9%
	Changes to Existing Units	28	1		
	Changes to Existing Purchases (4)	(326)	(431)		
2010	West County Unit #1 (5)	1,335	—	25.4%	25.2%
	West County Unit #2 (5)	—	1,219		
	Extension Renewable Capacity Purchases	98	98		
	Changes to Existing Purchases (4)	(559)	(455)		
2011	West County Unit #2 (5)	1,335	—	28.9%	27.9%
	West County Unit # 3 (5)	—	1,219		
	New Renewable Capacity Purchases	—	32		
	Extension Renewable Capacity Purchases	45	45		
	Changes to Existing Purchases (4)	(46)	(45)		
2012	Changes to Existing Purchases (4)	—	(156)	33.3%	26.0%
	West County Unit # 3 (5)	1,335	—		
	New Renewable Capacity Purchases	126	94		
	Changes to Existing Nuclear Units	103	310		
2013	Changes to Existing Nuclear Units	311	104	31.5%	24.0%
	Changes to Existing Purchases (4)	(180)	—		
2014	Unsited 3 x 1 CC #1 (5)	—	1,219	24.7%	23.8%
2015	Unsited 3 x 1 CC #1 (5)	1,335	—	27.1%	21.1%
2016	Unsited 3x1 CC # 2 (5)	—	1,219	20.2%	22.9%
	Unsited 3x1 CC # 3 (5)	—	1,219		
	Changes to Existing Purchases (4)	(930)	(1,311)		
2017	Unsited 3x1 CC # 2 (5)	1,335	—	25.9%	20.1%
	Unsited 3x1 CC # 3 (5)	1,335	—		
	Changes to Existing Purchases (4)	(390)	—		
	TOTALS =	**5,495**	**5,614**		

(1) Additional information about these resulting reserve margins and capacity changes are found on Schedules 7 & 8 respectively.
(2) Winter values are values for January of year shown.
(3) Summer values are values for August of year shown.
(4) These are firm capacity and energy contracts with QF, Utilities and other purchases. See Table I.B.1 and Table I.B.2 for more details.
(5) All new unit additions are scheduled to be in-service in June of the year shown. Consequently, they are included in the Summer reserve margin calculation for the in-service year and in both the Summer and Winter reserve margin calculations for subsequent years.

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CHAPTER I

Description of Existing Resources

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I. Description of Existing Resources

FPL's service area contains approximately 27,650 square miles and has a population of approximately 8.7 million people. FPL served an average of 4,496,589 customer accounts in thirty-five counties during 2007. These customers were served from a variety of resources including: FPL-owned fossil and nuclear generating units, non-utility owned generation, demand side management (DSM), and interchange/purchased power.

I.A. FPL-Owned Resources

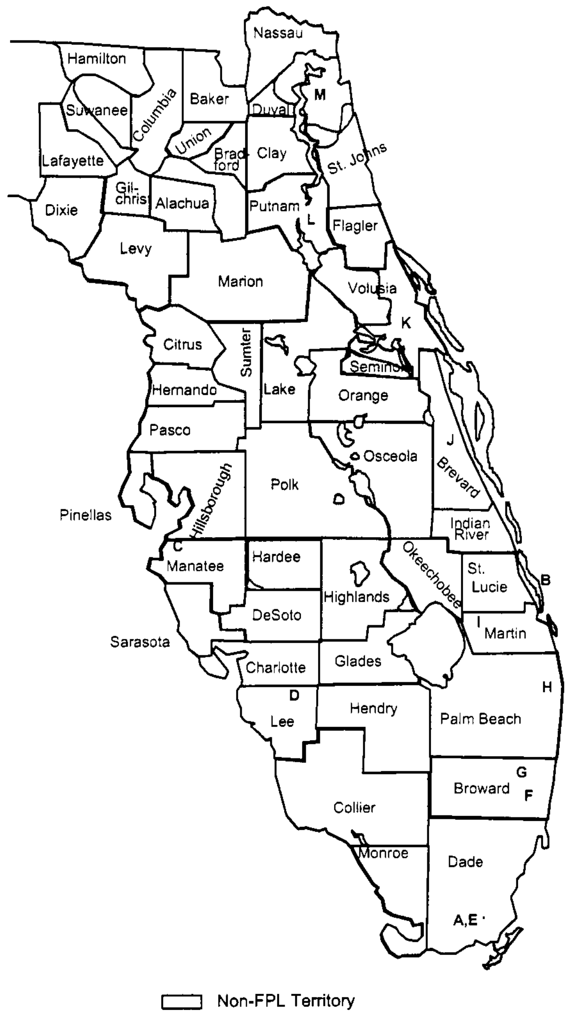
The existing FPL generating resources are located at fourteen generating sites distributed geographically around its service territory and also include partial ownership of one unit located in Georgia and two units located in Jacksonville, Florida. The current generating facilities consist of four nuclear units, three coal units, twelve combined cycle units, seventeen fossil steam units, forty eight combustion gas turbines, one simple cycle combustion turbine, and five diesel units. The location of these ninety generating units is shown on Figure I.A.1 and in Table I.A.1.

FPL's bulk transmission system is comprised of 6,640 circuit miles of transmission lines. Integration of the generation, transmission, and distribution system is achieved through FPL's 573 substations in Florida.

The existing FPL system, including generating plants, major transmission stations, and transmission lines, is shown on Figure I.A.2. In addition, Figure I.A.3 shows FPL's interconnection ties with other utilities.

FPL Generating Resources by Location

Location/ Map Key	Plant Name	Number of Units	Summer MW
A	Turkey Point	5	3,318
B	St. Lucie *	2	1,553
C	Manatee	3	2,742
D	Fort Myers	2	1,764
E	Cutler	2	205
F	Lauderdale	2	872
G	Port Everglades	4	1,219
H	Riviera	2	565
I	Martin	5	3,738
J	Cape Canaveral	2	792
K	Sanford	3	2,054
L	Putnam	2	498
M	SJRPP **	2	250
	Scherer ***	1	646
	Gas Turbines	48	1,908
	Internal Combustion Turbines	5	12
	FPL Generation =	**90**	**22,135**



* Represents FPL's ownership share: St Lucie nuclear: 100% unit 1, 85% unit 2: St. Johns River: 20% of two units.

** SJRPP = St. John's River Power Park

*** The Scherer unit is located in Georgia and is not shown on this map.

Figure I.A.1: Capacity Resources by Location (as of December 31, 2007)

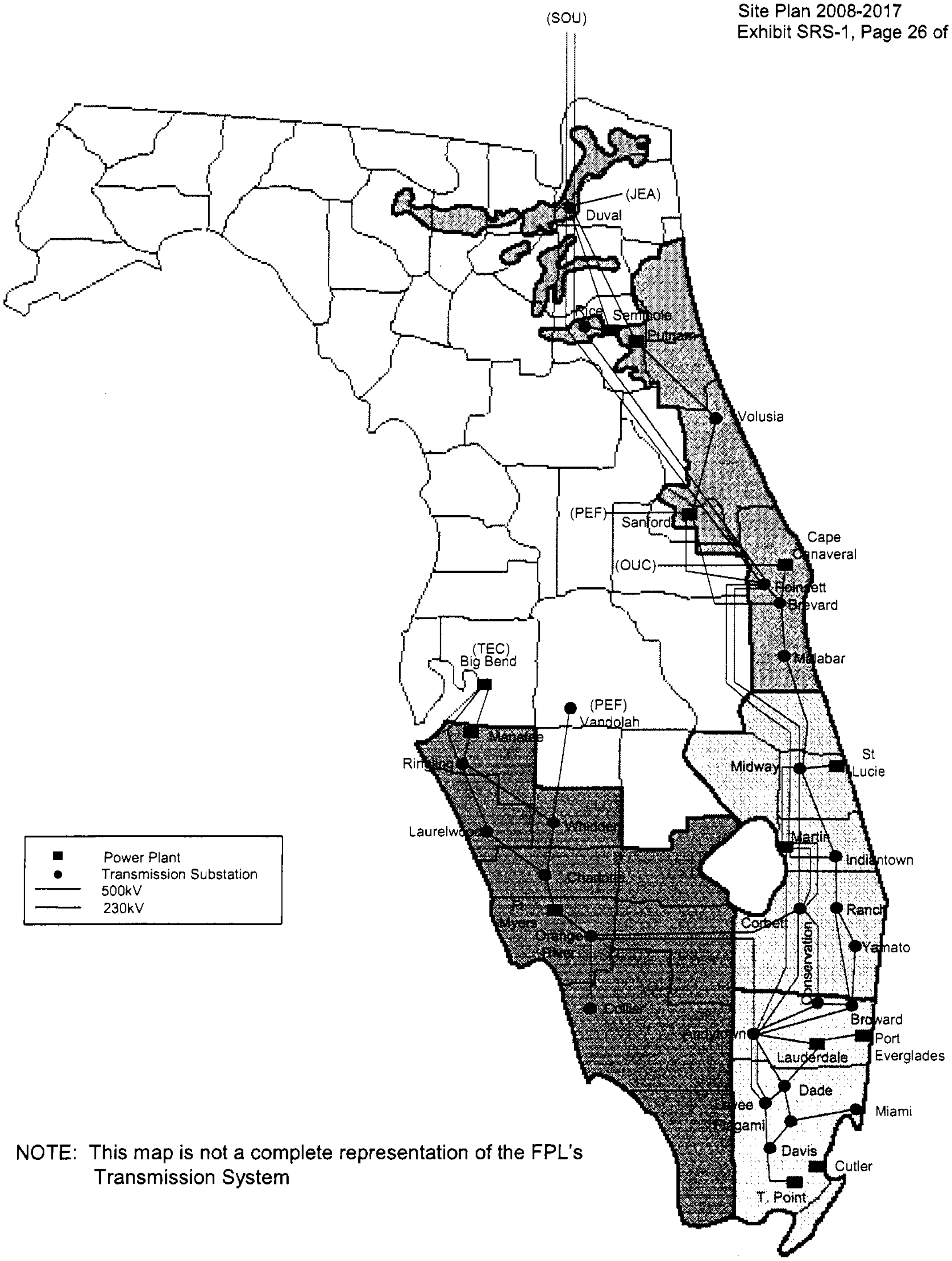
Table I.A.1: Capacity Resource by Unit Type (as of December 31, 2007)

Unit Type/ Plant Name	Location	Number of Units	Fuel	Summer MW
Combined-Cycle				
Lauderdale	Dania, FL	2	Gas/Oil	872
Martin	Indiantown,FL	2	Gas	956
Martin	Indiantown,FL	1	Gas/Oil	1,104
Sanford	Lake Monroe, FL	2	Gas	1,916
Putnam	Palatka, FL	2	Gas/Oil	498
Fort Myers	Fort Myers, FL	1	Gas	1,440
Manatee	Parrish,FL	1	Gas	1,104
Turkey Point	Florida City, FL	1	Gas	1,144
Total Combined Cycle		**12**		**9,033**
Combustion Turbines				
Fort Myers *	Fort Myers, FL	1	Gas/Oil	324
Total Combustion Turbines		**1**		**324**
Nuclear				
Turkey Point	Florida City, FL	2	Nuclear	1,386
St. Lucie **	Hutchinson Island, FL	2	Nuclear	1,553
Total Nuclear		**4**		**2,939**
Coal Steam				
SJRPP ***	Jacksonville, FL	2	Coal	250
Scherer	Monroe County, Ga	1	Coal	646
Total Coal Steam		**3**		**896**
Oil/Gas Steam				
Cape Canaveral	Cocoa, FL	2	Oil/Gas	792
Cutler	Miami, FL	2	Gas	205
Manatee	Parrish, FL	2	Oil/Gas	1,638
Martin	Indiantown,FL	2	Oil/Gas	1,678
Port Everglades	Port Everglades, FL	4	Oil/Gas	1,219
Riviera	Riviera Beach, FL	2	Oil/Gas	565
Sanford	Lake Monroe, FL	1	Oil/Gas	138
Turkey Point	Florida City, FL	2	Oil/Gas	788
Total Oil/Gas Steam		**17**		**7,023**
Gas Turbines(GT)/Diesels(IC)				
Lauderdale (GT)	Dania, FL	24	Gas/Oil	840
Port Everglades (GT)	Port Everglades, FL	12	Gas/Oil	420
Fort Myers (GT)	Fort Myers, FL	12	Oil	648
Turkey Point (IC)	Florida City, FL	5	Oil	12
Total Gas Turbines/Diesels		**53**		**1,920**
Total Units:		**90**		
Total Net Generating Capability:				**22,135**

* The consists of two combustion turbines.

** Total capability of each unit is 853/839 MW. FPL's ownership share of St. Lucie 1 and 2 is 100%(853/839) and 85% (714/726) above. respectively as shown. Capabilities shown represent FPL's output share from each of the units (approx. 92.5% and exclude the Orlando Utilities Commission (OUC) and Florida Municipal Power Agency (FMPA) combined portion of approximately 7.44776% per unit.

*** Represents FPL's ownership share: SJRPP coal: 20% of two units



NOTE: This map is not a complete representation of the FPL's Transmission System

Figure I.A.2 FPL Substation and Transmission System Configuration

FPL Interconnection Diagram

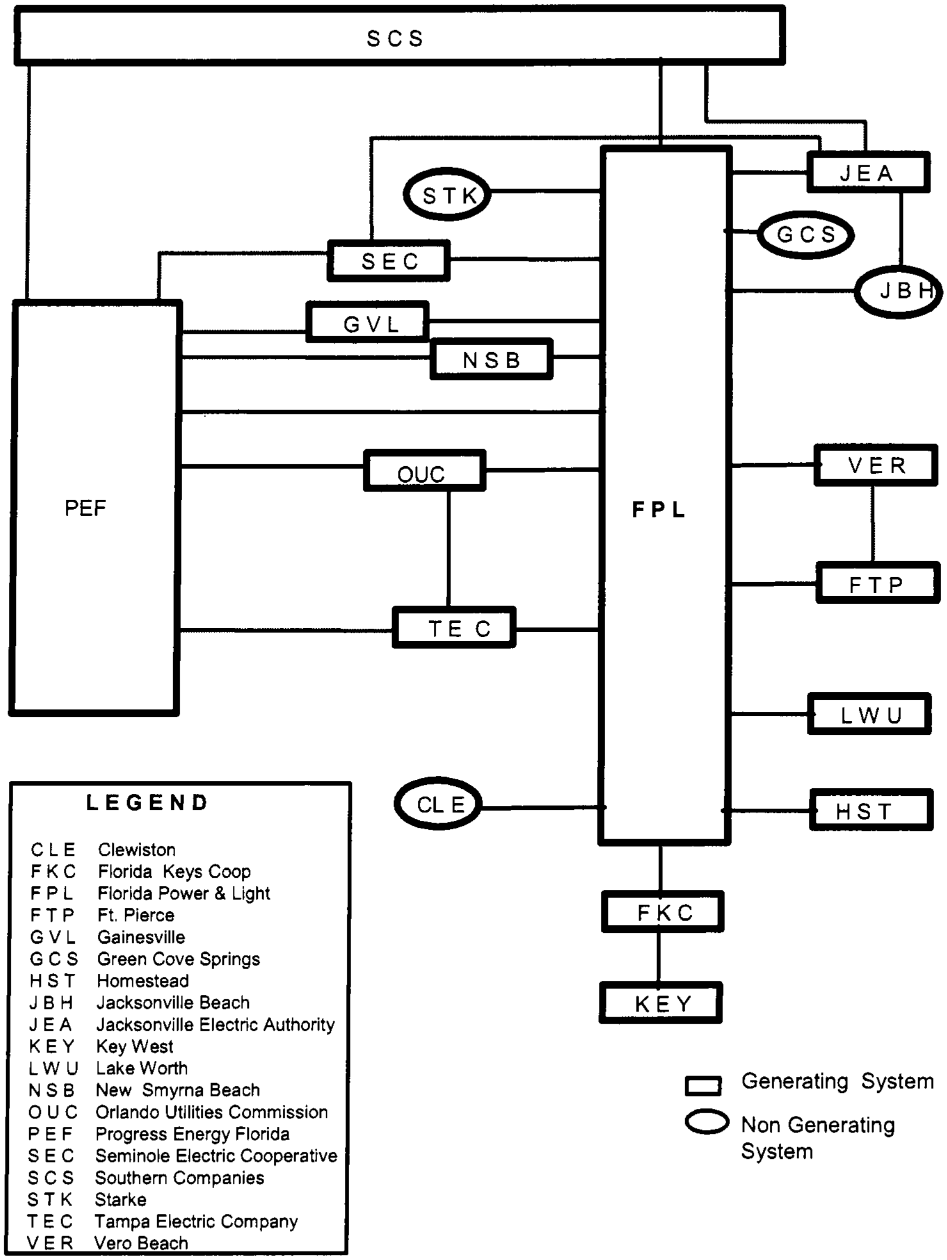


Figure I.A.3: FPL Interconnection Diagram

I.B Firm Capacity Power Purchases

Purchases from Qualifying Facilities (QF):

Firm capacity power purchases are an important part of FPL's resource mix. FPL currently has contracts with five qualifying facilities; i.e., cogeneration/small power production facilities, to purchase firm capacity and energy.

A cogeneration facility is one which simultaneously produces electrical and thermal energy, with the thermal energy (e.g., steam) being used for industrial, commercial, or cooling and heating purposes. A small power production facility is one which does not exceed 80 MW (unless it is exempted from this size limitation by the Solar, Wind, Waste, and Geothermal Power Production Incentives Act of 1990) and uses as its primary energy source (at least 50%) solar, wind, waste, geothermal, or other renewable resources.

Purchases from Utilities:

FPL has a Unit Power Sales (UPS) contract to purchase 931 MW, with a minimum of 381 MW, of coal-fired generation from the Southern Company (Southern) through May 2010. An additional contract with Southern will result in FPL receiving 930 MW from June 2010 through the end of December 2015. This capacity will be supplied by Southern from a mix of gas-fired and coal-fired units.

In addition, FPL has contracts with the Jacksonville Electric Authority (JEA) for the purchase of 381 MW (Summer) and 390 MW (Winter) of coal-fired generation from the St. John's River Power Park (SJRPP) Units No. 1 and No. 2. Due to Internal Revenue Service (IRS) regulations, the total amount of energy that FPL may receive from this purchase is limited. FPL currently assumes, for planning purposes, that this limit will be reached at the end of April 2016. (FPL also has ownership interest in these units. The ownership amount is reflected in FPL's installed capacity shown on Figure I.A.1, in Table I.A.1, and on Schedule 1.)

Other Purchases:

FPL has other firm capacity purchase contracts with a variety of Non-QF suppliers. These purchases are generally near-term in nature. Table I.B.1 and I.B.2 present the Summer and Winter MW, respectively, resulting from all firm purchased power contracts discussed above through the year 2017. For planning purposes, FPL assumes an additional 269 MW of firm capacity will be supplied from renewable energy sources. This firm capacity is expected to be provided through a variety of sources including: contract extensions and/or new contracts with existing renewable facilities currently under contract with FPL but whose contracts are set to expire in 2009 – 2010, proposals received in response to a new Renewable RFP that FPL plans to issue in April 2008, and/or FPL's own renewable development efforts.

Table I.B.1: FPL's Firm Purchased Power Summer MW

Summary of FPL's Firm Capacity Purchases: Summer MW (for August of Year Shown)

I. Purchases from QF's:

Cogeneration Small Power Production Facilities	Contract Start Date	Contract End Date	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1. Broward South	4/1/1991	8/1/2009 *	50.6	50.6	50.6	50.6	50.6	50.6	50.6	50.6	50.6	50.6
2. Broward South	1/1/1993	12/31/2026	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
3. Broward South	1/1/1995	12/31/2026	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
4. Broward South	1/1/1997	12/31/2026	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
5. Broward North	4/1/1992	12/31/2010 *	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
6. Broward North	1/1/1993	12/31/2026	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
7. Broward North	1/1/1995	12/31/2026	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
8.Broward North	1/1/1997	12/31/2026	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
9. Cedar Bay Generating Co.	1/25/1994	12/31/2024	250.0	250.0	250.0	250.0	250.0	250.0	250.0	250.0	250.0	250.0
10. Indiantown Cogen., LP	12/22/1995	12/1/2025	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0
11. Palm Beach SWA	4/1/1992	3/31/2010 *	47.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5
		QF Purchases Sub Total:	**738**	**738**	**738**	**738**	**738**	**738**	**738**	**738**	**738**	**738**

II. Purchases from Utilities:

	Contract Start Date	Contract End Date	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1. UPS from Southern Co.	7/20/1988	5/31/2010	931	931	0	0	0	0	0	0	0	0
2. UPS Replacement	6/1/2010	12/31/2015	0	0	930	930	930	930	930	930	0	0
3. SJRPP	4/2/1982	10/31/2015	381	381	381	381	381	381	381	381	0	0
		Utility Purchases Sub Total:	**1312**	**1312**	**1311**	**1311**	**1311**	**1311**	**1311**	**1311**	**0**	**0**

III. Other Purchases:

	Contract Start Date	Contract End Date	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1. Reliant/Indian River	1/1/2006	12/31/2009	576	250	0	0	0	0	0	0	0	0
2. Oleander (Extension)	6/1/2007	5/31/2012	156	156	156	156	0	0	0	0	0	0
3. Williams	3/1/2006	12/31/2009	106	106	0	0	0	0	0	0	0	0
4. Progress Energy Ventures	4/1/2006	3/31/2009	105	0	0	0	0	0	0	0	0	0
5. Additional Renewable Firm Capacity	6/1/2011	varies	0	0	0	32	126	126	126	126	126	126
		Other Purchases Sub Total	**943**	**512**	**156**	**188**	**126**	**126**	**126**	**126**	**126**	**126**

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Summer Firm Capacity Purchases Total MW:	**2993**	**2562**	**2205**	**2237**	**2175**	**2175**	**2175**	**2175**	**864**	**864**

* For planning purpose, the contracts for these renewable capacity purchases are assumed to be extended. New contractual arrangement have not yet been developed.

Table I.B.2: FPL's Firm Purchased Power Winter MW

Summary of FPL's Firm Capacity Purchases: Winter MW (for January of Year Shown)

I. Purchases from QF's:

Cogeneration Small Power Production Facilities	Contract Start Date	Contract End Date	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1. Broward South	04/01/91	8/1/2009 *	50.6	50.6	50.6	50.6	50.6	50.6	50.6	50.6	50.6	50.6
2. Broward South	01/01/93	12/31/26	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
3. Broward South	01/01/95	12/31/26	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
4. Broward South	01/01/97	12/31/26	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
5. Broward North	04/01/92	12/31/2010 *	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
6. Broward North	01/01/93	12/31/26	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
7. Broward North	01/01/95	12/31/26	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
8.Broward North	01/01/97	12/31/26	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
9. Cedar Bay Generating Co.	01/25/94	12/31/24	250.0	250.0	250.0	250.0	250.0	250.0	250.0	250.0	250.0	250.0
10. Indiantown Cogen., LP	12/22/95	12/01/25	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0
11. Palm Beach SWA	04/01/92	3/31/2010 *	47.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5
		QF Purchases Sub Total:	**738**	**738**	**738**	**738**	**738**	**738**	**738**	**738**	**738**	**738**

II. Purchases from Utilities:	Contract Start Date	Contract End Date	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1. UPS from Southern Co.	07/20/88	05/31/10	931	931	931	0	0	0	0	0	0	0
2. UPS Replacement	06/01/10	12/31/15	0	0	0	930	930	930	930	930	0	0
3. SJRPP	04/02/82	04/01/16	390	390	390	390	390	390	390	390	390	0
		Utility Purchases Sub Total:	**1321**	**1321**	**1321**	**1320**	**1320**	**1320**	**1320**	**1320**	**390**	**0**

III. Other Purchases:	Contract Start Date	Contract End Date	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1. Reliant/Indian River	01/01/06	12/31/09	576	250	0	0	0	0	0	0	0	0
2. Oleander (Extension)	06/01/07	05/31/12	180	180	180	180	180	0	0	0	0	0
3. Williams	03/01/06	12/31/09	106	106	0	0	0	0	0	0	0	0
4. Progress Energy Ventures	04/01/06	03/31/09	105	105	0	0	0	0	0	0	0	0
5. Additional Renewable Firm Capacity	6/1/2011	varies	0	0	0	0	126	126	126	126	126	126
		Other Purchases Sub Total	**967**	**641**	**180**	**180**	**306**	**126**	**126**	**126**	**126**	**126**

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Winter Firm Capacity Purchases Total MW:	**3026**	**2700**	**2239**	**2238**	**2364**	**2184**	**2184**	**2184**	**1254**	**864**

* For planning purpose, the contracts for these renewable capacity purchases are assumed to be extended. New contractual arrangement have not yet been developed.

I.C Non-Firm (As Available) Energy Purchases

FPL purchases non-firm (as-available) energy from several cogeneration and small power production facilities. Table I.C.1 shows the amount of energy purchased in 2007 from these facilities.

Table I.C.1: As Available Energy Purchases From Non-Utility Generators in 2007

Project	*County*	*Fuel*	*In-Service Date*	*Energy (MWH) Delivered to FPL in 2007*
Tropicana	Manatee	Natural Gas	2/90	19,067
Elliot	Palm Beach	Natural Gas	7/05	297
US Sugar-Bryant	Palm Beach	Bagassee	2/80	1,432
Okeelanta	Palm Beach	Bagassee/Wood	11/95	265,475
Georgia Pacific	Putnam	Paper by-product	2/94	3,415
Tomoka Farms	Volusia	Landfill Gas	7/98	20,500
Rothenbach Park	Sarasota	PV	10/07	48
Customer Owned PV	Various	PV	Various	60

I.D. Demand Side Management (DSM)

FPL has sought out and implemented cost-effective DSM programs since 1978. These programs include a number of conservation/energy-efficiency and load management initiatives. FPL's DSM efforts through 2007 have resulted in a cumulative Summer peak reduction of approximately 3,958 MW at the generator and an estimated cumulative energy saving of approximately 42,301 Gigawatt Hour (GWh) at the generator. After accounting for reserve margin requirements, FPL's DSM efforts through 2007 have eliminated the need to construct the equivalent of approximately 12 new 400 MW generating units.

Table I.D.1 presents FPL's DSM projections. This projection captures: FPL's DSM Goals approved by the Florida Public Service Commission through 2014, additional cost-effective DSM identified by FPL after the DSM Goals were established, and a projection of continued DSM implementation for 2015 – 2017 at an implementation rate commensurate with the projected annual rate of implementation for the years immediately preceding 2014.

Table I.D.1. : FPL's DSM Goals and Additional DSM: 2006 – 2017 (Summer MW)

Projected Incremental FPL DSM: 2006 - 2017

Year	DSM Projected by FPL (Summer MW at Generator) (1)
2006	1,491
2007	1,768
2008	1,908
2009	2,034
2010	2,146
2011	2,264
2012	2,388
2013	2,516
2014	2,651
2015	2,790
2016	2,910
2017	3,030
Incremental DSM MW from 2006 through 2017 =	1,539

Notes: (1) The DSM Summer MW shown are from column (8) in Schedule 7.1 and reflect projected DSM signups from 8/2006 through 8/2020. These values reflect FPL's DSM Goals through 2014 plus additional DSM through 2015 identified as cost-effective after the DSM Goals were established. These values also include a projected continuation of DSM signups for 2015 - 2017.

Schedule 1

Existing Generating Facilities
As of December 31, 2007

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
						Fuel		Alt. Fuel	Commercial	Expected	Gen.Max.	Net Capability 1/	
	Unit		Unit	Fuel		Transport		Days	In-Service	Retirement	Nameplate	Winter	Summer
Plant Name	No.	Location	Type	Pri.	Alt.	Pri.	Alt.	Use	Month/Year	Month/Year	KW	MW	MW
Cape Canaveral		Brevard County 19/24S/36F									804,100	796	792
	1		ST	FO6	NG	WA	PL	Unknown	Apr-65	Unknown	402,050	398	396
	2		ST	FO6	NG	WA	PL	Unknown	May-69	Unknown	402,050	398	396
Cutler		Miami Dade County 27/55S/40E									236,500	207	205
	5		ST	NG	No	PL	No	Unknown	Nov-54	Unknown	75,000	69	68
	6		ST	NG	No	PL	No	Unknown	Jul-55	Unknown	161,500	138	137
Fort Myers		Lee County 35/43S/25E									2,895,890	2,740	2,412
	2		CC	NG	No	PL	No	Unknown	Jun-02	Unknown	1,775,390	1,599	1,440
	3A & B		CT	NG	FO2	PL	PL	Unknown	Jun-03	Unknown	376,380	372	324
	1-12		GT	FO2	No	PL	No	Unknown	May-74	Unknown	744,120	769	648
Lauderdale		Broward County 30/50S/42E									1,873,968	1,946	1,712
	4		CC	NG	FO2	PL	PL	Unknown	May-93	Unknown	526,250	464	436
	5		CC	NG	FO2	PL	PL	Unknown	Jun-93	Unknown	526,250	464	436
	1-12		GT	NG	FO2	PL	PL	Unknown	Aug-70	Unknown	410,734	509	420
	13-24		GT	NG	FO2	PL	PL	Unknown	Aug-72	Unknown	410,734	509	420
Manatee		Manatee County 18/33S/20E									2,951,110	2,859	2,742
	1		ST	FO6	NG	WA	PL	Unknown	Oct-76	Unknown	863,300	831	819
	2		ST	FO6	NG	WA	PL	Unknown	Dec-77	Unknown	863,300	831	819
	3		CC	NG	No	PL	No	Unknown	Jun-05	Unknown	1,224,510	1,197	1,104

1/ These ratings are peak capability.

Schedule 1

Existing Generating Facilities
As of December 31, 2007

(1) Plant Name	(2) Unit No.	(3) Location	(4) Unit Type	(5) Fuel Pri.	(6) Fuel Alt.	(7) Fuel Transport Pri.	(8) Fuel Transport Alt.	(9) Alt. Fuel Days Use	(10) Commercial In-Service Month/Year	(11) Expected Retirement Month/Year	(12) Gen.Max. Nameplate KW	(13) Net Capability 1/ Winter MW	(14) Net Capability 1/ Summer MW
Martin		Martin County 29/29S/38E									4,317,510	3,874	3,738
	1		ST	FO6	NG	PL	PL	Unknown	Dec-80	Unknown	934,500	844	839
	2		ST	FO6	NG	PL	PL	Unknown	Jun-81	Unknown	934,500	844	839
	3		CC	NG	No	PL	No	Unknown	Feb-94	Unknown	612,000	503	478
	4		CC	NG	No	PL	No	Unknown	Apr-94	Unknown	612,000	503	478
	8*		CC	NG	FO2	PL	PL	Unknown	Jun-05	Unknown	1,224,510	1,180	1,104
Port Everglades		City of Hollywood 23/50S/42E									1,710,384	1,736	1,639
	1		ST	FO6	NG	WA	PL	Unknown	Jun-60	Unknown	247,775	222	220
	2		ST	FO6	NG	WA	PL	Unknown	Apr-61	Unknown	247,775	222	220
	3		ST	FO6	NG	WA	PL	Unknown	Jul-64	Unknown	402,050	389	387
	4		ST	FO6	NG	WA	PL	Unknown	Apr-65	Unknown	402,050	394	392
	1-12		GT	NG	FO2	PL	PL	Unknown	Aug-71	Unknown	410,734	509	420
Putnam		Putnam County 16/10S/27E									580,008	566	498
	1		CC	NG	FO2	PL	WA	Unknown	Apr-78	Unknown	290,004	283	249
	2		CC	NG	FO2	PL	WA	Unknown	Aug-77	Unknown	290,004	283	249
Riviera		City of Riviera Beach 33/42S/43E									620,840	571	565
	3		ST	FO6	NG	WA	PL	Unknown	Jun-62	Unknown	310,420	280	277
	4		ST	FO6	NG	WA	PL	Unknown	Mar-63	Unknown	310,420	291	288
Sanford		Volusia County 16/19S/30E									2,533,970	2,267	2,054
	3		ST	FO6	NG	WA	PL	Unknown	May-59	Unknown	156,250	140	138
	4		CC	NG	No	PL	No	Unknown	Oct-03	Unknown	1,188,860	1,067	958
	5		CC	NG	No	PL	No	Unknown	Jun-02	Unknown	1,188,860	1,060	958

1/ These ratings are peak capability.
* Martin 8 A and B combustion turbine units went into service on 6/14/2001 and the conversion to Combined Cycle went into service 6/30/2005.

Schedule 1

Existing Generating Facilities
As of December 31, 2007

(1) Plant Name	(2) Unit No.	(3) Location	(4) Unit Type	(5) Fuel Pri.	(6) Fuel Alt.	(7) Fuel Transport Pri.	(8) Fuel Transport Alt.	(9) Alt. Fuel Days Use	(10) Commercial In-Service Month/Year	(11) Expected Retirement Month/Year	(12) Gen.Max. Nameplate KW	(13) Net Capability 1/ Winter MW	(14) Net Capability 1/ Summer MW
Scherer 2/		Monroe, GA									680,368	652	646
	4		BIT	BIT	No	RR	No	Unknown	Jul-89	Unknown	680,368	652	646
St. Johns River Power Park 3/		Duval County 12/15/28E (RPC4)									271,836	250	250
	1		BIT	BIT	Pet	RR	WA	Unknown	Mar-87	Unknown	135,918	125	125
	2		BIT	BIT	Pet	RR	WA	Unknown	May-88	Unknown	135,918	125	125
St. Lucie		St. Lucie County 16/36S/41E									1,573,775	1,579	1,553
	1		NP	UR	No	TK	No	Unknown	May-76	Unknown	850,000	853	839
	2	4/	NP	UR	No	TK	No	Unknown	Jun-83	Unknown	723,775	726	714
Turkey Point		Miami Dade County 27/57S/40E									3,560,548	3,451	3,330
	1		ST	FO6	NG	WA	PL	Unknown	Apr-67	Unknown	402,050	398	396
	2		ST	FO6	NG	WA	PL	Unknown	Apr-68	Unknown	402,050	394	392
	3		NP	UR	No	TK	No	Unknown	Nov-72	Unknown	759,900	717	693
	4		NP	UR	No	TK	No	Unknown	Jun-73	Unknown	759,900	717	693
	5		CC	NG	No	PL	No	Unknown	May-07	Unknown	1,224,510	1213	1,144
	1-5		IC	FO2	No	TK	No	Unknown	Dec-67	Unknown	12,138	12	12
								Total System as of December 31, 2007 =				**23,494**	**22,135**

1/ These ratings are peak capability.
2/ These ratings represent Florida Power & Light Company's share of Scherer Unit No. 4, adjusted for transmission losses.
3/ The net capability ratings represent Florida Power & Light Company's share of St. Johns River Park Unit No. 1 and No. 2, excluding Jacksonville Electric Authority (JEA) share of 80%.
4/ Total capability of each unit is 853/839 MW. FPL's ownership share of St. Lucie 1 and 2 is 100%(853/839) and 85% (714/726) respectively as shown above. FPL's share of the deliverable capacity from each unit is approx. 92.5% and exclude the Orlando Utilities Commission (OUC) and Florida Municipal Power Agency (FMPA) combined portion of approximately 7.44776% per unit.

CHAPTER II

Forecast of Electric Power Demand

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II. Forecast of Electric Power Demand

II. A. Overview of the Load Forecasting Process

Long-term (20-year) forecasts of sales, net energy for load (NEL), and peak loads are typically developed on an annual basis for resource planning work at FPL and new forecasts were developed by FPL in February 2008. These forecasts are a key input to the models used to develop FPL's Integrated Resource Plan. The following pages describe how forecasts are developed for each component of the long-term forecast: sales, NEL, and peak loads.

Consistent with past forecasts, the primary drivers to develop these forecasts are demographic trends, weather, economic conditions, and prices of electricity. In addition, the resulting forecasts are an integration of economic evaluations, inputs of local economic development boards, weather assessments from the National Oceanic and Atmospheric Administration (NOAA), and inputs from FPL's own customer service planning areas. In the area of demographics, population trends, plus housing characteristics such as housing starts, housing sizes, and vintage of homes, are assessed.

The projections for the national and Florida economies are obtained from Global Insight. Population projections are obtained from the Bureau of Economic and Business Research (BEBR) of the University of Florida. These inputs are quantified and qualified using statistical models in terms of their impact on the future demand for electricity.

Weather is always a key factor that affects FPL's energy sales and peak demand. Two sets of weather variables are developed and used in FPL's forecasting models:

1. Cooling and Heating Degree-Hours are used to forecast energy sales.
2. Temperature data is used to forecast Summer and Winter peaks.

The Cooling and Heating Degree-Hours are used to capture the changes in the electric usage of weather-sensitive appliances such as air conditioners and electric space heaters. A composite temperature hourly profile is derived using hourly temperatures across FPL's service territory. Miami, Ft. Myers, Daytona Beach, and West Palm Beach are the locations from which temperatures are obtained. In developing the composite hourly profile these regional temperatures are weighted by regional energy sales. This composite temperature is used to derive Cooling and Heating Degree-Hours which are based, respectively, on starting point temperatures of 72°F and 66°F degrees. Similarly, composite temperature and hourly profile of temperatures are used for the Summer and Winter peak models.

II. B. Comparison of FPL's Current and Previous Load Forecasts

FPL's current load forecast is significantly changed from the load forecast presented in its 2007 Site Plan. Two significant factors have been the primary factors in this change in the current load forecast compared to the load forecast presented in the 2007 Ten Year Site Plan. First, FPL has utilized the November 2007 population projections issued by BEBR, which are lower than the projections utilized in the load forecasts presented in the 2007 Site Plan. Second, Lee County Electric Co-Operative (Lee County) has contracted with FPL to serve a portion of its load starting in 2010 and to serve its full load beginning in 2014.

The net effects of these two factors is that FPL's load, compared to the load forecast presented in the 2007 Site Plan, is projected to grow at a somewhat slower rate for 2008 through 2013. Then, due in large part to the fact that FPL will begin serving Lee County's full load in 2014, the load is projected to be higher in 2014 through 2017.

Although the projected growth pattern of FPL's load has changed; somewhat less growth in 2008 through 2013, followed by higher growth in 2014 through 2017, the total growth projected by FPL for the ten-year reporting period of this document is still significant.

II.C. Long-Term Sales Forecasts

Long-term forecasts of electricity sales were developed for each revenue class for the forecasting period of 2008-2026 and are adjusted to match the Net Energy for Load (NEL) forecast. The results of these sales forecasts for the years 2008-2017 are presented in Schedules 2.1 - 2.3 which appear at the end of this chapter. Econometric models are developed for each revenue class using the statistical software package MetrixND. The methodologies used to develop energy sales forecasts for each jurisdictional revenue class and NEL forecast are outlined below.

1. <u>Residential Sales</u>

Residential electric usage per customer is estimated by using a regression model which contains the real residential price of electricity, Florida Real Personal Income, Cooling and Heating Degree-Hours as explanatory variables, as well as a dummy variable for hurricanes and other outliers. The price of electricity plays a role in explaining electric usage since electricity, like all other goods and services, will be used in greater or lesser quantities depending upon its price. To capture economic conditions, the model includes Florida's Real Personal Income. The degree of economic prosperity can, and does, affect residential electricity sales. The impact of weather is captured by the Heating Degree-Hours and Cooling Degree-Hours. Residential energy sales are forecast by multiplying the residential use per customer forecast by the number of residential customers forecasted.

2. **Commercial Sales**

The commercial sales forecast is also developed using a regression model. Commercial sales are a function of the following variables: Florida Non-Agricultural Employment, commercial real price of electricity, Cooling Degree-Hours, as well as dummy variable for hurricanes. The price of electricity is also included as an explanatory variable in the model because it has an impact on customer usage. Cooling Degree-Hours are used to capture weather-sensitive load in the commercial sector.

3. **Industrial Sales**

Industrial sales were forecasted using a linear multiple regression model. The linear multiple regression model utilizes the following variables: Florida Housing Starts, Cooling Degree-Hours, and several dummy variables for outliers, hurricanes, and months. The Cooling Degree-Hour term is used to capture the weather-sensitive load in the industrial class.

4. **Railroad & Railways Sales and Street and Highway Sales**

The forecast for street and highway sales is developed using historical usage patterns and multiplying these usage levels by the number of forecasted customers. The forecast of sales to railroad & railways is developed using an econometric model with the Florida population as the primary driver and several monthly dummy variables to capture seasonality. This class consists solely of the Miami-Dade County's Metrorail system.

5. **Other Public Authority Sales**

The sales for other public authority sales are developed using historical usage patterns.

6. **Total Sales to Ultimate Customer**

Sales forecasts by revenue class are summed to produce a total sales forecast. After an estimate of annual total sales is obtained, an expansion factor is applied to generate a forecast of annual NEL.

7. **Sales for Resale**

Sales for resale (wholesale) customers are composed of municipalities and/or electric co-operatives. These customers differ from jurisdictional customers in that they are not the ultimate users of the electricity they buy. Instead, they resell this electricity to their own customers.

Currently, there are three customers in this class: the Florida Keys Electric Cooperative (Florida Keys), City Electric System of the Utility Board of Key West, Florida (City of Key West), and Miami-Dade County. However, starting in January 2010, Lee County will also be a customer in this class.

Sales to the City of Key West are forecasted using a regression model. Forecasted sales to the Florida Keys are based on assumptions regarding their contract demand and expected load factor. Miami-Dade County sells 60 MW to Progress Energy. Line losses associated with this sale are billed to Miami-Dade under a wholesale contract. Lee County has contracted for FPL to supply a portion of their load beginning in January 2010 and for FPL to supply their total load beginning in January 2014 through December 2033. Forecasted sales to Lee County are based on assumptions regarding their contract demand and expected load factor.

II.D. Net Energy for Load (NEL)

An econometric model is developed to produce an NEL forecast. The key inputs to the model are: the real price of electricity, Heating and Cooling Degree-Hours, and Florida Real Personal Income.

Once the NEL forecast is obtained using the above-mentioned methodology, the results are then compared for reasonableness to the NEL forecast generated using the total sales forecast. The sales by class forecasts previously discussed are then adjusted to match the NEL from the annual NEL model.

The forecasted NEL values for 2008 – 2017 are presented in Schedule 3.3 that appears at the end of this chapter.

II.E. System Peak Forecasts

The rate of absolute growth in FPL system peak load has been a function of a growing customer base, varying weather conditions, continued economic growth, changing patterns of customer behavior (including an increased stock of electricity-consuming appliances), and more efficient heating and cooling appliances. FPL developed the peak forecast models to capture these behavioral relationships. In addition, as previously discussed, the introduction of the Lee County load beginning in January 2010 is a new factor in FPL's 2008 load forecast that is addressed in the forecast models.

The forecasting methodology of Summer, Winter, and monthly system peaks is discussed below. The forecasted values for Summer and Winter peak loads for the years 2008–2017 are presented in Schedules 3.1 and 3.2 as well as in Schedules 7.1 and 7.2.

1. **System Summer Peak**
   The Summer peak forecast is developed using an econometric regression model. This econometric model utilizes the following explanatory variables: total average customers, the real price of electricity, Florida Real Personal Income, average temperature on peak day, and a heat buildup weather factor consisting of the sum of the Cooling Degree -Hours during the peak day and three prior days.

2. **System Winter Peak**
   The Winter peak forecast is developed using the same econometric regression methodology as is used for Summer peak forecasts. The Winter peak model is a per customer model which contains the following explanatory variables: the square of the minimum temperature on the peak day and Heating Degree-Hours for the prior day as well as for the morning of the Winter peak day. The model also includes an economic variable: Florida Real Personal Income.

3. **Monthly Peak Forecasts**

Monthly peaks are forecasted to provide information for the scheduling of maintenance for power plants and fuel budgeting. The forecasting process is basically the same as for the monthly NEL forecast and consists of the following actions:

a. Develop the historical seasonal factor for each month by using ratios of historical monthly peaks to seasonal peaks (Summer = April-October, Winter = November-March.)

b. Apply the monthly ratios to their respective seasonal peak forecast to derive the peak forecast by month. This process assumes that the seasonal factors remain unchanged over the forecasting period.

II.F. The Hourly Load Forecast

Forecasted values for system hourly load for the period 2008-2026 are produced using a System Load Forecasting "shaper" program. This model uses sixteen years of historical FPL hourly system load data to develop load shapes for weekdays, weekend days, and holidays. The model allows calibration of hourly values where the peak is maintained or where both the peak and minimum load-to-peak ratio is maintained.

Schedule 2.1
History and Forecast of Energy Consumption And Number of Customers by Customer Class

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
			Rural & Residential			Commercial		
		Members per		Average 3/ No. of	Average KWH Consumption		Average 3/ No. of	Average KWH Consumption
Year	Population 1/	Household	GWH 2/	Customers	Per Customer	GWH 2/	Customers	Per Customer
1998	7,249,627	2.22	45,482	3,266,011	13,926	34,618	396,749	87,255
1999	7,412,744	2.22	44,187	3,332,422	13,260	35,524	404,942	87,725
2000	7,603,964	2.23	46,320	3,414,002	13,568	37,001	415,295	89,096
2001	7,754,846	2.22	47,588	3,490,541	13,633	37,960	426,573	88,989
2002	7,898,628	2.21	50,865	3,566,167	14,263	40,029	435,313	91,955
2003	8,079,316	2.21	53,485	3,652,663	14,643	41,425	444,650	93,163
2004	8,247,442	2.20	52,502	3,744,915	14,020	42,064	458,053	91,832
2005	8,469,602	2.21	54,348	3,828,374	14,196	43,468	469,973	92,490
2006	8,620,855	2.21	54,570	3,906,201	13,970	44,487	478,930	92,889
2007	8,729,806	2.19	55,138	3,981,451	13,849	45,921	493,130	93,121
2008	8,861,063	2.19	57,243	4,038,555	14,174	47,382	499,843	94,794
2009	8,994,454	2.19	59,323	4,101,036	14,465	48,862	511,028	95,615
2010	9,151,644	2.19	61,420	4,170,352	14,728	50,568	521,289	97,006
2011	9,322,534	2.20	64,016	4,246,852	15,074	52,364	531,779	98,469
2012	9,484,655	2.20	66,564	4,320,532	15,407	54,096	541,819	99,841
2013	9,635,901	2.19	69,483	4,390,441	15,826	55,638	551,197	100,940
2014	9,784,007	2.19	71,587	4,459,223	16,054	57,062	560,814	101,749
2015	9,933,270	2.19	73,170	4,528,735	16,157	58,498	570,634	102,514
2016	10,087,189	2.19	75,147	4,599,061	16,340	59,963	580,654	103,269
2017	10,242,968	2.19	77,121	4,670,181	16,514	61,426	590,870	103,959

1/ Population represents only the area served by FPL. Does not include any Wholesale customers.
2/ Actual energy sales include the impacts of existing conservation. Forecasted energy sales do not include the impact of incremental conservation.
3/ Average No. of Customers is the annual average of the twelve month values.

Schedule 2.2
History and Forecast of Energy Consumption And Number of Customers by Customer Class

(1)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Industrial			Railroads	Street &	Other Sales to	Total Sales to
		Average 3/ No. of	Average KWH Consumption	& Railways	Highway Lighting	Public Authorities	Ultimate Consumers
Year	GWH 2/	Customers	Per Customer	GWH	GWH 2/	GWH	GWH 4/
1998	3,951	15,126	261,206	81	373	625	85,130
1999	3,948	16,040	246,135	79	473	465	84,676
2000	3,768	16,410	229,616	81	408	381	87,960
2001	4,091	15,445	264,875	86	419	67	90,212
2002	4,057	15,533	261,186	89	420	63	95,523
2003	4,004	17,029	235,128	93	425	64	99,496
2004	3,964	18,512	214,139	93	413	58	99,095
2005	3,913	20,392	191,873	95	424	49	102,296
2006	4,036	21,216	190,232	94	422	49	103,659
2007	3,774	18,732	201,499	91	437	53	105,415
2008	3,923	14,129	277,667	93	444	52	109,137
2009	3,931	13,245	296,769	93	456	50	112,715
2010	3,940	13,447	292,976	93	468	49	116,537
2011	3,947	14,116	279,616	93	481	48	120,948
2012	3,950	14,857	265,856	93	493	46	125,243
2013	3,952	15,463	255,565	93	506	46	129,718
2014	3,953	15,978	247,423	93	518	46	133,260
2015	3,955	16,389	241,307	93	530	46	136,293
2016	3,955	16,722	236,525	93	543	46	139,747
2017	3,955	16,917	233,767	93	555	46	143,196

2/ Actual energy sales include existing conservation. Forecasted energy sales do not include the impact of incremental conservation.

3/ Average No.of Customers is the annual average of the twelve month values.

4/ GWH Col. (16) = Col. (4) + Col. (7) + Col. (10) + Col. (13) + Col. (14) + Col. (15).

Schedule 2.3
History and Forecast of Energy Consumption
And Number of Customers by Customer Class

(1) Year	(17) Sales for Resale GWH	(18) Utility Use & Losses GWH	(19) Net 5/ Energy For Load GWH 2/	(20) Average 3/ No. of Other Customers	(21) Total Average 3/,6/ Number of Customers
1998	1,326	6,206	92,662	2,584	3,680,470
1999	953	5,829	91,458	2,605	3,756,009
2000	970	7,059	95,989	2,694	3,848,401
2001	970	7,222	98,404	2,722	3,935,281
2002	1,233	7,443	104,199	2,792	4,019,805
2003	1,511	7,386	108,393	2,879	4,117,221
2004	1,531	7,464	108,091	3,029	4,224,509
2005	1,506	7,498	111,301	3,157	4,321,896
2006	1,569	7,909	113,137	3,216	4,409,563
2007	1,499	7,401	114,315	3,276	4,496,589
2008	903	8,316	118,357	3,353	4,555,881
2009	903	8,233	121,852	3,435	4,628,744
2010	1,871	8,596	127,004	3,515	4,708,603
2011	2,001	8,913	131,862	3,597	4,796,344
2012	2,047	9,581	136,871	3,682	4,880,891
2013	2,089	9,567	141,374	3,770	4,960,871
2014	5,450	10,042	148,752	3,857	5,039,871
2015	5,919	10,283	152,495	3,942	5,119,700
2016	6,098	10,538	156,384	4,028	5,200,465
2017	6,251	10,799	160,246	4,114	5,282,082

2/ Actual energy sales include existing conservation. Forecasted energy sales do not include the impact of incremental conservation and agrees to Col. (2) on Schedule 3.3.

3/ Average No.of Customers is the annual average of the twelve month values.

5/ GWH Col. (19) = Col. (16) + Col. (17) + Col. (18). Actual NEL include the impacts of existing conservation and agrees to Col. (8) on schedule 3.3.

6/ Total Col. (21) = Col. (5) + Col. (8) + Col. (11) + Col. (20).

Schedule 3.1
History and Forecast of Summer Peak Demand: Base Case

(1) Year	(2) Total	(3) Wholesale	(4) Retail	(5) Interruptible	(6) Res. Load Management	(7) Residential Conservation	(8) C/I Load Management	(9) C/I Conservation	(10) Net Firm Demand
1998	17,897	426	17,471	0	628	526	458	385	16,811
1999	17,615	169	17,446	0	673	592	452	420	16,490
2000	17,808	161	17,647	0	719	645	467	451	16,622
2001	18,754	169	18,585	0	737	697	488	481	17,529
2002	19,219	261	18,958	0	770	755	489	517	17,960
2003	19,668	253	19,415	0	781	799	577	554	18,310
2004	20,545	258	20,287	0	783	847	588	578	19,174
2005	22,361	264	22,097	0	790	895	600	611	20,971
2006	21,819	256	21,563	0	809	948	635	640	18,787
2007	21,962	261	21,701	0	954	982	715	683	18,628
2008	22,356	162	22,195	0	966	129	738	75	20,448
2009	22,792	162	22,630	0	997	174	760	103	20,758
2010	23,554	361	23,193	0	1016	221	776	133	21,408
2011	24,191	368	23,823	0	1037	270	791	166	21,927
2012	24,837	373	24,463	0	1,059	322	806	201	22,449
2013	25,414	380	25,034	0	1,083	375	822	236	22,898
2014	26,576	1,076	25,500	0	1,110	430	837	274	23,925
2015	27,241	1,106	26,136	0	1,139	486	852	312	24,452
2016	27,932	1,135	26,797	0	1,164	535	867	345	25,021
2017	28,621	1,165	27,456	0	1,189	583	880	378	25,591

Historical Values (1998 - 2007):

Col. (2) - Col. (4) are actual values for historical summer peaks. As such, they incorporate the effects of conservation (Col. 7 & Col. 9), and may incorporate the effects of load control if load control was operated on these peak days. Therefore, Col. (2) represents the actual Net Firm Demand.

Col. (5) - Col. (9) for 1997 through 2006 represent actual DSM capabilities starting from January 1988 and are annual (12-month) values. Note that the values for FPL's former Interruptible Rate are incorporated into Col. (8), which also includes Business On Call (BOC) and Commercial /Industrial Demand Reduction (CDR). Col.(5) - Col.(9) for year 2004 are "estimated actuals" and are August values.

Col. (10) represents a HYPOTHETICAL "Net Firm Demand" if the load control values had definitely been exercised on the peak. Col. (10) is derived by the formula:Col. (10) = Col.(2) - Col.(6) - Col.(8).

Projected Values (2008 - 2017):

Col. (2) - Col.(4) represent FPL's forecasted peak w/o incremental conservation or cumulative load control. The effects of conservation implemented prior to 2004 are incorporated into the load forecast.

Col. (5) - Col. (9) represent all incremental conservation and cumulative load control. These values are projected August values and the conservation values are based on projections with a 1/2006 starting point for use with the 2006 load forecast.

Col. (10) represents a 'Net Firm Demand" which accounts for all of the incremental conservation and assumes all of the load control is implemented on the peak. Col. (10) is derived by using the formula: Col. (10) = Col. (2) - Col. (5) - Col. (6) - Col. (7) - Col. (8) - Col. (9).

Schedule 3.2
History and Forecast of Winter Peak Demand:Base Case

(1) Year	(2) Total	(3) Firm Wholesale	(4) Retail	(5) Interruptible	(6) Res. Load Management	(7) Residential Conservation	(8) C/I Load Management	(9) C/I Conservation	(10) Net Firm Demand
1998/99	16,802	149	16,653	0	692	404	446	164	15,664
1999/00	17,057	142	16,915	0	741	434	438	176	15,878
2000/01	18,199	150	18,049	0	791	459	448	183	16,960
2001/02	17,597	145	17,452	0	811	500	457	196	16,329
2002/03	20,190	246	19,944	0	847	546	453	206	18,890
2003/04	14,752	211	14,541	0	857	570	532	230	13,363
2004/05	18,108	225	17,883	0	862	583	542	233	16,704
2005/06	19,683	225	19,458	0	870	600	550	240	18,263
2006/07	16,815	223	16,592	0	894	620	577	249	15,344
2007/08	18,055	225	17,830	0	879	644	635	279	15,618
2008/09	22,755	137	22,617	0	935	54	644	17	21,105
2009/10	23,454	138	23,316	0	972	82	670	27	21,704
2010/11	23,971	374	23,597	0	989	109	678	38	22,157
2011/12	24,487	381	24,105	0	1,009	137	686	51	22,604
2012/13	24,976	387	24,588	0	1,030	166	694	65	23,022
2013/14	26,290	394	25,895	0	1,052	194	702	79	24,262
2014/15	26,979	1,226	25,753	0	1,077	224	711	95	24,873
2015/16	27,690	1,260	26,430	0	1,105	253	719	112	25,502
2016/17	28,418	1,296	27,122	0	1,131	280	726	127	26,154
2017/18	29,178	1,332	27,846	0	1,154	305	733	141	26,844

Historical Values (1998 - 2007):

Col. (2) - Col. (4) are actual values for historical winter peaks. As such, they incorporate the effects of conservation (Col. 7 & Col. 9), and may incorporate the effects of load control if load control was operated on these peak days. Therefore, Col. (2) represents the actual Net Firm Demand.

Col. (5) - Col.(9) for 1996/97 through 2005/06 represent actual DSM capabilities starting from January 1988 and are annual (12-month) values. Note that the values for FPL's former Interruptible Rate are incorporated into Col. (8), which also includes Business On Call (BOC) and Commercial/Industrial Demand Reduction (CDR).Col.(5) - Col.(9) for year 2004/05 are "estimated actuals" and are January values.

Col. (10) represents a HYPOTHETICAL "Net Firm Demand" if the load control values had definitely been exercised on the peak. Col. (10) is derived by the formula: Col. (10) = Col. (2) - Col. (6) - Col. (8).

Projected Values (2008 - 2017):

Col. (2) - Col.(4) represent FPL's forecasted peak w/o incremental conservation or cumulative load control. The effects of conservation implemented prior to 2004 are incorporated into the load forecast.

Col. (5) - Col.(9) represent all incremental conservation and cumulative load control. These values are projected January values and the conservation values are based on projections with a 1/2004 starting point for use with the 2004 load forecast.

Col. (10) represents a 'Net Firm Demand" which accounts for all of the incremental conservation and assumes all of the load control is implemented on the peak. Col. (10) is derived by using the formula: Col. (10) = Col. (2) - Col. (5) - Col. (6) - Col. (7) - Col. (8) - Col. (9).

Schedule 3.3

History of Annual Net Energy for Load - GWH: Base Case

(All values are "at the generator"value)

(1)	(2) = (5) + (3) + (4)	(3)	(4)	(5)	(6)	(7)	(8) = (5) - (6) - (7)	(9)
Year	Total Net Energy For Load without DSM	Residential Conservation	C/I Conservation	**Actual** Net Energy For Load	Sales for Resale GWH	Utility Use & Losses	**Actual** Total Billed Retail Energy Sales (GWH)	Load Factor(%)
1998	95,318	1,374	1,282	92,662	1,326	6,206	85,130	59.1%
1999	94,365	1,542	1,365	91,458	953	5,829	84,676	59.3%
2000	99,097	1,674	1,434	95,989	970	7,059	87,960	61.4%
2001	101,739	1,789	1,545	98,404	970	7,222	90,212	59.9%
2002	107,755	1,917	1,639	104,199	1,233	7,443	95,523	61.9%
2003	112,160	2,008	1,759	108,393	1,511	7,386	99,496	62.9%
2004	112,031	2,106	1,834	108,091	1,531	7,464	99,095	59.9%
2005	115,440	2,205	1,934	111,301	1,506	7,498	102,296	56.8%
2006	117,490	2,312	2,041	113,137	1,569	7,909	103,659	59.2%
2007	118,894	2,373	2,206	114,315	1,499	7,401	105,415	59.4%

Historical Values (1998 - 2007):

Col. (2) represents derived "Total Net Energy For Load w/o DSM". The values are calculated using the formula: Col. (2) = Col. (3) + Col. (4) + Col. (5).

Col.(3) & Col.(4) for 1998 through 2007 are DSM values starting in January 1988 and are annual (12-month) values.Col. (3) and Col. (4) for 2007 are "estimated actuals" and are also annual (12-month) values. The values represent the total GWH reductions actually experienced each year .

Col. (5) is the **actual** Net Energy for Load (NEL) for years 1998 - 2007.

Col. (8) is the Total Retail Billed Sales. The values are calculated using the formula: Col. (8) = Col. (5) - Col. (6) - Col. (7).

Col. (9) is calculated using Col. (5) from this page and Col. (2), "Total", from Schedule 3.1 using the formula: Col. (9) = ((Col. (5)*1000) / ((Col.(2) * 8760)

Forecast of Annual Net Energy for Load - GWH: Base Case

(All values are "at the generator"value)

(1)	(2)	(3)	(4)	(5) = (2) - (3) - (4)	(6)	(7)	(8) = (2) - (6) - (7)	(9)
Year	**Forecasted** Net Energy For Load without DSM	Residential Conservation	C/I Conservation	Net Energy For Load Adjusted for DSM	Sales for Resale GWH	Utility Use & Losses	**Forecasted** Total Billed Retail Energy Sales (GWH) without DSM	Load Factor(%)
2008	118,357	91	41	118,225	903	8,316	109,137	60.3%
2009	121,852	181	86	121,586	903	8,233	112,715	61.0%
2010	127,004	275	133	126,595	1,871	8,596	116,537	61.6%
2011	131,862	373	184	131,305	2,001	8,913	120,948	62.2%
2012	136,871	475	238	136,158	2,047	9,581	125,243	62.7%
2013	141,374	580	294	140,500	2,089	9,567	129,718	63.5%
2014	148,752	688	354	147,710	5,450	10,042	133,260	63.9%
2015	152,495	797	413	151,285	5,919	10,283	136,293	63.9%
2016	156,384	894	510	154,979	6,098	10,538	139,747	63.7%
2017	160,246	991	608	158,647	6,251	10,799	143,196	63.9%

Forecasted Values (2008 - 2017):

Col. (2) represents Forecasted Net Energy for Load w/o DSM values. The values are extracted from Schedule 2.3, Col. (19).

Col. (3) & Col. (4) are forecasted values of the reduction on sales from incremental conservation and are mid-year (6-month) values. The effects of conservation implemented prior to 2006 are incorporated into the load forecast.

Col. (5) is the forecasted Net Energy for Load (NEL) with DSM for years 2008 - 2017.

Col. (8) is the Retail Billed Sales. The values are calculated using the formula: Col. (8) = Col. (2) - Col. (6) - Col. (7).

Col. (9) is calculated using Col. (2) from this page and Col. (2), "Total", from Schedule 3.1. Col. (9) = ((Col. (2)*1000) / ((Col. (2) * 8760)
Adjustments are made for leap years.

Schedule 4
Previous Year Actual and Two-Year Forecast of
Retail Peak Demand and Net Energy for Load (NEL) by Month

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	2007 ACTUAL		2008* FORECAST		2009* FORECAST	
Month	Total Peak Demand MW	NEL GWH	Total Peak Demand MW	NEL GWH	Total Peak Demand MW	NEL GWH
JAN	15,619	8,458	22,332	8,579	22,755	9,051
FEB	16,815	7,476	18,409	7,938	18,757	8,154
MAR	16,450	8,427	17,369	8,964	17,698	9,216
APR	17,623	8,775	18,612	9,089	18,974	9,370
MAY	19,004	9,319	20,648	9,982	21,050	10,292
JUN	20,560	10,593	21,488	10,763	21,907	11,055
JUL	21,732	10,979	21,900	11,599	22,326	11,883
AUG	21,962	11,978	22,356	11,573	22,792	11,911
SEP	21,808	11,283	21,701	11,529	22,124	11,776
OCT	19,876	10,293	20,191	10,217	20,585	10,506
NOV	16,484	8,434	18,853	9,289	19,238	9,518
DEC	16,043	8,300	19,247	8,833	19,639	9,121
TOTALS		114,315		118,357		121,852

* Forecasted Peaks & NEL do not include the impacts of cumulative load management and incremental conservation and are consistent with values shown in Col. (19) of Schedule 2.3 and Col (2) of Schedule 3.3.

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CHAPTER III

Projection of Incremental Resource Additions

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III. Projection of Incremental Resource Additions

III.A FPL's Resource Planning:

FPL developed an integrated resource planning (IRP) process in the early 1990s and has since utilized the process to determine when new resources are needed, what the magnitude of the needed resources are, and what type of resources should be added. The timing and type of potential new power plants, the primary subjects of this document, are determined as part of the IRP process work. This section discusses how FPL applied this process in its 2007 and early 2008 resource planning work.

Four Fundamental Steps of FPL's Resource Planning:

There are 4 fundamental "steps" to FPL's resource planning. These steps can be described as follows:

Step 1: Determine the magnitude and timing of FPL's new resource needs;

Step 2: Identify which resource options and resource plans can meet the determined magnitude and timing of FPL's resource needs (i.e., identify competing options and resource plans);

Step 3: Evaluate the competing options and resource plans in regard to system economics and non-economic factors; and,

Step 4: Select a resource plan and commit, as needed, to near-term options.

Figure III.A.1 graphically outlines the 4 steps.

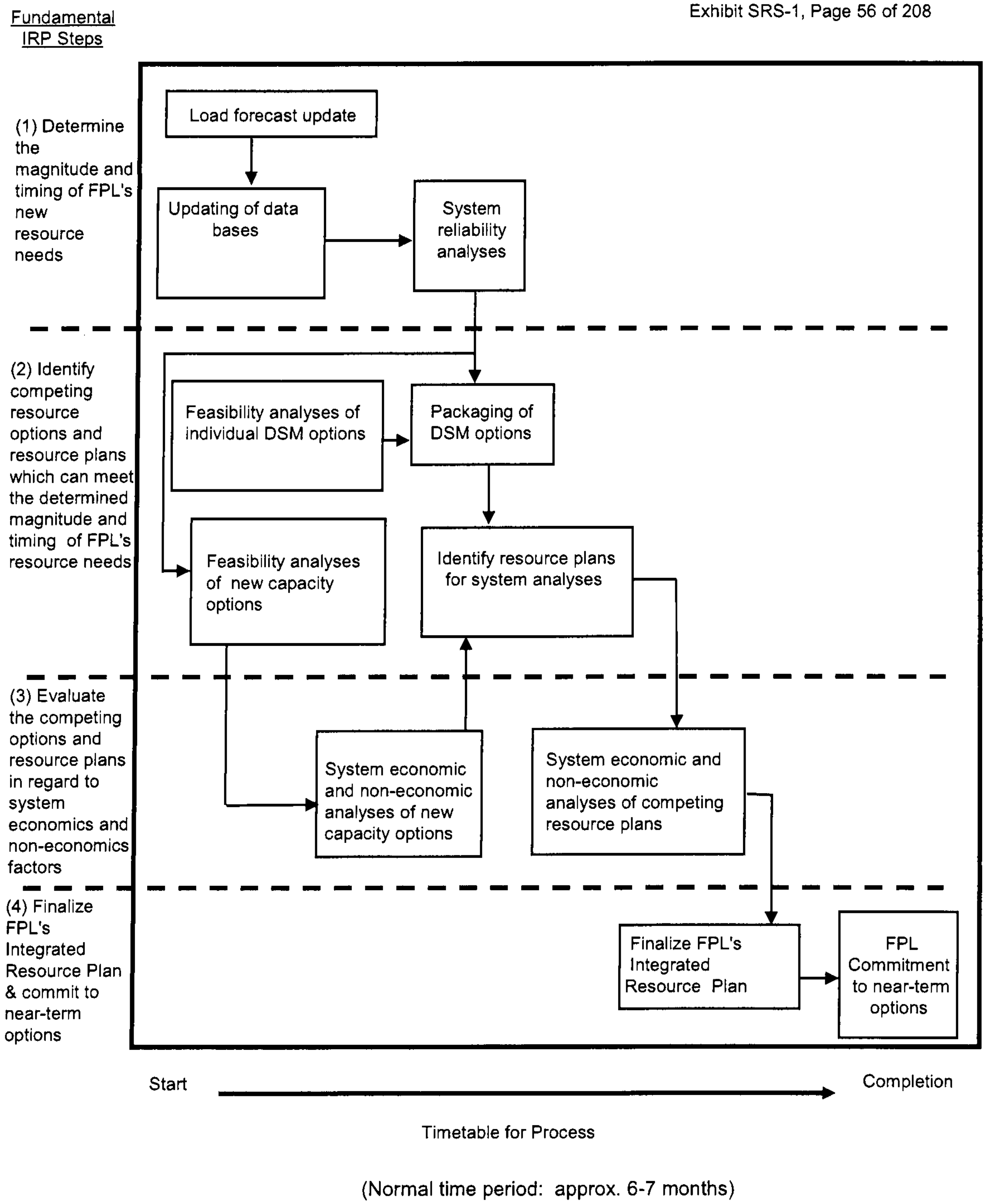

Figure III.A.1: Overview of FPL's IRP Process

Step 1: Determine the Magnitude and Timing of FPL's New Resource Needs:

The first of these four resource planning steps, determining the magnitude and timing of FPL's resource needs, is essentially a determination of the amount of capacity or megawatts (MW) of load reduction, new capacity additions, or a combination of both load reduction and new capacity additions that are needed. Also determined in this step is when the MW are needed to meet FPL's planning criteria. This step is often referred to as a reliability, or resource adequacy, assessment for the utility system.

Step 1 typically starts with an updated load forecast. Several databases are also updated in this first fundamental step, not only with the new information regarding forecasted loads, but also with other information that is used in many of the fundamental steps in resource planning. Examples of this new information include: delivered fuel price projections, current financial and economic assumptions, and power plant capability and reliability assumptions. FPL also includes key assumptions regarding three specific resource areas: (1) near-term construction capacity additions, (2) firm capacity power purchases, and (3) DSM implementation.

The first of these assumptions is based on FPL's ongoing engineering and construction activities to add near-term capacity. These construction activities include two new combined cycle (CC) units at FPL's West County Energy Center (WCEC) site scheduled to come in-service by mid-2009 and mid-2010 respectively. FPL selected these CC units, designated as WCEC 1 & 2, after conducting a Request for Proposals (RFP) solicitations and evaluating the options received in response to the RFP. The need for these additions was approved by the FPSC, and the Governor and Cabinet, acting as the Siting Board, approved FPL's Site Certification Application for the units.

The second of these assumptions involves firm capacity power purchases. These firm capacity purchases are from a combination of utility and independent power producers. Details, including the annual total capacity values for these purchases are presented in Tables I.B.1 and I.B.2. These purchased capacity amounts were incorporated in FPL's recent resource planning work.

The third of these assumptions involves DSM. Since 1994, FPL's resource planning work has assumed that the DSM MW called for in FPL's approved DSM Goals will be achieved per plan as has historically been the case. This was again the case in FPL's most recent planning work as its new DSM Goals that address the years 2005 through 2014, and that were approved by the FPSC in August 2004, are assumed to be achieved per plan. In addition, FPL's resource planning also incorporated a significant amount of additional cost-effective DSM through 2014 that FPL identified after FPL's DSM Goals had been set. In addition, FPL is also assuming continued DSM implementation in 2015 - 2017 at annual implementation rates commensurate with DSM implementation rates projected for the years immediately preceding 2014. In total, these projected DSM efforts will result in FPL implementing approximately 1,539 MW of cost-effective DSM from August 2006 through August 2017 beyond the significant amount of DSM previously achieved by FPL. These additional MWs of DSM were also accounted for prior to making projections of new resource needs.

These key assumptions, plus the other updated information, are then applied in the first fundamental step: the determination of the magnitude and the timing of FPL's resource needs. This determination is accomplished by system reliability analyses which are typically based on a dual planning criteria of a minimum peak period reserve margin of 20% (FPL applies this to both Summer and Winter peaks) and a maximum loss-of-load probability (LOLP) of 0.1 day per year. Both of these criteria are commonly used throughout the utility industry.

Historically, two types of methodologies, deterministic and probabilistic, have been employed in system reliability analysis. The calculation of excess firm capacity at the annual system peaks (reserve margin) is the most common method, and this relatively simple deterministic calculation can be performed on a spreadsheet. It provides an indication of the adequacy of a generating system's capacity resources compared to its load during peak periods. However, deterministic methods do not take into account probabilistic-related elements such as the impact of individual unit failures. For example: two 50 MW units which can be counted on to run 90% of the time are more valuable in regard to utility system reliability than is one 100 MW unit which can also be counted on to run 90% of the time. Probabilistic methods also recognize the value of being part of an interconnected system with access to multiple capacity sources.

For this reason, probabilistic methodologies have been used to provide an additional perspective on the generation resource adequacy of a generating system. There are a number of probabilistic methods that are being used to perform system reliability analyses. Of these, the most widely used is loss–of-load probability or LOLP. Simply stated, LOLP is an index of how well a generating system may be able to meet its demand (i.e., a measure of how often load may exceed available resources). In contrast to reserve margin, the calculation of LOLP looks at the daily peak demands for each year, while taking into consideration such probabilistic events as the unavailability of individual generators due to scheduled maintenance or forced outages.

LOLP is expressed in units of the "number of times per year" that the system demand could not be served. The standard for LOLP accepted throughout the industry is a maximum of 0.1 day per year. This analysis requires a more complicated calculation methodology than does the reserve margin analysis. LOLP analyses are typically carried out using computer software models such as the Tie Line Assistance and Generation Reliability (TIGER) program used by FPL.

The result of the first fundamental step of resource planning is a projection of how many new MW of resources are needed to meet both reserve margin and LOLP criteria, and thus maintain system reliability, and of when the MW are needed. Information regarding the timing and magnitude of these resource needs is used in the second fundamental step: identifying resource options and resource plans that can meet the determined magnitude and timing of FPL's resource needs.

Step 2: Identify Resource Options and Plans That Can Meet the Determined Magnitude and Timing of FPL's Resource Needs:

The initial activities associated with this second fundamental step of resource planning generally proceed concurrently with the activities associated with Step 1. During Step 2, feasibility analyses of new capacity options are conducted to determine which new capacity options appear to be the most competitive on FPL's system. These analyses also establish capacity size (MW) values, projected construction/permitting schedules, and operating parameters and costs. In similar analyses, feasibility analyses of new DSM options and/or continued growth in existing DSM options are conducted.

The individual new resource options emerging from these feasibility options are then typically "packaged" into different resource plans which are designed to meet the system reliability criteria. In other words, resource plans are created by combining individual resource options so that the timing and magnitude of FPL's new resource needs are met. The creation of these competing resource plans is typically carried out using spreadsheet and/or dynamic programming techniques.

At the conclusion of the second fundamental resource planning step, a number of different combinations of new resource options (i.e., resource plans) of a magnitude and timing necessary to meet FPL's resource needs are identified.

Step 3: Evaluate the Competing Options and Resource Plans in Regard to System Economics and Non-Economic Factors:

At the completion of fundamental steps 1 & 2, the most viable new resource options have been identified, and these resource options have been combined into a number of resource plans which meet the magnitude and timing of FPL's resource needs. The stage is set for evaluating these resource options and resource plans. In 2007, once the resource plans were developed, FPL utilized the P-MArea production cost model and a Fixed Cost Spreadsheet to perform the economic analyses. The P-MArea model is the model used by FPL to develop the Fuel Cost Budget and to conduct other production cost-related analyses.

FPL also utilized several other models in the economic evaluation portion of its resource planning work. For DSM analyses, FPL used its DSM cost-effectiveness model; an FPL spreadsheet model utilizing the FPSC's approved methodology for analyzing the cost-effectiveness of individual DSM measures/programs, and its non-linear programming model for analyzing the potential for lowering system peak loads through additional load management capacity.

The basic economic analyses of the competing resource plans focus on total system economics. The standard basis for comparing the economics of competing resource plans is their relative impact on FPL's electricity rate levels, with the intent of minimizing FPL's leveled system average rate (i.e., a Rate Impact Measure or RIM methodology). However, in cases in which the DSM contribution was assumed as a given and the only competing options were new generating units and/or purchase options, comparisons of competing resource plans' impacts on electricity rates and on system revenue requirements are equivalent. Consequently, the competing options and plans were evaluated on a cumulative present value revenue requirement (CPVRR) basis.

Other factors are also included in FPL's evaluation of resource options and resource plans. While these factors may have an economic component or impact, they are often discussed in quantitative, but non-economic terms, such as percentages, etc. rather than in terms of dollars. These factors are often referred to by FPL as "system concerns" that include maintaining/enhancing fuel diversity in the FPL system, maintaining a regional imbalance between load and generating capacity, particularly in Southeastern Florida, and moving in the direction of lowering system carbon dioxide (CO_2) emissions. In conducting the evaluations needed to determine which resource options and resource plans are best for FPL's system, both the economic and non-economic evaluations are conducted with an eye to whether the system concern is positively or negatively impacted by a given resource option or resource plan.

Step 4: Finalizing FPL's Current Resource Plan

The results of the previous three fundamental steps were used to develop the future generation plan. This plan is presented in the following section.

III.B Incremental Resource Additions

FPL's projected incremental generation capacity additions/changes for 2008 through 2017 are depicted in Table III.B.1 (the planned DSM additions through 2017 were shown previously in Table I.D.1). These capacity additions/changes result from a variety of actions including: changes to existing units (which are frequently achieved as a result of plant component replacements during major overhauls), changes in the amounts of purchased power being delivered under existing contracts as per the contract schedules or by entering into new purchase contracts, increases in generating capacity at FPL's four existing nuclear units, and by construction of both committed and proposed new generating units.

As shown in Table III.B.1, the capacity additions are largely made up of committed new construction, new purchases, and proposed self-build alternatives. (The additional DSM MW are not presented in this table but have been accounted for prior to making these new capacity option projections.) In 2009, the table shows previously committed generation additions: the new 1,219 MW CC unit at the West County Energy Center (WCEC) that is scheduled to be placed into service in June 2009 (WCEC Unit 1), and a second 1,219 MW CC unit at WCEC (WCEC Unit 2) that is scheduled to be placed into service in June 2010.

FPL is also currently assuming, for planning purposes, that contract extensions and/or new contracts will be reached with several existing renewable energy suppliers whose contracts with FPL are set to expire within this ten-year period. In addition, FPL's resource plan reflects its intent to obtain additional capacity and/or energy from the Renewable RFP solicitations or its own renewable energy development efforts.

For purposes of this planning document, FPL is assuming that 269 MW of firm capacity from renewable facilities will be added to FPL's system in the ten-year reporting period. This is discussed further in Section III.F.

In addition, FPL will be adding approximately 414 MW of proposed capacity uprates to FPL's four existing nuclear units in the 2011 and 2012 time period. Three uprates are projected to come in-service in December 2011, May 2012, and June 2012, respectively. Therefore, the 310 MW of capacity from these three units is accounted for in Summer reserve margin calculations beginning with the Summer of 2012. The fourth uprate is projected to come in-service in December 2012. Therefore, its 104 MW of capacity is accounted for in Summer reserve margin calculations beginning with the Summer of 2013.

Also projected is the proposed addition of a third new 1,219 MW unsited CC unit at the West County Energy Center site (WCEC 3) similar to the WCEC 1 & 2 units. This proposed new unit would have a June 2011 in-service date.

For purposes of this planning document, FPL also projects the construction of one unsited CC in 2014, and two unsited CC in 2016 to meet its remaining capacity needs through 2017. As an alternative to the 2014 unsited CC unit, FPL is currently evaluating the repowering of existing plants that would be completed in 2013 and 2014. The potential repowering projects are not shown in the table because FPL is currently analyzing these potential additions at the time the 2008 Site Plan is being prepared.

Table III.B.1: Projected Capacity Changes for FPL (1)

Projected Capacity Changes and Reserve Margins for FPL (1)			
		Net Capacity Changes (MW)	
		Winter (2)	Summer (3)
2008	Changes to Existing Units	41	14
	Changes to Existing Purchases (4)	(836)	---
2009	West County Unit #1 (5)	---	1,219
	Changes to Existing Units	28	1
	Changes to Existing Purchases (4)	(326)	(431)
2010	West County Unit #1 (5)	1,335	---
	West County Unit #2 (5)	---	1,219
	Extension Renewable Capacity Purchases	98	98
	Changes to Existing Purchases (4)	(559)	(455)
2011	West County Unit #2 (5)	1,335	---
	West County Unit # 3 (5)	---	1,219
	New Renewable Capacity Purchases	---	32
	Extension Renewable Capacity Purchases	45	45
	Changes to Existing Purchases (4)	(46)	(45)
2012	Changes to Existing Purchases (4)	---	(156)
	West County Unit # 3 (5)	1,335	---
	New Renewable Capacity Purchases	126	94
	Changes to Existing Nuclear Units	103	310
2013	Changes to Existing Nuclear Units	311	104
	Changes to Existing Purchases (4)	(180)	---
2014	Unsited 3 x 1 CC #1 (5)	---	1,219
2015	Unsited 3 x 1 CC #1 (5)	1,335	---
2016	Unsited 3x1 CC # 2 (5)	---	1,219
	Unsited 3x1 CC # 3 (5)	---	1,219
	Changes to Existing Purchases (4)	(930)	(1,311)
2017	Unsited 3x1 CC # 2 (5)	1,335	---
	Unsited 3x1 CC # 3 (5)	1,335	---
	Changes to Existing Purchases (4)	(390)	---
	TOTALS =	5,495	5,614

(1) Additional information about these resulting reserve margins and capacity changes are found on Schedules 7 & 8 respectively.
(2) Winter values are values for January of year shown.
(3) Summer values are values for August of year shown.
(4) These are firm capacity and energy contracts with QF, Utilities and other purchases. See Table I.B.1 and Table I.B.2 for more details.
(5) All new unit additions are scheduled to be in-service in June of the year shown. Consequently, they are included in the Summer reserve margin calculation for the in-service year and in both the Summer and Winter reserve margin calculations for subsequent years.

III.C Issues Impacting FPL's Resource Planning Work

FPL's 2007 and early 2008 planning efforts have continued to address two issues, or system concerns, that were identified in previous Site Plans as being items of on-going importance. Those two system concerns are: (1) the need to maintain fuel diversity in the FPL system and (2) the need to address the imbalance between regional load and generating capacity located in Southeastern Florida.

In addition, a third factor affecting resource planning was introduced in 2007: Florida Governor Crist's Executive Orders. These Orders addressed a number of issues including two of particular interest to electric utilities. The first of these was a goal to provide 20% of the energy produced by electric utilities from renewable, non-emitting sources. The second was to move in the direction of significantly reducing greenhouse gas emissions by 2017 and in later years.

1. **System Fuel Diversity**

FPL is working to increase system fuel diversity in variety of ways. In 2007, FPL sought approval from the FPSC to add two new advanced technology coal units to its system. These two new units would have been placed in-service in 2013 and 2014. However, due to concerns over greenhouse gas emissions, FPL was unable to obtain approval for these units. Consequently, FPL does not believe that new advanced technology coal units are viable generation options for the ten-year reporting period of this Site Plan.

FPL also sought approval for increased nuclear generation capacity in 2007 in two filings with the FPSC. The first filing was to increase capacity at each of FPL's four existing nuclear units by 103 or 104 MW. These capacity "uprates", that in total will add 414 MW to the FPL system in the 2011/2012 time period, were approved by the FPSC in January 2008. The second filing was for approval for FPL to proceed with plans and expenditures for two new nuclear units at FPL's existing Turkey Point site. These two new nuclear units are projected to add 2,200 to 3,040 MW to FPL's system, with the MW value dependent upon the technology eventually selected by FPL. The first of these units is projected to come in-service in 2018 (i.e., outside of the ten-year reporting period of this document) and the second unit to come in-service in 2020. The FPSC voted to approve the need for these two new nuclear units on March 18, 2008 and the FPSC is expected to issue the final order approving the units by mid-April 2008.

FPL also has been involved in activities to investigate adding or maintaining renewable resources as a part of its generation supply. One of these activities is a variety of discussions with existing facilities aimed at maintaining or extending current agreements that are scheduled to end during the ten-year reporting period of this document. Another activity is to attempt to solicit cost-effective new renewable projects. FPL issued a Request for Proposals (RFP) for new renewable energy capacity and energy in 2007 and plans to issue another one in April 2008, Other efforts to utilize renewable energy are discussed in Section III.F.

In the future, FPL will continue to identify and evaluate alternatives that may maintain or enhance fuel diversity in its capacity resource mix. FPL also plans to maintain the ability to utilize fuel oil at those existing units that have that capability, although cost factors currently limit the expected use of these facilities.

2. **Southeastern Florida Imbalance**

In recent years an imbalance had developed between regionally installed generation and peak load in Southeastern Florida. A significant amount of energy required in the Southeastern Florida region during peak periods was being provided through the transmission system from plants located outside the region. FPL's prior planning work concluded that either additional installed capacity in this region, or transmission capacity capable of delivering additional electricity from outside the region, would be required to address this imbalance.

Partly because of the lower transmission-related costs resulting from their location, three recent capacity additions: Turkey Point 5, WCEC Units 1 & 2, were evaluated as the most cost-effective options to meet FPL's 2007, 2009, and 2010 capacity needs, respectively. Adding these units will significantly reduce the imbalance between generation and load in Southeastern Florida.

In addition, FPL is proposing to add the WCEC 3 unit in 2011, and will be adding the already approved plans to increase capacity at FPL's existing two nuclear units at Turkey Point in 2011/2012. The result of these committed and proposed generating unit additions in Southeastern Florida are expected to address the imbalance for most, if not all, of the 2008-2017 reporting period addressed in this document. However, the Southeastern Florida imbalance will remain a consideration in FPL's on-going resource planning work.

3. **Governor Crist's Executive Orders**

The Executive Orders, particularly the portions directing significant increases in renewable, non-emitting energy and decreases in greenhouse gas emissions, are being addressed by FPL in a variety of ways. In regard to renewable energy, FPL's efforts to procure capacity from renewable energy sources, and to build its own renewable energy facilities, is discussed in detail in Section III.F.

These renewable energy efforts have the potential to help lower greenhouse gas emissions. In addition, significant reductions (particularly of carbon dioxide, CO_2) will be accomplished by the approved capacity uprates at FPL's existing nuclear units and the proposed two nuclear units at FPL's existing Turkey Point site. Further reductions in greenhouse gas emissions are also expected from increasing the overall fuel efficiency of FPL's system through the addition of the approved new generating units WCEC 1 & 2, and proposed new WCEC 3 unit. FPL will also continue to look for cost-effective ways to further improve the efficiency of its system that will lead to even more greenhouse gas emission reductions.

Another important potential strategy that could help achieve these objectives is "repowering" one or more of FPL's existing generating plants. The repowering plan consists, in part, of replacing an existing steam plant with a heat rate of about 10,000 Btu/kWh, with a new state-of-the-art advanced combined cycle unit that uses natural gas as the primary fuel, with a heat rate of less than 6,600 Btu/kWh. In addition, this new, highly efficient, repowered unit would result in a net increase in generating capacity.

The principal advantage of repowering is that, in addition to providing a net increase in generating capacity to meet growing demand, in a manner that is cost-competitive with adding a new generating unit, the repowering also converts a significant amount of existing, low efficiency, steam generation that utilizes fuel oil as much as, if not more than, natural gas, into an equivalent amount of highly efficient, low emission, gas-fueled, advanced combined cycle generation and thereby reduces fuel use and air emissions, including CO_2 emissions. As a result, such a repowering strategy could enable FPL to economically reduce, by 2017, CO_2 emissions to the level of CO_2 emissions in 2000, consistent with the 2017 CO_2 emissions target proposed in 2007 by Governor Crist, while still meeting FPL customers' electricity needs.

Before FPL can take concrete steps aimed at implementing a repowering strategy, it must complete a detailed evaluation of all aspects of repowering in order to ensure that its implementation would be beneficial to FPL's customers.

FPL's system CO_2 emission rate (amount of CO_2 emitted per MWh of electricity generated) is already relatively low due in large part to the overall efficiency of FPL's system. The efforts described above have the potential not only to continue the trend of steadily lowering FPL's already low CO_2 emission rate, but also to begin to lower total system CO_2 emissions despite increasing population growth.

III.D Demand Side Management (DSM)

FPL offers a wide variety of cost-effective DSM programs and a DSM-based renewable energy option to its customers. In addition, FPL is actively engaged in DSM research and development. These DSM efforts are discussed in the remainder of this section.

RESIDENTIAL DSM PROGRAMS

1. **Residential Building Envelope:** Offers incentives to residential customers to install energy efficient roof and ceiling insulation measures. FPL offers a maximum incentive of $1,676 per summer kW for ceiling insulation, a maximum incentive of $706 per summer kW for reflective roofs, and $1,518 per summer kW for other roofing technologies.

2. **Duct System Testing and Repair:** Provides reduced cost duct system testing to identify leaks in air conditioning duct systems, and encourages the repair of those leaks by qualified contractors. Incentives are offered for duct system repair. The maximum incentive is $466 per summer kW reduction.

3. **Residential Air Conditioning:** Offers incentives to customers to purchase higher efficiency heating, ventilating, and air conditioning equipment with incentive levels at a maximum of $1,429 and $1,643 per summer kW reduction for straight cooling and heat pumps, respectively. The program includes additional incentives for: 1) plenum repair measure, with a maximum incentive level of $412 per summer kW reduction; 2) air handler units with electronically commutated motors with a maximum incentive of $208 per summer kW; and, 3) units properly sized using FPL approved sizing software with a maximum incentive of $272 per summer kW.

4. **Residential Load Management (On Call Program):** Offers load control of major appliances/household equipment to residential customers in exchange for monthly electric bill credits. Direct load control equipment is installed on selected customer end-use equipment, allowing FPL to control these customer loads as needed. Qualifying equipment (and applicable monthly credits) includes central electric air conditioners ($3.00 for cycle units, and $9.00 for shed units), central electric heaters ($2.00 for cycle, and $4.00 for shed), conventional electric water heaters ($1.50), and swimming pool pumps ($3.00).

5. **Residential New Construction (BuildSmart):** Encourages the design and construction of energy efficient homes by offering education to contractors on energy efficiency measures, and providing construction design reviews and home inspections.

6. **<u>Residential Low Income Weatherization:</u>** Combines energy audits and incentives to encourage low income housing administrators to retrofit homes with energy efficiency measures. The housing authorities include: weatherization agency providers (WAPS), non-weatherization agency providers (non-WAPS), and other providers approved by FPL. The incentives are used by these providers to leverage their funds to increase the overall energy efficiency of the homes they are retrofitting. FPL offers incentives for HVAC maintenance ($45), reduced air infiltration measures ($60), and room air conditioning replacement ($25).

7. **<u>Residential Conservation Service:</u>** Offers a walk-through energy audit, a computer generated Class A audit, and a customer-assisted energy audit. For customer-assisted energy audits, a mail-in, phone, and Internet audit option may be offered. FPL does not apply demand and energy savings from this program towards its DSM Goals.

<u>BUSINESS DSM PROGRAMS</u>

1. **<u>Business Heating, Ventilating, and Air Conditioning (HVAC):</u>** Offers business customers financial incentives to upgrade to higher efficiency HVAC equipment that exceed the minimum efficiencies mandated by the U.S. Department of Energy. The current FPL program includes: 1) a maximum thermal storage incentive up to $898 per summer kW reduction; 2) a maximum incentive for chillers up to $99 per summer kW; 3) incentives for energy recovery ventilator units with a maximum incentive up to $417 per summer kW reduction; 4) incentives for direct expansion (DX) units up to $168 per summer kW reduction and up to $498 per summer kW for efficient air conditioning room units; 5) a maximum incentive of $627 per summer kW for demand control ventilation systems including kitchen hood control; and 6) a maximum incentive of $102 per summer kW for electrically commutated motors for air conditioning systems.

2. **<u>Business Efficient Lighting:</u>** Offers business customers financial incentives to install high efficiency lighting measures at the time of replacement. The FPL current program offers an incentive of $0.65 to $2 per lamp on linear fluorescent plus a schedule of incentives for other efficient lighting technologies.

3. **<u>Business Building Envelope:</u>** Offers financial incentives to business customers to install high efficiency building envelope measures such as roof/ceiling insulation and reflective roof coatings. The current incentive structure offers incentives for summer kW reductions with a maximum incentive of $185 for ceiling insulation, $219 for roof insulation, $579 for reflective roofs, and $429 for window treatments.

4. **Business Custom Incentive**: Serves as a "catch-all" program for cost-effective business efficiency measures which are not included in other FPL programs. DSM measures must reduce or shift at least 25 kW during peak hours, have verifiable demand and energy savings, and pass FPL's cost-effectiveness testing.

5. **Business On Call:** Offers load control of central air conditioning units to both small non–demand-billed, and medium demand-billed, business customers in exchange for monthly electric bill credits. FPL offers incentive payments of $2.00 per ton.

6. **Commercial Industrial Demand Reduction (CDR):** Reduces peak demand by allowing the direct control of customer loads of 200 kW or greater during periods of extreme demand or capacity shortages. Participants contract for a firm demand level which may not be exceeded during load control periods. In return, participants receive a monthly credit of $4.68 per kW used during a specified controllable rating period, less their contracted firm demand. Any kW used in excess of the contracted firm demand level is re-billed at $4.68 per kW, plus a $0.99 penalty charge per kW of excess kW for each month of rebilling. Participants must provide a 5-year termination notice to discontinue service under this rider.

7. **Business Energy Evaluation:** Offers free standard level energy evaluations on-site and on-line. More detailed evaluations are available through this audit program with costs shared between FPL and the participating customer. Participation in FPL's other business DSM programs is promoted through this program.

8. **Commercial/Industrial Load Control:** Reduces peak demand by controlling customer loads of 200 kW or greater during periods of extreme demand or capacity shortages in exchange for monthly electric bill credits. (This program was closed to new participants in 2000).

9. **Business Water Heating:** Encourages the installation of energy-efficient heat recovery units or heat pump water heaters. A maximum incentive of $881 per summer kW reduction is available.

10. **Business Refrigeration:** Encourages the installation of controls and equipment to reduce the usage of electric strip heat for defrosting purposes. FPL offers a maximum incentive of $80 per summer kW reduction.

11. **Cogeneration and Small Power Production**: Facilitates FPL compliance with all regulatory requirements concerning qualifying facilities and small power producers. One role of the program is to assist customers in the evaluation of potential cogeneration

projects, including self-generation. FPL does not project demand and energy savings from this program towards its DSM Goals.

RENEWABLE ENERGY PROGRAM

Green Power Program (marketed as the *Sunshine Energy* ® program): A voluntary program providing interested residential and business customers with the opportunity to support renewable energy development. The program includes a special tariff, under which participating customers voluntarily pay a $9.75 monthly premium. In exchange, FPL purchases a 1,000 kWh block of tradable renewable energy credits. For every 10,000 residential customers participating in the program, FPL will cause to be developed 150 kW of solar capacity in Florida.

RESEARCH AND DEVELOPMENT PROGRAMS

Conservation Research and Development Program (CRD): An umbrella research project under which new DSM technologies are analyzed. Several FPL DSM programs have emerged from the CRD program, including the business Building Envelope, Business On Call, and Residential New Construction programs. The program has also resulted in the addition of cost-effective measures to existing programs, such as the proposed inclusion of Energy Recovery Ventilators to the Business HVAC Program. FPL operates the CRD program based on DSM Plan approval, or for 6 years, whichever occurs first, with a spending cap of $2,500,000 for the period.

Residential Thermostat Load Control Pilot Project: On June 15, 2007 FPL filed a petition with the Commission for the Residential Thermostat Load Control Pilot Project. A typical barrier to customer acceptance of utility load control programs is reluctance to surrender control of heating and air conditioning appliances. Consequently, for an initial 24-month period, FPL is proposing to evaluate whether the benefits of the existing On-Call Program can be expanded through use of a new generation of communication and control technologies that put residential customers in charge of decisions that could lower energy costs, while allowing customers to override FPL control of their heating and air conditioning appliances. The Commission approved FPL's request on August 14, 2007, and issued Consummating Order 07-0719 TRF-EG on September 28, 2007.

DSM SUMMARY:

FPL has sought out and implemented cost-effective DSM programs since 1978. These programs include both conservation initiatives and load management. FPL's DSM efforts through 2007 have resulted in a cumulative Summer peak reduction of approximately 3,958 MW at the generator and an estimated cumulative energy saving of approximately 42,301 Gigawatt Hour (GWh) at the generator. Accounting for reserve margin requirements, FPL's DSM efforts through 2007 have eliminated the need to construct the equivalent approximately 12 new 400 MW generating units.

III.E Transmission Plan

The transmission plan will allow for the reliable delivery of the required capacity and energy for FPL's retail and wholesale customers. The following table presents FPL's proposed future additions of 230 kV bulk transmission lines that must be certified under the Transmission Line Siting Act.

(1) Line Ownership	(2) Terminals (To)	(3) Terminals (From)	(4) Line Length CKT. Miles	(5) Commercial In-Service Date (Mo/Yr)	(6) Nominal Voltage (KV)	(7) Capacity (MVA)
FPL	St. Johns [1/]	Pringle	25	Dec-08	230	759
FPL	Manatee	BobWhite	30	Dec-11	230	1190

1/ Final order certifying the corridor was issued on April 21, 2006. This project will be completed in two phases. Phase I consists of 4 miles of new 230kV line (Pringle to Pellicer) and is scheduled to be completed by Dec-2008. Phase II consists of 21 miles of new 230kV line (St. Johns to Pellicer) and is scheduled to be completed by Jun-2011.

Table III.E.1: List of Proposed Power Lines

In addition, there will be transmission facilities needed to connect several of FPL's committed and proposed capacity additions to the system transmission grid. These transmission facilities for the committed capacity additions at the WCEC site; WCEC 1 & 2, and the proposed capacity addition at the WCEC site, WCEC 3, are described on the following pages.

III.E.1 Transmission Facilities for West County Energy Center (WCEC) Unit 1

The work required to connect West County Energy Center (WCEC) Unit 1 in 2009 with the FPL grid is projected to be as follows:

I. Substation:

1. Build new collector yard containing two collector busses with 4 breakers to connect the three combustion turbines (CT) and one steam turbine (ST).
2. Construct two string busses to connect the collector busses and main switchyard to Corbett 230 kV Substation.
3. Add four main step-up transformers (3-370 MVA, 1-580 MVA), one for each CT, and one for the ST.
4. Add a new Bay #4 with 3 breakers at the Corbett 230 kV main switchyard. Connect one string buss from the collector yard and relocate the Alva 230 kV terminal from Bay #3 to new Bay #4.
5. Connect second collector string buss to Bay #3.
6. Add relays and other protective equipment.
7. Breaker replacements:
   Corbett Sub – Replace eight (8) 230 kV breakers
   Ranch Sub – Replace five (5) 138 kV breakers
   Midway Sub – Replace one (1) 230 kV breaker
   Levee Sub – Replace one (1) 230 kV breaker
   Dade Sub – Replace two (2) 138 kV breakers

II. Transmission:

1. No upgrades expected to be necessary at this time.

III.E.2 Transmission Facilities for West County Energy Center (WCEC) Unit 2

The work required to connect West County Energy Center (WCEC) Unit 2 in 2010 with the FPL grid is projected to be as follows:

I. Substation:

1. Build new collector yard containing two collector busses with 4 breakers to connect the three combustion turbines (CT), and one steam turbine (ST).
2. Construct two string busses to connect the collector busses and main switchyard to Corbett 500kV Substation.
3. Add four main step-up transformers (3-370 MVA, 1- 580 MVA), one for each CT, and one for the ST.
4. At Corbett Sub, install one breaker and relocate Martin #2 500 kV line from Bay 2S to Bay 2N. Install one West County 500 kv string bus into Bay 2S.
5. At Corbett Sub, install one breaker and second West County 500 kV string bus into Bay 1S.
6. Add relays and other protective equipment.
7. Breaker replacements:
   Dade Sub – Replace one (1) 138 kV breaker
   Levee Sub – Replace four (4) 230 kV breakers
   Midway Sub – Replace three (3) 230 kV breakers
   Ranch Sub – Replace one (1) 230 kV breaker

II. Transmission:

1. No upgrades expected to be necessary at this time.

III.E.3 Transmission Facilities for West County Energy Center (WCEC) Unit 3

The work required to connect the proposed West County Energy Center (WCEC) Unit 3 in 2011 with the FPL grid is projected to be as follows:

I. Substation:

1. Build new collector yard containing two collector busses with 4 breakers to connect the three combustion turbines (CT), and one steam turbine (ST).
2. Build new Sugar 230 kV substation on WCEC site.
3. Construct two string busses to connect the collector busses and main switchyard to Sugar 230kV Substation.
4. Add four main step-up transformers (3-370 MVA, 1- 580 MVA), one for each CT, and one for the ST.
5. At Corbett Sub relocate Germantown 230 kV line terminal from Corbett to Sugar Sub.
6. At Corbett Sub relocate Broward/Yamato 230 kV line terminal from Corbett to Sugar Sub.
7. At Corbett Sub install new Sugar 230 kV line terminal in Bay 2W
8. At Corbett Sub, install one 5-ohm reactor on the 230 kV side of the 500/230 kV autotransformer.
9. Add relays and other protective equipment Corbett, Sugar, Rainberry, Broward, Yamato, and Marlin Subs

II. Transmission:

1. Relocate Germantown 230 kV line from Corbett to Sugar.
2. Relocate Broward/Yamato 230 kV line from Corbett to Sugar.
3. Construct one (1) mile 230 kV 1190 MVA line from Sugar to Corbett

III.F. Renewable Resources

FPL has been the leading Florida utility in examining ways to utilize renewable energy technologies to meet its customers' current and future needs. FPL has been involved since 1976 in renewable energy research and development and in facilitating the implementation of various renewable energy technologies. For purposes of discussing FPL's renewable energy efforts in this document, those efforts will be placed into five categories.

1) **Early Research & Development Efforts:**

FPL assisted the Florida Solar Energy Center (FSEC) in the late 1970s in demonstrating the first residential solar photovoltaic (PV) system east of the Mississippi. This PV installation at FSEC's Brevard County location was in operation for over 15 years and provided valuable information about PV performance capabilities in Florida on both a daily and annual basis. FPL later installed a second PV system at the FPL Flagami substation in Miami. This 10-kilowatt (kW) system was placed into operation in 1984. (The system was removed in 1990 to make room for substation expansion after the testing of this PV installation was completed.)

For a number of years, FPL maintained a thin-film PV test facility located at the FPL Martin Plant Site. The FPL PV test facility was used to test new thin-film PV technologies and to identify design, equipment, or procedure changes necessary to accommodate direct current electricity from PV facilities into the FPL system. Although this testing has ended, the site is now the home for PV capacity which was installed as a result of FPL's recent Green Pricing effort (which is discussed below).

2) **Demand Side & Customer Efforts:**

In terms of utilizing renewable energy sources to meet its customers' needs, FPL initiated the first utility-sponsored conservation program in Florida designed to facilitate the implementation of solar technologies by its customers. FPL's Conservation Water Heating Program, first implemented in 1982, offered incentive payments to customers choosing solar water heaters. Before the program was ended (due to the fact that it was no longer cost-effective), FPL paid incentives to approximately 48,000 customers who installed solar water heaters.

In the mid-1980s, FPL introduced another renewable energy program, FPL's Passive Home Program. This program was created in order to broadly disseminate information about passive solar building design techniques which are most applicable in Florida's climate. As part of this program, three Florida architectural firms created complete construction blueprints for 6 passive homes with the assistance of the FSEC and FPL. These designs and blueprints were available to customers at a low cost. During its existence, this program was popular and received a U.S. Department of Energy award for innovation. The program was eventually phased out due to a revision of the Florida Model Energy Building Code (Code). This revision was brought about in part by FPL's Passive Home Program. The revision incorporated into the Code one of the most significant passive design techniques highlighted in the program: radiant barrier insulation.

In early 1991, FPL received approval from the Florida Public Service Commission to conduct a research project to evaluate the feasibility of using small PV systems to directly power residential swimming pool pumps. This research project was completed with mixed results. Some of the performance problems identified in the test were deemed to be solvable, particularly when new pools are constructed. However, the high cost of PV, the significant percentage of sites with unacceptable shading, and various customer satisfaction issues remain as significant barriers to wide acceptance and use of this particular solar application.

FPL then analyzed the feasibility of encouraging utilization of PV in another, potentially much larger way. FPL's basic approach did not require all of its customers to bear PV's high cost, but facilitated the use of renewable energy by customers who were interested. FPL's initial effort to implement this approach allowed customers to make voluntary contributions into a separate fund that FPL used to make PV purchases in bulk quantities. PV modules were then installed and deliver PV-generated electricity directly into the FPL grid, thus displacing an equivalent amount of fossil fuel-generated electricity.

FPL's basic approach for this program, which has been termed Green Pricing, was initially discussed with the FPSC in 1994. FPL's efforts to implement this approach were then formally presented to the FPSC as part of FPL's DSM Plan in 1995 and FPL received approval from the FPSC in 1997 to proceed. FPL began the effort in 1998 and received approximately $89,000 in contributions (that significantly exceeded the goal of $70,000). FPL purchased the PV modules and installed them at FPL's Martin Plant site.

FPL initiated two new renewable efforts in 2000. FPL's first new initiative in 2000 was FPL's Photovoltaic Research, Development, and Education Project. This demonstration project's objectives were to: increase the public awareness of roof tile PV technologies, provide data to determine the durability of this technology and its impact on FPL's electric system, collect demand and energy data to better understand the coincidence between PV roof tile system output and FPL's system peaks (as well as the total annual energy capabilities of roof tile PV systems), and assess the homeowner's financial benefits and costs of PV roof tile systems. This project was completed in 2003.

The second effort initiated in 2000 was the Green Energy Project. The objectives of this Project were to: determine customer interest in an on–going renewable energy program, determine their price responsiveness and views on the different renewable technologies, and identify potential renewable energy supply sources that would meet the forecasted customer demand for this type of product. This Project formed the basis for FPL's Green Power Pricing Research Project, and then led to FPL's Business Green Energy Research Project.

Both the Green Power Pricing Research Project and the Business Green Energy Research Project examined the feasibility of purchasing tradable renewable energy credits generated from renewable resources including solar-powered technologies, biomass energy, landfill methane, wind energy, low impact hydroelectric energy, and/or other renewable sources. Customers who participate are charged a premium for purchasing the tradable renewable energy credits associated with electric energy generated by these sources.

Development of the Green Pricing Research Project was completed and filed with the FPSC in August 2003. As part of this process, a supply contract was put into place that allows FPL to match supply with demand for green energy. Tradable renewable energy credits are used to supply the renewable benefits required of this project. The FPSC approved the program on December 2, 2003 with program implementation during the first quarter of 2004. The project was offered to customers as FPL's Sunshine Energy® program. As part of the project, FPL made a commitment that 150 kW of solar capacity would be put in place for every 10,000 program participants. The Business Green Energy Research Project focused on determining the interest and needs for business customers in this area. In 2006 FPL petitioned the FPSC for approval to make the Green Pricing Research Project a permanent program and expand eligibility to business customers. This approval was granted in the fourth quarter of 2006.

As of the end of 2007, FPL had 36,918 participants in the program. The Rothenbach Park solar array in Sarasota was commissioned as the first large scale PV facility as a direct result of FPL's Sunshine Energy® renewable program. The 250 kilowatt solar array at Rothenbach Park is the largest solar facility in the state of Florida and one of the largest in the Southeastern United States. Construction on the new solar facility was completed in October 2007.

Several additional solar initiatives have also been developed through the Sunshine Energy program including support for schools. The Sunshine Energy program support of installing PV at schools is a continuation of previous FPL renewable activities involving schools. In 2003, as part of the State of Florida's PV for Schools program, FPL worked with three schools to install 4.8 kW PV systems.

FPL has also been investigating fuel cell technologies through monitoring of industry trends, discussions with manufacturers, and direct field trials. From 2002 through the end of 2005, FPL conducted field trials and demonstration projects of Proton Exchange Membrane (PEM) fuel cells with the objectives of serving customer end-uses while evaluating the technical performance, reliability, economics, and relative readiness of the PEM technology. The demonstration projects were conducted in partnership with customers and included 5 locations. The research projects were useful to FPL in identifying specific issues that can occur in field applications and the current commercial viability of this technology. FPL will continue to monitor the progress of these technologies and conduct additional field evaluations as significant developments in the fuel cell technologies occur.

In addition, FPL assists customers who are interested in installing PV equipment at their facilities. In support of Florida Administrative Code Rule 25-6.065, Interconnection of Small Photovoltaic Systems, FPL works with customers to interconnect these customer-owned PV systems. Through February 2008, approximately 110 customer systems (predominantly residential but with a few business systems) have been interconnected.

3) Supply Side Efforts – Power Purchases:

FPL has also facilitated renewable energy projects (facilities which burn bagasse, waste wood, municipal waste, etc.). Firm capacity and energy and as-available energy have been purchased by FPL from these types of facilities. (Please refer to Tables I.B.1, I.B.2, and Table I.C.1).

FPL is seeking out cost-effective Power Purchase Agreements (PPAs) with any and all potential renewable energy providers. FPL issued a Renewable Request for Proposals (RFP) in 2007 that solicited proposals that offered capacity and/or energy from new renewable energy facilities. FPL plans to issue another Renewable Energy RFP in April 2008.

In regard to certain of the existing contracts that are currently scheduled to end in the near-term, and proposals resulting from the RFP process, FPL has assumed that some of this firm capacity will be available during the ten-year reporting period of this document through extended and/or new contracts. Firm renewable energy capacity from these sources, and from the FPL development activities discussed below, are assumed for planning purposes to provide 269 MW through this reporting period.

4) Supply Side Efforts – FPL Facilities:

FPL is in the process of developing a wind generation project on South Hutchinson Island, in St. Lucie County known as the "St. Lucie Wind project" which may consist of up to six (6) wind turbine generators (i.e., that do not use water or emit pollutants of any kind) capable of generating up to approximately 13.8 MW of wind generation. In addition, other wind development efforts are currently underway on Florida's coastline. FPL's goal is to start construction on the St. Lucie Wind project in 2008 with completion in 2009.

FPL is in the process of developing three large scale proposed solar thermal and/or photovoltaic generation facilities, with plans to install up to 350 MW of overall solar capacity by 2012. All of the solar generation facilities will be constructed within FPL's service territory. FPL is in the process of locating sites for these three solar projects. The first solar project is being designed to deliver up to 10 MW of solar generation to FPL's customers. One potential location for this project is at NASA's Kennedy Space Center in Brevard County Florida, where FPL and NASA are actively engaged in studies to determine if the Kennedy Space Center property may be feasible. The second solar project is being designed to deliver up to 20 MW. The third solar project is being designed for up to 50 MW of solar energy to FPL's customers and the existing Martin plant site is being considered as a potential location for the project. FPL is in the process of locating and/or finalizing sites for these three solar projects. FPL's goal is to start construction on all three solar projects mentioned in 2008 with completion in 2009/2010. FPL is also in the process of identifying the feasibility of technologies, locating sites and potential equipment suppliers for the remaining portion of the projected 350 MW of solar generation.

FPL is currently in the process of evaluation to determine each project's costs, impacts to the community and the environment as part of the overall development analysis. For those projects it determines to be both technically and economically viable, FPL plans to seek approval for the projects and recovery of the associated costs from the FPSC.

For planning purposes, FPL expects that the energy delivered from these proposed renewable facilities to be "as available", non-firm energy. This is due to the intermittent nature of these renewable resources. Once site-specific operating data has been gathered for an appropriate amount of time, FPL will then re-evaluate the actual output from each renewable facility to determine what portion, if any, of this output can be projected as firm capacity in its resource planning work.

5) **Ongoing Research & Development Efforts:**

FPL has developed alliances with several Florida Universities to promote development of emerging technologies. For example, an alliance as been established with the newly formed Center of Excellence in Ocean Energy Technology at Florida Atlantic University (FAU), which will focus on the commercialization of ocean current, ocean thermal (i.e., energy conversion as well as cold water air conditioning) and hydrogen technologies. FPL has been taking the lead in assisting FAU with the discussions being held with the U.S. Department of the Interior's Minerals Management Service Department (MMS). MMS is working to establish the permitting process for ocean energy development on the outer continental shelf.

FPL has also developed an alliance with the University of Florida to support their studies of biomass renewable potential and wind studies in the state. In addition, FPL has partnered with Florida Institute of Technology on fuel cell technology.

FPL has also been in discussion with several private companies on several emerging technology initiatives including ocean current, ocean thermal, hydrogen, fuel cell technology, biomass, biofuels and energy storage.

III.G FPL's Fuel Mix and Fuel Price Forecasts

1. <u>FPL's Fuel Mix</u>

Until the mid-1980s, FPL relied primarily on a combination of fuel oil, natural gas, and nuclear energy to generate electricity with significant reliance on oil–fired generation. In the early 1980s FPL began to purchase "coal-by-wire." In 1987, coal was first added to the fuel mix through FPL's partial ownership and additional purchases from the St. Johns River Power Park (SJRPP). This allowed FPL to meet its customers' energy needs with a more diversified mix of energy sources. Additional coal resources were added with the partial acquisition (76%) of Scherer Unit 4 in 1989. Starting in 1997, petroleum coke was added to the fuel mix as a blend stock with coal at SJRPP.

The trend since the early 1990s has been a steady increase in the amount of natural gas that is used by FPL to provide electricity due, in part, to the introduction of highly efficient and cost-effective combined cycle generating units and the ready availability of natural gas. This planning document reflects an evolution in that trend in recognition that, although efficient gas-fired generation continues to provide significant benefits to FPL's customers, adding natural gas-fired additions exclusively would, in the long term, create an unbalanced generation portfolio. FPL has committed to add two new gas-fired CC units at the West County Energy Center (WCEC) site in 2009 and 2010, and is proposing to add a third CC unit at the WCEC site in 2011. These CC units will provide highly efficient generation that will benefit the entire FPL system by reducing transmission-related costs, mitigate the load-to-generation imbalance in Southeastern Florida, and dramatically improve the overall system generation efficiency.

FPL's future resource planning work will remain focused on identifying and evaluating alternatives that would maintain and/or enhance FPL's long-term fuel diversity. These fuel diverse alternatives may include: the purchase of power from renewable energy facilities, addition of FPL-owned renewable energy facilities, obtaining access to diversified sources of natural gas such as liquefied natural gas (LNG), preserving FPL's ability to utilize fuel oil at its existing units, and increased utilization of nuclear energy. (As previously discussed in the Executive Summary of this document, new advanced technology coal generating units are not considered as viable options in Florida in the ten-year reporting period of this document due to concerns over greenhouse gas emissions.) The evaluation of the feasibility and cost-effectiveness of these, and other possible alternatives, will be an ongoing part of future planning cycles.

FPL's current use of various fuels to supply energy to customers, plus a projection of this "fuel mix" through 2017 based on the resource plan presented in this document, is presented in Schedules 5, 6.1, and 6.2 later in this chapter.

2. <u>Fossil Fuel Price Forecasts</u>

Fossil fuel price forecasts, and the resulting projected price differentials between fuels, are major drivers used in evaluating alternatives for meeting future generating capacity needs. FPL's forecasts are generally consistent with other published contemporary forecasts.

a) Fossil Fuel Price Forecast Methodology

Future oil and natural gas prices, and to a lesser extent, coal and petroleum coke prices, are inherently uncertain due to a significant number of unpredictable and uncontrollable drivers that influence the short- and long-term price of oil, natural gas, coal, and petroleum coke. These drivers include: (1) current and projected worldwide demand for crude oil and petroleum products; (2) current and projected worldwide refinery capacity/production; (3) expected worldwide economic growth, in particular in China and the other Pacific Rim countries; (4) Organization of Petroleum Exporting Countries (OPEC) production and the availability of spare OPEC production capacity and the assumed growth in spare OPEC production capacity; (5) non-OPEC production and expected growth in non-OPEC production; (6) the geopolitics of the Middle East, West Africa, the Former Soviet Union, Venezuela, etc., as well as, the uncertainty and impact upon worldwide energy consumption related to U. S. and worldwide environmental legislation, politics, etc.; (7) current and projected North American natural gas demand; (8) current and projected U.S., Canadian, and Mexican natural gas production; (9) the worldwide supply and demand for LNG; and (10) the growth in solid fuel generation on a U. S. and worldwide basis.

The inherent uncertainty and unpredictability in these factors today and tomorrow clearly underscores the need to develop a set of plausible oil, natural gas, and solid fuel (coal and petroleum coke) price scenarios that will bound a reasonable set of long-term price outcomes. In this light, FPL developed and utilized Low, Medium, and High price forecasts for oil, natural gas, and solid fuel in much of its 2007 and early 2008 resource planning work.

FPL's Medium price forecast methodology is consistent for oil and natural gas. For oil and natural gas commodity prices, FPL's Medium price forecast applies the following methodology: (1) for 2007 through 2009, the methodology used the July 31,2007 forward curve for New York Harbor 1% sulfur heavy oil, U. S. Gulf Coast 1% sulfur heavy oil, and Henry Hub natural gas commodity prices; (2) for the next two years (2010 and 2011), FPL used a 50/50 blend of the July 31, 2007 forward curve and projections from The PIRA Energy Group; (3) for the 2012 through 2020 period, FPL used the annual projections from The PIRA Energy Group, and (4) for the period beyond 2020, FPL used the real rate of escalation provided in the Energy Information Administration (EIA) *Annual Energy Outlook 2007* publication. FPL assumed a 2.5% annual rate of escalation to convert real prices to nominal prices. In addition to the development of oil and natural gas commodity prices, nominal price forecasts also were prepared for oil and natural gas transportation costs. The addition of commodity and transportation forecasts resulted in delivered price forecasts.

FPL's Medium price forecast methodology is also consistent for coal and petroleum coke prices. Coal and petroleum coke prices were based upon the following approach: (1) the price forecasts for Central Appalachian coal (CAPP), South American coal, and petroleum coke were provided by JD Energy; (2) the marine transportation rates from the loading port for coal and petroleum coke to an import terminal were also provided by JD Energy; (3) the Terminal Throughput Fee was based on a range of offers from comparable facilities throughout the Southeast U.S.. The coal price forecast for FPL's existing coal plants at SJRPP and Plant Scherer assume the continuation of the existing mine-mouth and transportation contracts until expiration, along with the purchase of spot coal, to meet generation requirements.

The development of FPL's Low and High price forecasts for oil, natural gas, coal, and petroleum coke prices were based upon the historical relationship of prices realized by FPL's customers compared to the average for the 2000 through 2006 time frame. FPL developed these forecasts to account for the uncertainty which exists within each commodity as well as across commodities. These forecasts reflect a range of reasonable forecast outcomes.

3. <u>Nuclear Fuel Cost Forecast</u>

This section reviews the various steps needed to fabricate nuclear fuel for delivery to the nuclear power plants, the method used to forecast the price for each step, and other comments regarding FPL's nuclear fuel costs.

a) Steps Required for Nuclear Fuel to be Delivered to FPL's Plants

Four separate steps are required before nuclear fuel can be used in a commercial nuclear power reactor. These steps are summarized below.

Step (1) - Mining: Uranium is produced in many countries such as Canada, Australia, Khazakhstan, and the United States. During the first step, uranium is mined from the ground using techniques such as open pit mine, underground mining, in-situ leaching operations, or production as a by-product from other mining operations, such as gold, copper or phosphate rocks. The product from this first step is the raw uranium delivered as an oxide, U3O8 (sometimes referred to as yellowcake).

Step (2) - Conversion: During the second step, the U3O8 is chemically converted into UF6 which, when heated, changes into a gaseous state. This second step further removes any chemical impurities and serves as preparation for the third step, which requires uranium to be in a gaseous state.

Step (3) - Enrichment: The third step is called enrichment. Natural uranium contains 0.711% of uranium at an atomic mass of 235 (U-235) and 99.289% of uranium at an atomic mass of 238 (U-238). FPL's nuclear reactors use uranium with a higher percentage of up to five percent (5%) of U-235 atoms. Because natural uranium does not contain a sufficient amount of U-235, the third step increases the percentage amount of U-235 from 0.711% to a level specified when designing the reactor core (typically in a range from approximately 3% to as high as 5%). The output of this enrichment process is enriched uranium in the form of UF6.

Step (4) - Fabrication: During the last step, fuel fabrication, the enriched UF6 is changed to a UO2 powder, pressed into pellets, and fed into tubes, which are sealed and bundled together into fuel assemblies. These fuel assemblies are then delivered to the plant site for insertion in a reactor.

Like other utilities, FPL has purchased raw uranium and the other components of the nuclear fuel cycle separately from numerous suppliers from different countries.

b) Price Forecasts for Each Step

(1) Mining: There is a significant volatility in the current uranium market. Demand is rather stable but inventory sales are a significant source of supply to complement outputs from production facilities. To the extent that source of supply can be restricted and inventories held from the market, price will rise significantly. The following are the current major contributors to this uranium price volatility:

- Hedge funds have been purchasing a significant amount of uranium, reducing availability of uranium.
- The large inventory from DOE is being withheld from the market due to political pressure.
- The Russians have announced that they would not supply down-blended weapons material to the U.S. government after 2013, for sales in the U.S. market.
- The U.S. Department of Commerce (DOC) has imposed restrictions on the import of nuclear fuel from France and Russia.

However, FPL expects these issues to be addressed within the next few years, returning price behavior to be more consistent with market fundamentals. A number of lawsuits have determined that DOC is illegally restricting the import of nuclear fuels. FPL expects the hedge funds to significantly reduce their activities, once supply starts outpacing demand. The high market price has led to significant investment to increase supply of uranium.

FPL's nuclear fuel price forecasts are the result of FPL's analysis based on inputs from various nuclear fuel market expert firms. There is a current shortage of uranium, which has pushed the current spot market price up. On the other hand, these higher market prices have motivated additional production expected to come on line over the next few years, which should bring uranium prices back to a level consistent with market fundamentals.

(2) <u>Conversion:</u> FPL's price forecast considers the construction of new nuclear units. Just like for raw uranium, an increase in demand for conversion services would result from this need. Insufficient planned production is currently forecast after 2013 to meet the higher demand scenario. As with additional raw uranium production, supply will expand beyond current level once more firm commitments are made to building new nuclear units.

(3) <u>Enrichment:</u> With no new production capacity, and if the current restrictions on imports of enrichment services from Russia and France continue, the current tight market supply for economically produced enrichment services will continue. A high projection of new nuclear unit construction shows a shortage of enrichment services, starting in 2010. Fortunately, there are a number of new facilities coming on line in that time frame and the current restrictions will be lifted, at least partially if not totally. In addition, as with supply for the other steps of the nuclear fuel cycle, expansion of future capacity is feasible within the lead time for constructing new nuclear units.

(4) Fabrication: Because the nuclear fuel fabrication process is highly regulated by the Nuclear Regulatory Commission (NRC), not all production facilities can qualify as suppliers to nuclear reactors in the U.S. Although world supply/demand is expected to show significant excess capacity for the foreseeable future, the gap is not as wide for U.S. supply and demand. The supply for the U.S. market is expected to be sufficient to meet U.S. demand for the foreseeable future.

c) Other Comments Regarding FPL's Nuclear Fuel Cost Forecast

The calculations for the nuclear fuel costs are performed consistent with the method currently used for FPL's Fuel Clause filings, including the assumption of a fuel lease and the assumption of refueling outages every 18 months. The costs for each step to fabricate the nuclear fuels are added and capitalized to come up with the total costs of the fresh fuel to be loaded at each refueling (capitalized acquisition costs). The capitalized acquisition cost for each group of fresh fuel assemblies are then amortized over the energy produced by each group of fuel assemblies, and carrying costs are also added on the total un-recovered costs to come up with the total fuel costs to be charged to customers. FPL also adds 1 mill per kilowatt hour net to reflect payment to DOE for spent fuel disposal.

Schedule 5
Fuel Requirements 1/

Fuel Requirements	Units	Actual 2/ 2006	Actual 2/ 2007	Forecasted 2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
(1) Nuclear	Trillion BTU	258	240	273	269	252	261	280	304	309	305	305	309
(2) Coal	1,000 TON	3,367	2,961	3,668	3,986	3,686	3,972	3,806	3,794	3,795	3,793	3,805	3,791
(3) Residual (FO6)- Total	1,000 BBL	15,297	15,524	8,580	6,083	6,074	1,653	1,847	2,471	1,951	2,727	1,989	1,794
(4) Steam	1,000 BBL	15,297	15,524	8,580	6,083	6,074	1,653	1,847	2,471	1,951	2,727	1,989	1,794
(5) Distillate (FO2)- Total	1,000 BBL	40	114	0	20	1,518	0	0	1	1	1	4	0
(6) Steam	1,000 BBL	0	0	0	0	0	0	0	0	0	0	0	0
(7) CC	1,000 BBL	19	64	0	10	1513	0	0	1	0	1	0	0
(8) CT	1,000 BBL	21	50	0	10	5	0	0	0	1	0	4	0
(9) Natural Gas -Total	1,000 MCF	437,700	447,353	474,527	496,322	549,764	613,218	626,260	638,207	685,761	705,665	777,390	799,950
(10) Steam	1,000 MCF	91,555	66,914	81,613	32,933	32,032	29,227	30,282	33,256	37,187	33,140	37,691	32,689
(11) CC	1,000 MCF	341,229	370,039	392,775	463,148	517,479	583,991	595,978	604,938	648,434	671,785	738,734	765,830
(12) CT	1,000 MCF	4,916	10,401	140	241	252	0	0	13	140	740	966	1,432

1/ Reflects fuel requirements for FPL only.
2/ Source: A Schedules.

Schedule 6.1
Energy Sources

			Actual 1/		Forecasted									
	Energy Sources	Units	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
(1)	Annual Energy Interchange 2/	GWH	10,440	10,688	11,294	11,267	9,191	6,370	6,435	6,748	6,923	7,070	832	0
(2)	Nuclear	GWH	23,533	21,899	24,455	24,110	22,617	23,376	25,150	27,276	27,751	27,353	27,355	27,751
(3)	Coal	GWH	6,168	6,856	6,953	7,530	7,011	7,504	7,223	7,201	7,202	7,198	7,222	7,195
(4)	Residual(FO6) -Total	GWH	9,586	9,651	5,740	4,030	4,018	1,094	1,221	1,634	1,290	1,803	1,316	1,186
(5)	Steam	GWH	9,586	9,651	5,740	4,030	4,018	1,094	1,221	1,634	1,290	1,803	1,316	1,186
(6)	Distillate(FO2) -Total	GWH	26	27	0	11	1,172	0	0	0	0	1	1	0
(7)	Steam	GWH	0	0	0	0	0	0	0	0	0	0	0	0
(8)	CC	GWH	9	6.7	0	8	1,171	0	0	0	0	1	0	0
(9)	CT	GWH	17	20	0	3	1	0	0	0	0	0	1	0
(10)	Natural Gas - Total	GWH	56,985	59,300	63,415	68,568	76,891	86,832	88,901	90,421	97,355	100,621	111,387	115,379
(11)	Steam	GWH	8,689	6,205	8,059	3,208	3,114	2,853	2,954	3,239	3,631	3,231	3,677	3,188
(12)	CC	GWH	47,871	52,717	55,343	65,337	73,754	83,979	85,948	87,180	93,711	97,320	107,619	112,055
(13)	CT	GWH	424	378	13	22	24	0	0	1	13	70	91	136
(14)	Other 3/	GWH	6,399	5,893	6,500	6,337	6,103	6,687	7,940	8,094	8,232	8,450	8,272	8,736
	Net Energy For Load 4/	GWH	113,137	114,315	118,357	121,852	127,004	131,862	136,871	141,374	148,752	152,495	156,384	160,246

1/ Source: A Schedules
2/ The projected figures are based on estimated energy purchases from SJRPP and the Southern Companies.
3/ Represents a forecst of energy expected to be purchased from Qualifying Facilities, Independent Power Producers, net of Economy and other Power Sales.
4/ Net Energy For Load is also shown in Schedule 2.3.

Schedule 6.2
Energy Sources % by Fuel Type

	Energy Source	Units	Actual 1/ 2006	2007	Forecasted 2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
(1)	Annual Energy Interchange 2/	%	9.2	9.3	9.5	9.2	7.2	4.8	4.7	4.8	4.7	4.6	0.5	0.0
(2)	Nuclear	%	20.8	19.2	20.7	19.8	17.8	17.7	18.4	19.3	18.7	17.9	17.5	17.3
(3)	Coal	%	5.5	6.0	5.9	6.2	5.5	5.7	5.3	5.1	4.8	4.7	4.6	4.5
(4)	Residual (FO6) -Total	%	8.5	8.4	4.8	3.3	3.2	0.8	0.9	1.2	0.9	1.2	0.8	0.7
(5)	Steam	%	8.5	8.4	4.8	3.3	3.2	0.8	0.9	1.2	0.9	1.2	0.8	0.7
(6)	Distillate (FO2) -Total	%	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(7)	Steam	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(8)	CC	%	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(9)	CT	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(10)	Natural Gas -Total	%	50.4	51.9	53.6	56.3	60.5	65.9	65.0	64.0	65.4	66.0	71.2	72.0
(11)	Steam	%	7.7	5.4	6.8	2.6	2.5	2.2	2.2	2.3	2.4	2.1	2.4	2.0
(12)	CC	%	42.3	46.1	46.8	53.6	58.1	63.7	62.8	61.7	63.0	63.8	68.8	69.9
(13)	CT	%	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
(14)	Other 3/	%	5.7	5.2	5.5	5.2	4.8	5.1	5.8	5.7	5.5	5.5	5.3	5.5
			100	100	100	100	100	100	100	100	100	100	100	100

1/ Source: A Schedules.
2/ The projected figures are based on estimated energy purchases from SJRPP and the Southern Companies.
3/ Represents a forecast of energy expected to be purchased from *Qualifying Facilities, Independent Power Producers, etc.*

Schedule 7.1
Forecast of Capacity, Demand, and Scheduled Maintenance At Time Of Summer Peak

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Year	Total Installed 1/ Capacity MW	Firm Capacity Import MW	Firm Capacity Export MW	Firm QF MW	Total Capacity Available 2/ MW	Total Peak 3/ Demand MW	DSM 4/ MW	Firm Summer Peak Demand MW	Reserve Margin Before Maintenance 5/ MW	Reserve Margin Before Maintenance 5/ % of Peak	Scheduled Maintenance MW	Reserve Margin After Maintenance 6/ MW	Reserve Margin After Maintenance 6/ % of Peak
2008	22,149	2,255	0	738	25,142	22,356	1,908	20,448	4,694	23.0	0	4,694	23.0
2009	23,369	1,824	0	738	25,931	22,792	2,034	20,758	5,173	24.9	0	5,173	24.9
2010	24,588	1,467	0	738	26,793	23,554	2,146	21,408	5,385	25.2	0	5,385	25.2
2011	25,807	1,499	0	738	28,044	24,191	2,264	21,927	6,117	27.9	0	6,117	27.9
2012	26,117	1,437	0	738	28,292	24,837	2,388	22,449	5,843	26.0	0	5,843	26.0
2013	26,221	1,437	0	738	28,396	25,414	2,516	22,898	5,498	24.0	0	5,498	24.0
2014	27,440	1,437	0	738	29,615	26,576	2,651	23,925	5,690	23.8	0	5,690	23.8
2015	27,440	1,437	0	738	29,615	27,241	2,790	24,451	5,164	21.1	0	5,164	21.1
2016	29,878	126	0	738	30,742	27,932	2,910	25,022	5,720	22.9	0	5,720	22.9
2017	29,878	126	0	738	30,742	28,621	3,030	25,591	5,151	20.1	0	5,151	20.1

1/ Capacity additions and changes projected to be in-service by June 1st are considered to be available to meet Summer peak loads which are forecasted to occur during August of the year indicated. All values are Summer net MW.
2/ Total Capacity Available = Col.(2) + Col.(3) - Col.(4) + Col.(5).
3/ These forecasted values reflect the 2008 load forecast without DSM. This load does include load from Lee County
4/ The DSM MW shown represent cumulative load management capability plus incremental conservation from 1/2006-on for use with the 2008 load forecast. They are not included in total additional resources but reduce the peak load upon which Reserve Margin calculations are based.
5/ Margin (%) Before Maintenance = Col.(10) / Col.(9)
6/ Margin (%) After Maintenance = Col.(13) / Col.(9)

Schedule 7.2
Forecast of Capacity , Demand, and Scheduled Maintenance At Time of Winter Peak

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Year	Total Installed [1/] Capability MW	Firm Capacity Import MW	Firm Capacity Export MW	Firm QF MW	Total Capacity Available [2/] MW	Total Peak [3/] Demand MW	DSM [4/] MW	Firm Winter Peak Demand MW	Reserve Margin Before Maintenance [5/] MW	Reserve Margin Before Maintenance [5/] % of Peak	Scheduled Maintenance MW	Reserve Margin After Maintenance [6/] MW	Reserve Margin After Maintenance [6/] % of Peak
2007/08	23,535	2,288	0	738	26,561	22,332	1,649	20,683	5,878	28.4	0	5,878	28.4
2008/09	23,563	1,962	0	738	26,263	22,755	1,750	21,005	5,258	25.0	0	5,258	25.0
2009/10	24,898	1,501	0	738	27,137	23,454	1,814	21,640	5,497	25.4	0	5,497	25.4
2010/11	26,233	1,500	0	738	28,471	23,971	1,883	22,088	6,383	28.9	0	6,383	28.9
2011/12	27,671	1,626	0	738	30,035	24,487	1,954	22,533	7,502	33.3	0	7,502	33.3
2012/13	27,982	1,446	0	738	30,166	24,976	2,028	22,948	7,218	31.5	0	7,218	31.5
2013/14	27,982	1,446	0	738	30,166	26,290	2,106	24,184	5,982	24.7	0	5,982	24.7
2014/15	29,317	1,446	0	738	31,501	26,979	2,188	24,791	6,710	27.1	0	6,710	27.1
2015/16	29,317	516	0	738	30,571	27,690	2,264	25,426	5,145	20.2	0	5,145	20.2
2016/17	31,987	126	0	738	32,851	28,418	2,334	26,084	6,767	25.9	0	6,767	25.9

1/ Capacity additions and changes projected to be in-service by January 1st are considered to be available to meet Winter peak loads which are forecast to occur during January of the "second" year indicated. All values are Winter net MW.

2/ Total Capacity Available = Col.(2) + Col.(3) - Col.(4) + Col.(5).

3/ These forecasted values reflect the 2007 load forecast without DSM. This load does include load from Lee County

4/ The DSM MW shown represent cumulative load management capability plus incremental conservation from 1/2007-on for use with the 2007 load forecast. They are not included in total additional resources but reduce the peak load upon which Reserve Margin calculations are based.

5/ Margin (%) Before Maintenance = Col.(10) / Col.(9)

6/ Margin (%) After Maintenance = Col.(13) / Col.(9)

Schedule 8
Planned And Prospective Generating Facility Additions And Changes

(1)	(2)	(3)	(4)	(5)	(5)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
				Fuel		Fuel Transport		Const.	Comm.	Expected	Gen. Max.	Net Capability		
Plant Name	Unit No.	Location	Unit Type	Pri.	Alt.	Pri.	Alt.	Start Mo./Yr.	In-Service Mo./Yr.	Retirement Mo./Yr.	Nameplate KW	Winter MW	Summer MW	Status
ADDITIONS/ CHANGES														
2008														
Cape Canaveral	1	Brevard County	ST	FO6	NG	WA	PL	Jan-08	Jun-08	Unknown	402,050	4	2	OT
Cape Canaveral	2	Brevard County	ST	FO6	NG	WA	PL	Jan-08	Jun-08	Unknown	402,050	4	2	OT
Cutler	5	Miami Dade County	ST	NG	No	PL	No	Jan-08	Jun-08	Unknown	75,000	1	—	OT
Cutler	6	Miami Dade County	ST	NG	No	PL	No	Jan-08	Jun-08	Unknown	161,500	(8)	(11)	OT
Ft. Myers	2	Lee County	CC	NG	No	PL	No	Jan-08	Jun-08	Unknown	1,775,390	11	1	OT
Ft. Myers	3	Lee County	CT	NG	FO2	PL	PL	Jan-08	Jun-08	Unknown	376,380	8	2	OT
Lauderdale	4	Broward County	CC	NG	FO2	PL	PL	Jan-08	Jun-08	Unknown	526,250	(2)	(8)	OT
Lauderdale	5	Broward County	CC	NG	FO2	PL	PL	Jan-08	Jun-08	Unknown	526,250	(2)	(8)	OT
Port Everglades	1	City of Hollywood	ST	FO6	NG	WA	PL	Jan-08	Jun-08	Unknown	247,775	(2)	(1)	OT
Port Everglades	2	City of Hollywood	ST	FO6	NG	WA	PL	Jan-08	Jun-08	Unknown	247,775	(2)	(1)	OT
Port Everglades	3	City of Hollywood	ST	FO6	NG	WA	PL	Jan-08	Jun-08	Unknown	402,050	7	6	OT
Port Everglades	4	City of Hollywood	ST	FO6	NG	WA	PL	Jan-08	Jun-08	Unknown	402,050	6	3	OT
Manatee	1	Manatee County	ST	FO6	NG	WA	PL	Jan-08	Jun-08	Unknown	863,300	1	6	OT
Manatee	2	Manatee County	ST	FO6	NG	WA	PL	Jan-08	Jun-08	Unknown	863,300	1	6	OT
Manatee	3	Manatee County	CC	NG	No	PL	No	Jan-08	Jun-08	Unknown	1,224,510	7	10	OT
Martin	1	Martin County	ST	FO6	NG	PL	PL	Jan-08	Jun-08	Unknown	934,500	(4)	(1)	OT
Martin	2	Martin County	ST	FO6	NG	PL	PL	Jan-08	Jun-08	Unknown	934,500	(5)	(8)	OT
Martin	3	Martin County	CC	NG	No	PL	No	Jan-08	Jun-08	Unknown	612,000	(8)	(7)	OT
Martin	4	Martin County	CC	NG	No	PL	No	Jan-08	Jun-08	Unknown	612,000	(7)	(6)	OT
Martin	8	Martin County	CC	NG	FO2	PL	PL	Jan-08	Jun-08	Unknown	1,224,510	25	11	OT
Putnam	1	Putnam County	CC	NG	FO2	PL	WA	Jan-08	Jun-08	Unknown	290,004	3	—	OT
Putnam	2	Putnam County	CC	NG	FO2	PL	WA	Jan-08	Jun-08	Unknown	290,004	3	—	OT
Riviera	3	City of Riviera Beach	ST	FO6	NG	WA	PL	Jan-08	Jun-08	Unknown	310,420	(2)	(1)	OT
Riviera	4	City of Riviera Beach	ST	FO6	NG	WA	PL	Jan-08	Jun-08	Unknown	310,420	(7)	(7)	OT
Sanford	3	Volusia County	ST	FO6	NG	WA	PL	Jan-08	Jun-08	Unknown	156,250	2	—	OT
Sanford	4	Volusia County	CC	NG	No	PL	No	Jan-08	Jun-08	Unknown	1,188,860	(8)	8	OT
Sanford	5	Volusia County	CC	NG	No	PL	No	Jan-08	Jun-08	Unknown	1,188,860	(5)	4	OT
St. Johns River Power Park	1	Duval County	BIT	BIT	Pet	RR	WA	Jan-08	Jun-08	Unknown	135,918	5	2	OT
St. Johns River Power Park	2	Duval County	BIT	BIT	Pet	RR	WA	Jan-08	Jun-08	Unknown	135,918	5	2	OT
Scherer	4	Monroe, GA	BIT	BIT	No	RR	No	Jan-08	Jun-08	Unknown	680,368	4	2	OT
Turkey Point	1	Miami Dade County	ST	FO6	NG	WA	PL	Jan-08	Jun-08	Unknown	402,050	3	2	OT
Turkey Point	2	Miami Dade County	ST	FO6	NG	WA	PL	Jan-08	Jun-08	Unknown	402,050	3	4	OT
									2008 Changes/Additions Total:			41	14	

Note 1: The Winter Total MW value consists of all generation additions and changes achieved by January. The Summer Total MW value consists of all generation additions and changes achieved by June. All other MW will be picked up in the following year.

Note 2: Changes shown include different ratings than shown in Schedule 1 due solely to ambient temperature consistent with those in FPL 's peak load forecast to maintain consistency in Reserve Margin calculation.

Schedule 8
Planned And Prospective Generating Facility Additions And Changes

(1)	(2)	(3)	(4)	(5)	(5)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
				Fuel		Fuel Transport		Const.	Comm.	Expected	Gen. Max.	Net Capability		
Plant Name	Unit No.	Location	Unit Type	Pri.	Alt.	Pri.	Alt.	Start Mo./Yr.	In-Service Mo./Yr.	Retirement Mo./Yr.	Nameplate KW	Winter MW	Summer MW	Status
ADDITIONS/ CHANGES														
2009														
Cutler	5	Miami Dade County	ST	NG	No	PL	No	Jan-09	Jun-09	Unknown	75,000	(1)	—	OT
Port Everglades	3	City of Hollywood	ST	FO6	NG	WA	PL	Jan-09	Jun-09	Unknown	402,050	3	—	OT
Martin	1	Martin County	ST	FO6	NG	PL	PL	Jan-09	Jun-09	Unknown	934,500	5	—	OT
Martin	2	Martin County	ST	FO6	NG	PL	PL	Jan-09	Jun-09	Unknown	934,500	5	—	OT
Martin	3	Martin County	CC	NG	No	PL	No	Jan-09	Jun-09	Unknown	612,000	1	1	OT
Manatee	1	Manatee County	ST	FO6	NG	WA	PL	Jan-09	Jun-09	Unknown	863,300	7	—	OT
Manatee	2	Manatee County	ST	FO6	NG	WA	PL	Jan-09	Jun-09	Unknown	863,300	7	—	OT
Riviera	3	City of Riviera Beach	ST	FO6	NG	WA	PL	Jan-09	Jun-09	Unknown	310,420	1	—	OT
West County Combined Cycle	1	Palm Beach County	CC	NG	FO2	PL	PL	Jan-09	Jun-09	Unknown	Unknown	—	1,219	U
									2009 Changes/Additions Total:			**28**	**1,220**	
2010														
West County Combined Cycle	1	Palm Beach County	CC	NG	FO2	PL	PL	Jan-07	Jun-09	Unknown	Unknown	1,335	—	U
West County Combined Cycle	2	Palm Beach County	CC	NG	FO2	PL	PL	Jan-08	Jun-10	Unknown	Unknown	—	1,219	U
									2010 Changes/Additions Total:			**1,335**	**1,219**	
2011														
West County Combined Cycle	2	Palm Beach County	CC	NG	FO2	PL	PL	Jan-08	Jun-10	Unknown	Unknown	1,335	—	U
West County Combined Cycle	3	Palm Beach County	CC	NG	FO2	PL	PL	Jan-09	Jun-11	Unknown	Unknown	—	1,219	P
									2011 Changes/Additions Total:			**1,335**	**1,219**	
2012														
West County Combined Cycle	3	Palm Beach County	CC	NG	FO2	PL	PL	Jan-09	Jun-11	Unknown	Unknown	1,335	—	P
St. Lucie Uprates	1	St. Lucie County	NP	UR	No	TK	No	See Note 3	Dec-11	Unknown	850,000	103	103	T
St. Lucie Uprates	2	St. Lucie County	NP	UR	No	TK	No	See Note 3	Jun-12	Unknown	723,775	—	103	T
Turkey Point Uprates	3	Miami Dade County	NP	UR	No	TK	No	See Note 3	May-12	Unknown	759,900	—	104	T
									2012 Changes/Additions Total:			**1,438**	**310**	
2013														
St. Lucie Uprates	2	St. Lucie County	NP	UR	No	TK	No	See Note 3	Jun-12	Unknown	723,775	103	—	T
Turkey Point Uprates	3	Miami Dade County	NP	UR	No	TK	No	See Note 3	May-12	Unknown	759,900	104	—	T
Turkey Point Uprates	4	Miami Dade County	NP	UR	No	TK	No	See Note 3	Dec-12	Unknown	759,900	104	104	T
									2013 Changes/Additions Total:			**311**	**104**	
2014														
Unsited 3x1 CC #1	1	Unknown	CC	NG	FO2	PL	PL	Jan-12	Jun-14	Unknown	Unknown	—	1219	P
									2014 Changes/Additions Total:			**0**	**1,219**	
2015														
Unsited 3x1 CC #1	1	Unknown	CC	NG	FO2	PL	PL	Jan-12	Jun-14	Unknown		1,335	—	P
									2015 Changes/Additions Total:			**1,335**	**0**	
2016														
Unsited 3x1 CC #2	2	Unknown	CC	NG	FO2	PL	PL	Jan-13	Jun-16			—	1219	P
Unsited 3x1 CC #3	3	Unknown	CC	NG	FO2	PL	PL	Jan-14	Jun-16	Unknown	Unknown	—	1,219	P
									2016 Changes/Additions Total:			**0**	**2,438**	
2017														
Unsited 3x1 CC #2	2	Unknown	CC	NG	FO2	PL	PL	Jan-14	Jun-16	Unknown	Unknown	1,335	—	P
Unsited 3x1 CC #3	3	Unknown	CC	NG	FO2	PL	PL	Jan-15	Jun-16	Unknown	Unknown	1,335	—	P
									2017 Changes/Additions Total:			**2,670**	**0**	

Note 1: The Winter Total MW value consists of all generation additions and changes achieved by January. The Summer Total MW value consists of all generation additions and changes achieved by June. All MW additions/changes occuring later in the year will be picked up for reporting/planning purposes in the following year.

Note 2: Changes shown include different ratings than shown in Schedule 1 due solely to ambient temperature consistent with those in FPL 's peak load forecast to maintain consistency in Reserve Margin calculations.

Note 3: The nuclear uprates will be performed during the scheduled refueling outages for each unit.

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1) **Plant Name and Unit Number:** West County Energy Center Combined Cycle Unit 1

(2) **Capacity**
a. Summer 1,219 MW
b. Winter 1,335 MW

(3) **Technology Type:** Combined Cycle

(4) **Anticipated Construction Timing**
a. Field construction start-date: 2007
b. Commercial In-service date: 2009

(5) **Fuel**
a. Primary Fuel: Natural Gas
b. Alternate Fuel: Distillate

(6) **Air Pollution and Control Strategy:** Natural Gas, Dry Low No_x Combustors, SCR
0.0015% S. Distillate, & Water Injection on Distillate

(7) **Cooling Method:** Cooling Tower

(8) **Total Site Area:** 220 Acres

(9) **Construction Status:** U (Under construction, less than or equal to 50% complete)

(10) **Certification Status:** U (Under construction, less than or equal to 50% complete)

(11) **Status with Federal Agencies:** U (Under construction, less than or equal to 50% complete)

(12) **Projected Unit Performance Data:**

Planned Outage Factor (POF):	2.1%	
Forced Outage Factor (FOF):	1.1%	
Equivalent Availability Factor (EAF):	96.8%	(Base & Duct Firing Operation)
Resulting Capacity Factor (%):	Approx. 90%	(First Full Year Base Operation)
Average Net Operating Heat Rate (ANOHR):	6,582 Btu/kWh	(Base Operation)
Base Operation 75F,100%		

(13) **Projected Unit Financial Data *,****

Book Life (Years):	25 years
Total Installed Cost (2009 $/kW):	565
Direct Construction Cost ($/kW):	
AFUDC Amount ($/kW):	
Escalation ($/kW):	
Fixed O&M ($/kW -Yr.): (2009 $kW-Yr)	11.65
Variable O&M ($/MWH): (2009 $/MWH)	0.138
K Factor:	1.5834

* $/kW values are based on Summer capacity.
** Fixed O&M cost includes capital replacement, but not firm gas transportation costs.

NOTE: Total installed cost includes gas expansion, transmission interconnection and integration, escalation, and AFUDC.

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1) **Plant Name and Unit Number:** West County Energy Center Combined Cycle Unit 2

(2) **Capacity**
a. Summer 1,219 MW
b. Winter 1,335 MW

(3) **Technology Type:** Combined Cycle

(4) **Anticipated Construction Timing**
a. Field construction start-date: 2008
b. Commercial In-service date: 2010

(5) **Fuel**
a. Primary Fuel: Natural Gas
b. Alternate Fuel: Distillate

(6) **Air Pollution and Control Strategy:** Natural Gas, Dry Low No_x Combustors, SCR
0.0015% S. Distillate, & Water Injection on Distillate

(7) **Cooling Method:** Cooling Tower

(8) **Total Site Area:** 220 Acres

(9) **Construction Status:** U (Under construction, less than or equal to 50% complete)

(10) **Certification Status:** U (Under construction, less than or equal to 50% complete)

(11) **Status with Federal Agencies:** U (Under construction, less than or equal to 50% complete)

(12) **Projected Unit Performance Data:**

Planned Outage Factor (POF):	2.1%	
Forced Outage Factor (FOF):	1.1%	
Equivalent Availability Factor (EAF):	96.8%	(Base & Duct Firing Operation)
Resulting Capacity Factor (%):	Approx. 88%	(First Full Year Base Operation)
Average Net Operating Heat Rate (ANOHR):	6,582	Btu/kWh (Base Operation)
Base Operation 75F,100%		

(13) **Projected Unit Financial Data **,*****

Book Life (Years):	25 years
Total Installed Cost (2010 $/kW):	519
Direct Construction Cost ($/kW):	
AFUDC Amount ($/kW):	
Escalation ($/kW):	
Fixed O&M ($/kW -Yr.): (2010 $kW-Yr)	10.11
Variable O&M ($/MWH): (2010 $/MWH)	0.138
K Factor:	1.5873

* $/kW values are based on Summer capacity.
** Fixed O&M cost includes capital replacement, but not firm gas transportation costs.

NOTE: Total installed cost includes gas expansion, transmission interconnection and integration, escalation, and AFUDC.

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1) **Plant Name and Unit Number:** West County Energy Center Combined Cycle Unit 3

(2) **Capacity**
a. Summer 1,219 MW
b. Winter 1,335 MW

(3) **Technology Type:** Combined Cycle

(4) **Anticipated Construction Timing**
a. Field construction start-date: 2009
b. Commercial In-service date: 2011

(5) **Fuel**
a. Primary Fuel: Natural Gas
b. Alternate Fuel: Distillate

(6) **Air Pollution and Control Strategy:** Natural Gas, Dry Low No_x Combustors, SCR
0.0015% S. Distillate, & Water Injection on Distillate

(7) **Cooling Method:** Cooling Tower

(8) **Total Site Area:** 220 Acres

(9) **Construction Status:** P (Planned)

(10) **Certification Status:** P (Planned)

(11) **Status with Federal Agencies:** P (Planned)

(12) **Projected Unit Performance Data:**

Planned Outage Factor (POF):	2.1%	
Forced Outage Factor (FOF):	1.1%	
Equivalent Availability Factor (EAF):	96.8%	(Base & Duct Firing Operation)
Resulting Capacity Factor (%):	Approx. 93%	(First Full Year Base Operation)
Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%	6,582 Btu/kWh	(Base Operation)

(13) **Projected Unit Financial Data **,*****

Book Life (Years):	25 years
Total Installed Cost (2011 $/kW):	715
Direct Construction Cost ($/kW):	
AFUDC Amount ($/kW):	72
Escalation ($/kW):	
Fixed O&M ($/kW -Yr.): (2011 $kW-Yr)	11.63
Variable O&M ($/MWH): (2011 $/MWH)	0.480
K Factor:	1.4699

• $/kW values are based on Summer capacity.
** Fixed O&M cost includes capital replacement, but not firm gas transportation costs.

NOTE: Total installed cost includes gas expansion, transmission interconnection and integration, escalation, and AFUDC.

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**	St. Lucie 1 Nuclear Uprate	
(2)	**Capacity**		
	a. Summer	103 MW (Incremental)	
	b. Winter	103 MW (Incremental)	
(3)	**Technology Type:**	Nuclear	
(4)	**Anticipated Construction Timing**		
	a. Field construction start-date:	2010	
	b. Commercial In-service date:	2011	
(5)	**Fuel**		
	a. Primary Fuel	Uranium	
	b. Alternate Fuel	---	
(6)	**Air Pollution and Control Strategy:**		No change from existing unit
(7)	**Cooling Method:**		No change from existing unit
(8)	**Total Site Area:**		No change from existing unit
(9)	**Construction Status:**	T	(Regulatory approval received, but not under construction)
(10)	**Certification Status:**	T	(Regulatory approval received, but not under construction)
(11)	**Status with Federal Agencies:**	T	(Regulatory approval received, but not under construction)
(12)	**Projected Unit Performance Data:**		
	Planned Outage Factor (POF):		No change from existing unit
	Forced Outage Factor (FOF):		No change from existing unit
	Equivalent Availability Factor (EAF):		No change from existing unit
	Resulting Capacity Factor (%):		No change from existing unit
	Average Net Operating Heat Rate (ANOHR):		No change from existing unit
	Base Operation 75F,100%		No change from existing unit
(13)	**Projected Unit Financial Data** *		
	Book Life (Years):	25	years (Matches the current operating license period.)
	Total Installed Cost ($/kW): **	3,054	(See Note (1) for explanation.)
	Direct Construction Cost:	3,054	(See Note (1) for explanation.)
	AFUDC Amount ($/kW):		(See Note (2) for explanation.)
	Escalation ($/kW):		(See Note (3) for explanation.)
	Fixed O&M ($/kW -Yr.):		There is no additional O&M impact from this project.
	Variable O&M ($/MWH):		There is no additional O&M impact from this project.
	K Factor:		(See Note (2) for explanation.)

NOTE:

(1) This value does not include a plant-specific portion of the early recovery of approx. $353 million of capital carrying costs in total associated with the uprates at the four existing nuclear units, nor a plant-specific portion of a projected $45 million in total for transmission costs associated with the uprates at the four existing nuclear units.
(2) Not applicable due to early recovery of capital carrying costs.
(3) These costs are included in the Total Installed Cost value.

* $/kW values are based on incremental Summer capacity.
** $/incremental kW

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1) **Plant Name and Unit Number:** Turkey Point 3 Nuclear Uprate

(2) **Capacity**
a. Summer 104 MW (Incremental)
b. Winter 104 MW (Incremental)

(3) **Technology Type:** Nuclear

(4) **Anticipated Construction Timing**
a. Field construction start-date: 2010
b. Commercial In-service date: 2012

(5) **Fuel**
a. Primary Fuel Uranium
b. Alternate Fuel ---

(6) **Air Pollution and Control Strategy:** No change from existing unit

(7) **Cooling Method:** No change from existing unit

(8) **Total Site Area:** No change from existing unit

(9) **Construction Status:** T (Regulatory approval received, but not under construction)

(10) **Certification Status:** T (Regulatory approval received, but not under construction)

(11) **Status with Federal Agencies:** T (Regulatory approval received, but not under construction)

(12) **Projected Unit Performance Data:**

Planned Outage Factor (POF):	No change from existing unit
Forced Outage Factor (FOF):	No change from existing unit
Equivalent Availability Factor (EAF):	No change from existing unit
Resulting Capacity Factor (%):	No change from existing unit
Average Net Operating Heat Rate (ANOHR):	No change from existing unit
Base Operation 75F,100%	No change from existing unit

(13) **Projected Unit Financial Data ***

Book Life (Years):	20	years (Matches the current operating license period.)
Total Installed Cost ($/kW): **	3,580	(See Note (1) for explanation.)
Direct Construction Cost ($/kW):	3,580	(See Note (1) for explanation.)
AFUDC Amount ($/kW):		(See Note (2) for explanation.)
Escalation ($/kW):		(See Note (3) for explanation.)
Fixed O&M ($/kW -Yr.):	There is no additional O&M impact from this project.	
Variable O&M ($/MWH):	There is no additional O&M impact from this project.	
K Factor:		(See Note (2) for explanation.)

NOTE:
(1) This value does not include a plant-specific portion of the early recovery of approx. $353 million of capital carrying costs in total associated with the uprates at the four existing nuclear units, nor a plant-specific portion of a projected $45 million in total for transmission costs associated with the uprates at the four existing nuclear units.
(2) Not applicable due to early recovery of capital carrying costs.
(3) These costs are included in the Total Installed Cost value.

* $/kW values are based on incremental Summer capacity.
** $/incremental kW

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1) **Plant Name and Unit Number:** St. Lucie 2 Nuclear Uprate

(2) **Capacity**
a. Summer 103 MW (Incremental)
b. Winter 103 MW (Incremental)

(3) **Technology Type:** Nuclear

(4) **Anticipated Construction Timing**
a. Field construction start-date: 2010
b. Commercial In-service date: 2012

(5) **Fuel**
a. Primary Fuel Uranium
b. Alternate Fuel ---

(6) **Air Pollution and Control Strategy:** No change from existing unit

(7) **Cooling Method:** No change from existing unit

(8) **Total Site Area:** No change from existing unit

(9) **Construction Status:** T (Regulatory approval received, but not under construction)

(10) **Certification Status:** T (Regulatory approval received, but not under construction)

(11) **Status with Federal Agencies:** T (Regulatory approval received, but not under construction)

(12) **Projected Unit Performance Data:**

Planned Outage Factor (POF):	No change from existing unit
Forced Outage Factor (FOF):	No change from existing unit
Equivalent Availability Factor (EAF):	No change from existing unit
Resulting Capacity Factor (%):	No change from existing unit
Average Net Operating Heat Rate (ANOHR):	No change from existing unit
Base Operation 75F,100%	No change from existing unit

(13) **Projected Unit Financial Data *,****

Book Life (Years):	31	years (Matches the current operating license period.)
Total Installed Cost ($/kW): **	3,271	(See Note (1) for explanation.)
Direct Construction Cost ($/kW):	3,271	(See Note (1) for explanation.)
AFUDC Amount ($/kW):		(See Note (2) for explanation.)
Escalation ($/kW):		(See Note (3) for explanation.)
Fixed O&M ($/kW -Yr.):	There is no additional O&M impact from this project.	
Variable O&M ($/MWH):	There is no additional O&M impact from this project.	
K Factor:		(See Note (2) for explanation.)

NOTE:
(1) This value does not include a plant-specific portion of the early recovery of approx. $353 million of capital carrying costs in total associated with the uprates at the four existing nuclear units, nor a plant-specific portion of a projected $45 million in total for transmission costs associated with the uprates at the four existing nuclear units.
(2) Not applicable due to early recovery of capital carrying costs.
(3) These costs are included in the Total Installed Cost value.

* $/kW values are based on incremental Summer capacity.
** $/incremental kW

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1) **Plant Name and Unit Number:** Turkey Point 4 Nuclear Uprate

(2) **Capacity**
a. Summer 104 MW (Incremental)
b. Winter 104 MW (Incremental)

(3) **Technology Type:** Nuclear

(4) **Anticipated Construction Timing**
a. Field construction start-date: 2011
b. Commercial In-service date: 2012

(5) **Fuel**
a. Primary Fuel: Uranium
b. Alternate Fuel: ---

(6) **Air Pollution and Control Strategy:** No change from existing unit

(7) **Cooling Method:** No change from existing unit

(8) **Total Site Area:** No change from existing unit

(9) **Construction Status:** T (Regulatory approval received, but not under construction)

(10) **Certification Status:** T (Regulatory approval received, but not under construction)

(11) **Status with Federal Agencies:** T (Regulatory approval received, but not under construction)

(12) **Projected Unit Performance Data:**

Planned Outage Factor (POF):	No change from existing unit
Forced Outage Factor (FOF):	No change from existing unit
Equivalent Availability Factor (EAF):	No change from existing unit
Resulting Capacity Factor (%):	No change from existing unit
Average Net Operating Heat Rate (ANOHR):	No change from existing unit
Base Operation 75F,100%	No change from existing unit

(13) **Projected Unit Financial Data *,****

Book Life (Years):	22	years (Matches the current operating license period.)
Total Installed Cost ($/kW): **	3,630	(See Note (1) for explanation.)
Direct Construction Cost ($/kW):	3,630	(See Note (1) for explanation.)
AFUDC Amount ($/kW):		(See Note (2) for explanation.)
Escalation ($/kW):		(See Note (3) for explanation.)
Fixed O&M ($/kW -Yr.):	There is no additional O&M impact from this project.	
Variable O&M ($/MWH):	There is no additional O&M impact from this project.	
K Factor:		(See Note (2) for explanation.)

NOTE:
(1) This value does not include a plant-specific portion of the early recovery of approx. $353 million of capital carrying costs in total associated with the uprates at the four existing nuclear units, nor a plant-specific portion of a projected $45 million in total for transmission costs associated with the uprates at the four existing nuclear units.
(2) Not applicable due to early recovery of capital carrying costs.
(3) These costs are included in the Total Installed Cost value.

* $/kW values are based on incremental Summer capacity.
** $/incremental kW

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1) **Plant Name and Unit Number:**	Unsited Combined Cycle		
(2) **Capacity**			
a. Summer	1,219 MW		
b. Winter	1,335 MW		
(3) **Technology Type:**	Combined Cycle		
(4) **Anticipated Construction Timing**			
a. Field construction start-date:	2012		
b. Commercial In-service date:	2014		
(5) **Fuel**			
a. Primary Fuel		Natural Gas	
b. Alternate Fuel		Distillate	
(6) **Air Pollution and Control Strategy:**		Dry Low NO_x Burners, SCR, Natural Gas, 0.0015% S. Distillate and Water Injection on Distillate	
(7) **Cooling Method:**		Cooling Tower	
(8) **Total Site Area:**	Unknown	Acres	
(9) **Construction Status:**	P	(Planned)	
(10) **Certification Status:**	P	(Planned)	
(11) **Status with Federal Agencies:**	P	(Planned)	
(12) **Projected Unit Performance Data:**			
Planned Outage Factor (POF):		2.1%	
Forced Outage Factor (FOF):		1.1%	
Equivalent Availability Factor (EAF):		96.8%	
Resulting Capacity Factor (%):		Approx. 92%	(First Full Year Base Operation)
Average Net Operating Heat Rate (ANOHR):		6,582	Btu/kWh
Base Operation 75F,100%			
(13) **Projected Unit Financial Data *,****			
Book Life (Years):		25	years
Total Installed Cost (2014 $/kW):		994	
Direct Construction Cost ($/kW):			
AFUDC Amount ($/kW):			
Escalation ($/kW):			
Fixed O&M ($/kW -Yr.): (2014 $kW-Yr)		14.74	
Variable O&M ($/MWH): (2014 $/MWH)		0.80	
K Factor:		1.481	

* $/kW values are based on Summer capacity.
** Fixed O&M cost includes capital replacement.

NOTE: Total installed cost includes gas expansion, transmission interconnection and integration, escalation, and AFUDC.

Schedule 9

Status Report and Specifications of Proposed Generating Facilities

(1) **Plant Name and Unit Number:** Unsited Combined Cycle

(2) **Capacity**
a. Summer 1,219 MW
b. Winter 1,335 MW

(3) **Technology Type:** Combined Cycle

(4) **Anticipated Construction Timing**
a. Field construction start-date: 2014
b. Commercial In-service date: 2016

(5) **Fuel**
a. Primary Fuel: Natural Gas
b. Alternate Fuel: Distillate

(6) **Air Pollution and Control Strategy:** Dry Low No_x Burners, SCR, Natural Gas, 0.0015% S. Distillate and Water Injection on Distillate

(7) **Cooling Method:** Cooling Tower

(8) **Total Site Area:** Unknown Acres

(9) **Construction Status:** P (Planned)

(10) **Certification Status:** P (Planned)

(11) **Status with Federal Agencies:** P (Planned)

(12) **Projected Unit Performance Data:**

Planned Outage Factor (POF):	2.1%	
Forced Outage Factor (FOF):	1.1%	
Equivalent Availability Factor (EAF):	96.8%	
Resulting Capacity Factor (%):	Approx. 92%	(First Full Year Base Operation)
Average Net Operating Heat Rate (ANOHR):	6,582	Btu/kWh
Base Operation 75F,100%		

(13) **Projected Unit Financial Data *,****

Book Life (Years):	25	years
Total Installed Cost (2016 $/kW):	1,044	
Direct Construction Cost ($/kW):		
AFUDC Amount ($/kW):		
Escalation ($/kW):		
Fixed O&M ($/kW -Yr.): (2016 $kW-Yr)	15.49	
Variable O&M ($/MWH): (2016 $/MWH)	0.84	
K Factor:	1.481	

* $/kW values are based on Summer capacity.
** Fixed O&M cost includes capital replacement.

NOTE: Total installed cost includes gas expansion, transmission interconnection and integration, escalation, and AFUDC.

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

West County Energy Center Unit 1

The new West County Energy Center Unit 1 that is scheduled to come in-service in 2009 does not require any "new" transmission lines.

Schedule 10

Status Report and Specifications of Proposed Transmission Lines

West County Energy Center Unit 2

The new West County Energy Center Unit 2 that is scheduled to come in-service in 2010 does not require any "new" transmission lines.

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

WCEC Unit 3 by 2011

(1)	Point of Origin and Termination:	New Sugar Substation – Corbett Substation
(2)	Number of Lines:	1
(3)	Right-of-way	FPL Owned
(4)	Line Length:	1 mile
(5)	Voltage:	230 kV
(6)	Anticipated Construction Timing:	Start date: May 2009 End date: November 2010
(7)	Anticipated Capital Investment: (Trans. and Sub.)	$11,300,000
(8)	Substations:	New Sugar Substation and Corbett Substation
(9)	Participation with Other Utilities:	None

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

St. Lucie 1 Nuclear Uprate

The St. Lucie 1 Nuclear Uprate that is scheduled to come in-service in 2011 does not require any "new" transmission lines.

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Turkey Point 3 Nuclear Uprate

The Turkey Point 3 Nuclear Uprate that is scheduled to come in-service in 2012 does not require any "new" transmission lines.

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

St. Lucie 2 Nuclear Uprate

The St. Lucie 2 Nuclear Uprate that is scheduled to come in-service in 2012 does not require any "new" transmission lines.

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Turkey Point 4 Nuclear Uprate

The Turkey Point 3 Nuclear Uprate that is scheduled to come in-service in 2012 does not require any "new" transmission lines.

Schedule 11.1

Existing FIRM and NON-FIRM Capacity and Energy by Primary Fuel Type
Actuals for the Year 2007

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		Net (MW) Capability				**NEL**	**Fuel Mix**
	Generation by Primary Fuel	**Summer (MW)**	**Summer (%)**	**Winter (MW)**	**Winter (%)**	**GWH**	**%**
(1)	Coal	896	3.6%	902	3.3%	6,856	6.0%
(2)	Nuclear	2,939	11.7%	3,013	11.0%	21,899	19.2%
(3)	Residual	6,818	27.1%	6,876	25.1%	9,651	8.4%
(4)	Distillate	660	2.6%	781	2.9%	27	0.0%
(5)	Natural Gas	10,822	43.1%	11,922	43.6%	59,300	51.9%
(6)	***FPL Existing Units Total:***	***22,135***	***88.1%***	***23,494***	***85.9%***	***97,733***	***85.5%***
(7)	Renewables (Purchases)- Firm	157.6	0.6%	157.6	0.6%	1,201	1.1%
(8)	Renewables (Purchases)- Non-Firm	Not Applicable		Not Applicable		291	0.3%
(9)	***Renewable Total:***	***157.6***	***0.6%***	***157.6***	***0.6%***	***1,492***	***1.3%***
(10)	***Purchases Other:***	***2,835.0***	***11.3%***	***3,704.0***	***13.5%***	***15,090***	***13.2%***
(11)	***Total***	***25,127.6***	***100.0%***	***27,355.6***	***100.1%***	***114,315***	***100.0%***

Note:
(1) FPL Existing Units Total matches Total System found on Schedule 1.
(2) Net Energy for Load MWH matches Schedule 6.1

Schedule 11.2

Existing NON-FIRM Self-Service Renewable Generation Facilities
Actuals for the Year 2007

(1)	(2)	(3)	(4)	(5) = (3) - (4)
Type of Facility	**Installed Capacity (MW)**	**Projected Annual Output (MWH)**	**Annual Energy Sold to FPL (MWH)**	**Projected Annual Energy Used by Customer (MWH)**
Customer-Owned PV (less than 10 kw)	0.27	277.19	57.59	219.60

Notes:

(1) There were approximately 110 customer-owned operating PV facilities interconnected with FPL during this year.
(2) The Installed Capacity value is the sum of the nameplate ratings (AC kw) for all of the customer-owned PV facilities.
(3) The Projected Annual Output value is based on NREL's PV Watts program and the Installed Capacity value in column (2), adjusted for the date when each facility was installed and assuming each facility operated as planned.
(4) The Annual Energy Sold to FPL is an actual value from FPL's metered data for this year.
(5) The Projected Annual Energy Used by Customers is a projected value that is the difference between the Projected Annual Output value in column (2) and the actual Annual Energy Sold to FPL in column (4).

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CHAPTER IV

Environmental and Land Use Information

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IV. Environmental and Land Use Information

IV.A Protection of the Environment

FPL operates in a sensitive, temperate/sub-tropical environment containing a number of distinct ecosystems with many endangered plant and animal species. Population growth in FPL's service area is continuing, which heightens competition for air, land, and water resources that are necessary to meet the increased demand for generation, transmission, and distribution of electricity. At the same time, residents and tourists want unspoiled natural amenities, and the general public has an expectation that large corporations such as FPL will conduct their business in an environmentally responsible manner.

FPL has been recognized for many years as one of the leaders among electric utilities for its commitment to the environment. FPL's environmental leadership has been heralded by many outside organizations as demonstrated by a few recent examples. In 2004, FPL Group earned a first place ranking among U.S. power companies and second globally in a report from the World Wildlife Fund for voluntary commitments to limit CO_2 emissions. This commitment was made to support initiatives to better manage utility impacts on climate change through use of greenhouse gas emission reductions and improvements in energy efficiency. The report stated that this was "primarily due to the company's leadership in developing wind energy and their commitment to dramatically improve their efficiency." In January 2007, FPL joined with a diverse group of U.S.-based business market leaders and leading non-governmental organizations to form the U.S. Climate Action Partnership (USCAP) in recognition of the need for a national policy framework on climate change. USCAP has called upon the federal government to formulate mandatory economy-wide policies to reduce CO_2 emissions.

As a further demonstration of FPL's efforts in sustainability, the EPA and the Department of Energy gave an award to FPL for its Sunshine Energy® program which allows customers, who voluntarily choose to participate, to pay a premium for their electricity that is used to purchase renewable energy credits associated with electric energy generated from renewable energy sources. FPL Group, the parent corporation of FPL was also recently awarded its fourth number one rating of major electric utilities surveyed in an environmental assessment conducted by Innovest, an independent advisory group. This rating was in recognition of FPL Group's success in executing a strategy to become a clean energy provider harnessing primarily clean and renewable fuels while also boosting shareholder value. FPL Group was named one of the world's most Sustainable

Corporations in Global 100 and was one of only two utilities to be so named in the United States.

FPL has also been the recipient of earlier environmental awards and recognition. In 2001, FPL was awarded Edison Electric Institute's National Land Management Award for its stewardship of 25,000 acres surrounding its Turkey Point Plant. In 2001, FPL was awarded the 2001 Waste Reduction and Pollution Prevention Award from the Solid Waste Association of North America. FPL received the 2001 Program Champion Award from the Environmental Protection Agency's Wastewise Program. The Florida Department of Environmental Protection named FPL a "Partner for Ecosystem Protection" in 2001 for its emission-reducing "repowering" projects at its Fort Myers and Sanford Plants. FPL won the Council for Sustainable Florida's award in 2002 for its sea turtle conservation and education programs at its St. Lucie Plant. Finally, FPL has been recognized by numerous federal and state agencies for its innovative endangered species protection programs which include such species as manatees, crocodiles, and sea turtles.

As mentioned above, FPL Group has taken a leadership role to address climate change and the call for action for a national climate change policy. The decision to step into the forefront of this issue goes hang-in-hand with FPL Group's longtime commitment to managing operations with sensitivity to the environment.

FPL is taking action now in Florida to address climate change with a number of actions. According to the U.S. Department of Energy (DOE), FPL is the nation's leader among electric utilities for its energy efficiency/conservation achievement and is also ranked number three nationally in load management achievement. FPL's nationally recognized leadership in the implementation of demand side management (DSM) within its system has avoided the need to build the equivalent of 12 medium-sized power plants as discussed in Chapter III of this document. Also discussed in Chapter III are FPL's plans for adding a significant amount of renewable energy resources. FPL is also the nation's leader in "repowering," significantly increasing the efficiency of a number of its existing power plants while reducing FPL system emissions. In addition, FPL's future generation plans include nuclear uprates and two new nuclear units that are projected to significantly reduce air emissions in Florida.

IV.B FPL's Environmental Statement

To reaffirm its commitment to conduct business in an environmentally responsible manner, FPL developed an Environmental Statement in 1992 to clearly define its position. This statement reflects how FPL incorporates environmental values into all aspects of its activities and serves as a framework for new environmental initiatives throughout the company. FPL's Environmental Statement is:

It is the Company's intent to continue to conduct its business in an environmentally responsible manner. Accordingly, Florida Power & Light Company will:

- Comply with the spirit and intent, as well as the letter of, environmental laws, regulations, and standards.
- Incorporate environmental protection and stewardship as an integral part of the design, construction, operation, and maintenance of our facilities.
- Encourage the wise use of energy to minimize the impact on the environment.
- Communicate effectively on environmental issues.
- Conduct periodic self-evaluations, report performance, and take appropriate actions.

IV.C Environmental Management

In order to implement the Environmental Statement, FPL established an environmental management system to direct and control the fulfillment of the organization's environmental responsibilities. A key component of the system is an Environmental Assurance Program that is discussed below. Other components include: executive management support and commitment, a dedicated environmental corporate governance program, written environmental policies and procedures, delineation of organizational responsibilities and individual accountabilities, allocation of appropriate resources for environmental compliance management (which includes reporting and corrective action when non-compliance occurs), environmental incident and/or emergency response, environmental risk assessment/management, environmental regulatory development and tracking, and environmental management information systems.

IV.D Environmental Assurance Program

FPL's Environmental Assurance Program consists of activities which are designed to evaluate environmental performance, verify compliance with corporate policy as well as with legal and regulatory requirements, and communicate results to corporate management. The principal mechanism for pursuing environmental assurance is the environmental audit. An environmental audit may be defined as a management tool comprising a systematic, documented, periodic, and objective evaluation of the performance of the organization and of the specific management systems and equipment designed to protect the environment. The environmental audit's primary objectives are to facilitate management control of environmental practices and assess compliance with existing environmental regulatory requirements and FPL policies.

IV.E Environmental Communication and Facilitation

FPL is involved in many efforts to enhance environmental protection through the facilitation of environmental awareness and in public education. Some of FPL's 2006 environmental outreach activities are noted in Table IV.E.1.

Table IV.E.1: 2007 FPL Environmental Outreach Activities

Activity	***# of Participants***
Visitors to Energy Encounter	20,000
Visitors to Manatee Park	150,000
Number of visits to FPL's Environmental Website	300,000
Number of pieces of Environmental literature distributed	>120,000

(All numbers are approximations.)

IV.F Preferred and Potential Sites

Based upon its projection of future resource needs, FPL has identified three Preferred Sites and eight Potential Sites for future generation additions. Preferred Sites are those locations where FPL has conducted significant reviews and has either taken action, or is planning to take action, to site new generation capacity. Potential Sites are those sites that have attributes that support the siting of generation and are under consideration as a location for future generation. Some of these sites are currently in use as existing generation sites and some are not. The identification of a Potential Site does not indicate that FPL has made a definitive decision to pursue generation (or generation expansion in the case of an existing generation site) at that location, nor does this designation indicate that the size or technology of a generator has been determined. The Preferred Sites and Potential Sites are discussed in separate sections below.

IV.F.1 Preferred Sites

FPL identifies three Preferred Sites in this Site Plan: the West County Energy Center (WCEC) adjacent to the existing Corbett FPL substation, the existing St. Lucie plant site, and the existing Turkey Point plant site. The West County Energy Center site is the location for combined cycle capacity additions FPL will make in 2009 and 2010, and is proposing to make in 2011. The St. Lucie site is the location for nuclear capacity additions that FPL will make in 2011 and 2012, and the plant site is also the location for a proposed wind generation addition that is proposed for 2009. The Turkey Point site is the location for nuclear capacity additions that FPL will make in 2012.

In regard to the WCEC site, combined cycle (CC) capacity additions, WCEC units 1 & 2, have been approved by the FPSC and by the Governor and Cabinet acting as the Siting Board. FPL is planning to file a need petition for the WCEC unit 3 combined cycle unit in April 2008.

In regard to the St. Lucie and Turkey Point sites, FPL petitioned the FPSC for approval of capacity uprates for the two existing nuclear units at each of these sites in September 2007. The FPSC approved the need and issued a Need Order for both Uprates in January 2008.

The existing Turkey Point plant site is also the proposed site for two new nuclear units, Turkey Point units 6 & 7. These two new nuclear units are proposed for 2018 and 2020, respectively. FPL filed for approval of a determination of need for these two new nuclear units with the FPSC in the second half of 2007. The FPSC voted to approve this request on March 18, 2008, and is expected to issue a final order approving the units in April 2008. These new nuclear units are not discussed in detail in this Site Plan because the units' projected in-service dates, fall outside of the 2008-2017 time period covered in this document.

The three Preferred Sites are discussed below.

Preferred Site # 1: West County Energy Center , Palm Beach County

FPL has identified the property adjacent to the existing Corbett Substation property in unincorporated western Palm Beach County as a Preferred Site for the addition of new generating capacity. The site was selected for the addition of two new combined cycle natural gas power plants with ultra-low sulfur light fuel oil (distillate) as a backup fuel. These units, WCEC 1 & 2, have been approved by both the FPSC and the Governor and Cabinet acting as the Siting Board. The units are scheduled to come in-service in 2009 and 2010, respectively. In addition, the site has also been selected as the location for a proposed third combined cycle unit, WCEC 3, projected to come in-service in 2011 if approved. FPL plans to file for FPSC approval of a determination of need for this unit in April 2008. If approved, all three combined cycle units will be identical in regard to technology and capacity.

The existing site is an area accessible to both natural gas and electrical transmission through existing structures or through additional lateral connections. The approved and proposed facilities would use natural gas as the primary fuel and state-of-the-art combustion controls.

a. **U.S. Geological Survey (USGS) Map**

A USGS map of the West County Energy Center (WCEC) plant site is found at the end of this chapter.

b. **Proposed Facilities Layout**

A map of the general layout of the WCEC generating facilities at the site is found at the end of this chapter.

c. **Map of Site and Adjacent Areas**

An overview map of the site and adjacent areas is also found at the end of this chapter.

d. **Existing Land Uses of Site and Adjacent Areas**

The site was inactive until February 2007 when construction of WCEC 1 & 2 was initiated. The site was previously dedicated to industrial and agricultural use. The site had been excavated, back-filled, and totally re-graded to an elevation approximately 10 feet. above the surrounding land surface. Prior to initiation of power plant construction, no structures were present on the site and vegetation was virtually nonexistent. Structures are now being built on the site for work associated with WCEC 1 & 2.

e. General Environment Features On and In the Site Vicinity

1. Natural Environment

The plant site had been significantly altered by the construction and operation of a limestone mine where vegetation had been cleared and removed. The surrounding land use is predominantly sugar cane agriculture and limestone mining. FPL's existing Corbett substation is located north of the site. The Arthur R. Marshall Loxahatchee National Wildlife Refuge is located to the south of the site.

2. Listed Species

Construction and operation of new units at the site is not expected to affect any rare, endangered, or threatened species. Wildlife utilization of the property is minimal as a result of the prior mining activities. Common wading birds can be observed on areas adjacent to, and occasionally within, the property. The property is adjacent to areas that have been identified as potential habitat for wood stork.

3. Natural Resources of Regional Significance Status

The construction and operation of gas-fired combined cycle generating facilities at this location are not expected to have any adverse impacts on parks, recreation areas, or environmentally sensitive lands including the Arthur R. Marshall Loxahatchee National Wildlife Refuge. Construction will not result in any onsite wetland impacts under federal, state, or local agency permitting criteria.

4. Other Significant Features

FPL is not aware of any other significant features of the site.

f. Design Features and Mitigation Options

The design of both the two approved units and the one proposed unit is a new 1,219 MW (Summer capacity) unit with each unit consisting of three new combustion turbines (CT) and three new heat recovery steam generators (HRSG) and a new steam turbine. Natural gas delivered via pipeline is the primary fuel type for this facility with ultra-low sulfur light fuel oil (distillate) serving as a backup fuel.

g. Local Government Future Land Use Designations

Local government future land use designation for the project site is "Rural Residential" according to the Palm Beach County Future Land Use Map. Designations for the area under the Palm Beach County Unified Land Development Code classified the project site and surrounding area as Special Agricultural District. The site has been granted conditional use for electrical power facilities under a General Industrial zoning district.

h. Site Selection Criteria Process

The site has been selected as a Preferred Site due to consideration of various factors including system load and economics. Environmental issues were not a deciding factor since this site does not exhibit significant environmental sensitivity or other environmental issues.

i. Water Resources

In regard to the two approved units, water from the Floridan Aquifer and surface water from the L10/L12 canal will be used for cooling, service, and process water. Water from the surficial aquifer will be treated and used for potable water unless water is available for purchase from Palm Beach County water municipality.

In regard to the proposed third unit, the primary water source for the project will be reclaimed (reuse) water that will come from Palm Beach County Water Utilities Department. FPL will obtain the necessary approvals to also supply Units 1 & 2 using reclaimed water after obtaining the necessary approvals for Unit 3. The Floridan and L10/L12 will remain as back up water supplies for the site. Reclaimed water will be used for cooling, service, and process water. Back-up water sources include utilizing the Floridan Aquifer allocation permitted for WCEC 1 & 2, potable water from Palm Beach County, and the L10/L12 canal when made available by the SFWMD. Water from the surficial aquifer will be treated and used for potable water unless water is available for purchase from Palm Beach County.

j. Geological Features of Site and Adjacent Areas

The site is underlain by approximately 13,000 feet of sedimentary rock strata. The basement complex in this area consists of Paleozoic igneous and metamorphic rocks about which little is known due to their great depth.

Overlying the basement complex to the ground surface are sedimentary rocks and deposits that are primarily marine in origin. Below a depth of about 400 feet these rocks are predominantly limestone and dolomite. Above 400 feet the deposits are largely composed of sand, silt, clay, and phosphate grains. The deepest formation in Palm Beach County on which significant published data are available is the Eocene Age Avon Park. Limited information is available from wells penetrating the underlying Oldsmar formation. The published information on the sediments comprising the formations below the Avon Park Limestone is based on projections from deep wells in Okeechobee, St. Lucie, and Palm Beach Counties.

Testing during construction of Exploratory Well 2 (EW-2) demonstrated the presence of a highly permeable zone (Boulder Zone) below a depth of 2,790 feet below pad level (bpl) overlain by a thick confining interval from approximately 2,000 to 2,790 feet bpl. The base of the Underground Source of Drinking Water (USDW) was identified between the depths of 1,932 and 1,959 feet bpl through interpretation of packer tests water quality data and geophysical logs. These conditions suggest that the hydrogeology of the EW-2 site is favorable for disposal of fluids via a deep injection well system.

k. <u>Projected Water Quantities for Various Uses</u>

In regard to the two approved units, the estimated quantity of water required for industrial processing for both units is approximately 450 gallons per minute (gpm) for uses such as process water and service water. Approximately 15 million gallons per day (mgd) in total of cooling water for the two generating units would be cycled through the addition of cooling towers.

In regard to the proposed third unit, the estimated quantity of water required for industrial processing is approximately 225 gallons per minute (gpm) for uses such as process water and service water. Approximately 7.5 million gallons per day (mgd) in total of cooling water for the one generating unit would be cycled through the addition of a cooling tower. Water quantities needed for other uses such as potable water are estimated to be approximately 35,000 gallons per day (gpd) for the entire WCEC site.

l. <u>Water Supply Sources by Type</u>

The two approved generating units will use available surface or ground water as the source of cooling water for the cooling towers. The cooling towers will also act as a heat sink for the facility process water. Such needs for cooling and process water will comply with the existing South Florida Water Management District (SFWMD) regulations for consumptive water use.

In regard to the proposed third unit, it will use reclaimed water as the primary source of cooling water for the cooling tower. The cooling tower will also act as a heat sink for the facility process water. Such needs for cooling and process water will comply with the existing SFWMD regulations for consumptive water use. In addition, reclaimed water used by WCEC 3 must meet all relevant requirements of Chapter 62-610, F.A.C., Part III, for use in the cooling tower.

m. <u>Water Conservation Strategies Under Consideration</u>

The use of reclaimed water is a water conservation strategy because it is a beneficial use of wastewater. Impacts on the surficial aquifer would be minimized and used only for potable water. Water from the Floridan Aquifer or the L10/L12 canal will be used for cooling purposes as a backup water source and cooling towers will be utilized. In addition, captured stormwater will be reused in the cooling tower whenever feasible. Stormwater captured in the stormwater ponds will also recharge the surficial aquifer.

n. <u>Water Discharges and Pollution Control</u>

Heat will be dissipated in the cooling towers. Blowdown water from the cooling towers, along with other wastestreams, will be injected into the boulder zone of the Floridan Aquifer. Non-point source discharges are not an issue since there will be none at this facility. Storm water runoff will be collected and used to recharge the surficial aquifer via a storm water management system. Design elements will be included to capture suspended sediments. In addition, captured stormwater will be reused in the cooling towers whenever feasible The facility will employ a Best Management Practices (BMP) plan and Spill Prevention, Control, and Countermeasure (SPCC) plan to control the inadvertent release of pollutants.

o. <u>Fuel Delivery, Storage, Waste Disposal, and Pollution Control</u>

The site is not located near an existing natural gas transmission pipeline that is capable of providing a sufficient quantity of gas. Upgrades of existing pipelines and/or lateral connections to other pipelines will be made for supply of natural gas. Ultra-low sulfur light fuel oil (distillate) would be received by truck and stored in above-ground storage tanks to serve as backup fuel for the new units.

p. Air Emissions and Control Systems

The use of natural gas and ultra-low sulfur light fuel oil (distillate) and combustion controls will minimize air emissions from these units and ensure compliance with applicable emission limiting standards. Using these fuels minimizes emissions of sulfur dioxide (SO_2), particulate matter, and other fuel-bound contaminates. Combustion controls similarly minimize the formation of nitrogen oxides (NO_x) and the combustor design will limit the formation of carbon monoxide and volatile organic compounds. When firing natural gas, NO_x emissions will be controlled using dry-low NO_x combustion technology and selective catalytic reduction (SCR). Water injection and SCR will be used to reduce NO_x emissions during operations when using ultra-low sulfur light fuel oil (distillate) as backup fuel. These design alternatives constitute the Best Available Control Technology for air emissions, and minimize such emissions while balancing economic, environmental, and energy impacts. Taken together, the design of the West County Energy Center units will incorporate features that will make them among the most efficient and cleanest power plants in the State of Florida.

q. Noise Emissions and Control Systems

Noise expected to be caused by unit construction at the site is expected to be below current noise levels for the residents nearest the site. Noise from the operation of the new units will be within allowable levels.

r. Status of Applications

In regard to the two approved units, a Site Certification Application (SCA) for the construction and operation of the West County Energy Center project under the Florida Electrical Power Plant Siting Act was filed on April 14, 2005 and received Site Certification by the Governor and Cabinet, acting as the Siting Board, on December 26, 2006. Palm Beach County Planning Zoning and Building department issued approval for the project on June 28, 2006. FDEP issued an Underground Injection Control Exploratory Well permit on January 11, 2006 and another Exploratory Well Permit on December 6, 2006. FDEP issued a Prevention of Significant Deterioration (PSD) air permit on January 10, 2007. After acquiring these permits and authorizations, FPL initiated construction in February 2007 and anticipates an in-service date for the first unit of mid-2009. FDEP is in the process of issuing the Final UIC permit.

In regard to the proposed third unit, a Site Certification Application (SCA) for the construction and operation of WCEC 3 under the Florida Electrical Power Plant Siting Act was filed on December 6, 2007 and is currently undergoing review. Palm Beach County Planning Zoning and Building department issued initial approval on November 29, 2007, and final approval on December 5, 2007, for an increase in total generating capacity for the project. A Prevention of Significant Deterioration (PSD) air permit was filed on December 6, 2007. After acquiring these permits and authorizations, FPL proposes to initiate construction in June 2009 and anticipates an in-service date of mid-2011. WCEC 3 plans to utilize the UIC system being permitted for the entire site.

Preferred Site # 2: St. Lucie Plant, St. Lucie County

FPL's St. Lucie Plant is located in St. Lucie County on Hutchinson Island on an FPL-owned 1,130-acre site. The plant site is bordered by the Atlantic Ocean to the east and the Indian River Lagoon to the west. Located on the site are two nuclear powered generating units, St. Lucie Units 1 & 2, that have been in operation since 1976 and 1983, respectively. The St. Lucie site has been selected as a Preferred Site for the addition of two types of new generating capacity.

The first type of generating capacity addition is an increase in the capacity of the two existing nuclear generating units by approximately 103 to 104 MW each. This work will involve changes to several existing main components within the existing facilities to increase their capability to produce steam for the generation of electricity. No new or expanded facilities are required as part of this capacity "uprate." This capacity uprate, along with a similar capacity uprate of FPL's existing Turkey Point nuclear units, was approved by the FPSC in January 2008. The capacity uprates at St. Lucie for the two nuclear units sited there are projected to be in-service in late 2011 and 2012, respectively.

The second type of generating capacity addition is the proposed installation of FPL wind generation turbines at the plant site by 2009. Six wind turbines are being proposed that, in total, would have a maximum output of approximately 13.8 MW.

a. U.S. Geological Survey (USGS) Map

A USGS map of the FPL St. Lucie Nuclear site is found at the end of this chapter.

b. Proposed Facilities Layout

A map of the general layout of the proposed generating facilities at the site is found at the end of this chapter.

c. Map of Site and Adjacent Areas

An overview map of the site and adjacent areas is also found at the end of this chapter.

d. Existing Land Uses of Site and Adjacent Areas

St. Lucie Units 1 & 2 are pressurized water reactors, each having two steam generators. The prominent structures, enclosed facilities, and equipment associated with St. Lucie Units 1 & 2 include the containment building, the turbine generator building, the auxiliary building, and the fuel handling building.

Prominent features beyond the power block area include the intake and discharge canals, switchyard, spent-fuel storage facilities, technical and administrative support facilities, and public education facilities (Energy Encounter Exhibit and the Marine Education Facility). Significant features surrounding the St. Lucie Units 1 & 2 are predominately undeveloped land and water bodies including; Big Mud Creek, the Atlantic Ocean, Herman's Bay and Indian River Lagoon.

In regard to the nuclear capacity uprates, the only changes will be modifications to the existing power generation facilities within the power block area. None of the other existing facilities at the plant will change as a result of the uprates. No changes to the nuclear power generation facilities are currently projected as a result of the proposed wind turbine additions.

e. General Environment Features On and In the Site Vicinity

1. Natural Environment

FPL's St. Lucie Plant is located in St. Lucie County on Hutchinson Island on an FPL-owned 1,130-acre site. The St. Lucie Plant includes the reactor buildings, turbine buildings, access/security building, auxiliary building, maintenance facilities, and miscellaneous warehouses and other buildings associated with the operation of Units 1 & 2. The site includes adjacent undeveloped mangrove areas. As a result of the approved capacity uprates, the site characteristics will not change.

The proposed wind turbines are also located on the FPL-owned site. Impacts to the site characteristics are projected to be minimal from the proposed wind turbines.

2. **Listed Species**

Some listed species known to occur in the area of the plant location are atlantic sturgeon, smalltooth sawfish, loggerhead sea turtle (*Caretta caretta*), green sea turtle (*Chelonia mydas*), leatherback sea turtle (*Dermochelys coriacea*), hawksbill sea turtle (*Eretmochelys imbriccata*), gopher tortoise (*Gopherus polyphemus*), kemp's ridley (*Lepidochelys kempi*) sea turtle, wood stork (*Mycteria americana*), black skimmer (*Rynchops niger*), and least tern (*Sterna antillarum*).

In regard to the capacity uprates, neither the development work, nor the continued operation of the two nuclear units after the uprate work has been completed, are expected to adversely affect any rare, endangered, or threatened species. No changes in wildlife populations at the adjacent undeveloped areas are anticipated, including listed species. Noise and lighting impacts will not change and it is expected that wildlife will continue to use the undeveloped areas within the St. Lucie Plant boundary.

In regard to the wind turbines, some changes to the adjacent undeveloped areas are anticipated, excluding listed species. Noise and lighting impacts will not change and the wind turbines are not anticipated to deter the continued use by wildlife of the undeveloped areas within the St. Lucie Plant boundary or any adjacent areas.

3. **Natural Resources of Regional Significance Status**

Significant features surrounding the St. Lucie Units 1 & 2 are predominately undeveloped land and water bodies including; Big Mud Creek, the Atlantic Ocean, Herman's Bay and Indian River Lagoon.

4. **Other Significant Features**

FPL is not aware of any other significant features of the site.

f. **Design Features and Mitigation Options**

The source of cooling water for the St. Lucie Plant is the Atlantic Ocean. It is a once-through system. The effects of the discharge of cooling water via these discharge structures were evaluated and mixing zones were established to allow compliance with thermal water quality standards as a part of the Plant's NPDES (Permit No. FL0002208). These mixing zones include the volume of water beyond the discharge structures, at the edge of which, the water temperature is no greater than 17°F above the ambient temperature of the intake water.

In regard to the nuclear capacity uprates, the once-through system will continue to be used for the nuclear units. In regard to the wind turbines, no water will be used.

g. Local Government Future Land Use Designations

St. Lucie Units 1 & 2 are located in unincorporated St. Lucie County, Florida. The County has adopted a comprehensive plan, which is updated on a periodic basis. The County Comprehensive Plan incorporates a map that depicts the future land use categories of all property falling within the unincorporated portions of the County. The St. Lucie Plant has a Future Land Use category of Transportation/Utilities (T/U) according to the St. Lucie County Future Land Use Map. The T/U category is described in the St. Lucie County Comprehensive Plan Future Land Use Element Future Land Use.

h. Site Selection Criteria Process

The site has been selected as a Preferred Site for the nuclear capacity uprates because it is an existing nuclear plant site and, therefore, offers the opportunity for increased nuclear capacity. The site has been selected as a Preferred Site for the wind turbines because of the available wind resource at that location.

i. Water Resources

The source of cooling water for the St. Lucie Plant is the Atlantic Ocean. The once-through system flow will not change as a result of the nuclear capacity uprates. There will be no water used to operate the wind turbines. Due to the existing nature of the St. Lucie Plant, surrounding surface waters will not be adversely affected by either of the generation capacity additions. Stormwater will be handled by the existing facilities and no new areas will be impacted. Wetlands, groundwater, and nearby surface waters will not be impacted.

j. Geological Features of Site and Adjacent Areas

Beneath the land surface, there is a peat layer 4 to 6 feet thick. Below this layer is the Anastasia Formation, a sedimentary rock formation composed of clay lenses, sandy limestone, and silty fine to medium sand with fragmented shells. This highly permeable stratum extends 35 to 90 feet below mean sea level (msl). Underlying this stratum there is a semi-permeable zone, The Hawthorn Formation, consisting of slightly clayey and very fine silt which extends 600 feet below msl.

The original surficial deposits at the St. Lucie Plant were excavated to a depth of 60 feet and backfilled with Category I or II fill. The fill is underlain by the Anastasia formation, a sequence of partially cemented sand and sandy limestone, which extend to an average depth of about 145 feet. The Anastasia is underlain to an depth of about 600 to 700 feet by the partially cemented and indurated sands, clays, and sandy limestones of The Hawthorn Formation. Underlying these surface strata are about 13,000 feet of Jurassic through Tertiary Formations, primarily carbonate rocks. These formations have a relatively gentle slope to the southeast.

k. **<u>Projected Water Quantities for Various Uses</u>**

In regard to the nuclear capacity uprates, no change is expected in the quantity or characteristics of industrial wastewaters generated by the facility. Therefore, no change in that compliance achievement status is expected. The capacity uprates will not cause any changes in hydrologic or water quality conditions due to diversion, interception, or additions to surface water flow. The St. Lucie Plant does not directly withdraw groundwater under its current operations and it will not withdraw groundwater after the uprates work is completed. The use of water supplied by the City of Fort Pierce, which does withdraw groundwater, will remain unchanged and there will be no changes to the groundwater discharges. There will be no quality, quantity, or hydrological changes, either by withdrawal or discharge to a drinking water source. Therefore, there will be no impacts on drinking water.

The wind turbines will not require water for operations and will not cause any changes in the hydrologic or water quality conditions due to diversion, interception, or additions to surface water flow.

l. **<u>Water Supply Sources by Type</u>**

The source of cooling water for the St. Lucie Plant is the Atlantic Ocean. General plant service water, fire protection water, process water, and potable water are obtained from City of Fort Pierce. Process water uses include demineralizer regeneration, steam cycle makeup, and general service water use for washdowns.

The existing St. Lucie Plant water use is projected to be unchanged from that for the existing facility as a result of the nuclear capacity uprates. The wind turbines will not require water for operations.

m. Water Conservation Strategies Under Consideration

The existing water resources will not change as a result of the nuclear capacity uprates. The wind turbines will not require water for operations.

n. Water Discharges and Pollution Control

St. Lucie Units 1 & 2 use once-through cooling water from the Atlantic Ocean to remove heat from the main (turbine) condensers via the Circulating Water System (CWS), and to remove heat from other auxiliary equipment via the Auxiliary Equipment Cooling Water System (AECWS). The great majority of this cooling water is used for the CWS.

Under emergency conditions, water can be withdrawn from Big Mud Creek via the Emergency Intake Canal through two 54-inch pipe assemblies in the barrier wall that separates the Creek from the Canal. FPL does not use this intake during normal operations, but does test this system semi-annually.

The facility employs a Best Management Practices (BMP) plan and Spill Prevention, Control, and Countermeasure (SPCC) plan to control the inadvertent release of pollutants.

The wind turbines will not require water for operations. Consequently, there will be no water discharge as a result of these turbines.

o. Fuel Delivery, Storage, Waste Disposal, and Pollution Control

St. Lucie Units 1 & 2 are licensed for uranium-dioxide fuel that is slightly enriched uranium-235. The uranium-dioxide fuel is in the form of pellets contained in Zircaloy tubes with welded end plugs to confine radionuclides. The tubes are fabricated into assemblies designed for loading into the reactor core. Each reactor core includes 217 fuel assemblies.

FPL currently replaces approximately one-third of the fuel assemblies in each reactor at intervals of approximately 18 months. FPL operates the reactors such that the average fuel usage by the reactors is approximately 47,000 megawatt-days per metric ton uranium. In regard to the nuclear capacity uprates, more nuclear fuel will be used due to the increased capacity of each unit. No changes in the fuel-handling facilities are required. The addition of the wind turbines will have no fuel-related impact; i.e., no impacts from fuel delivery, storage, waste, or pollution control.

Diesel fuel is used in a number of emergency generators that include four main plant generators, two building generators, and various general purpose diesel engines. The main plant emergency generators will not be changed as a result of either of the two types of generation capacity additions. These emergency generators are for standby use only and only tested to assure reliability and for maintenance. Diesel fuel is delivered to the St. Lucie Plant by truck as needed, and stored in tanks with secondary containment.

p. Air Emissions and Control Systems

The St. Lucie Plant is classified as a minor source of air pollution, since FDEP has issued a Federally Enforceable State Operating Permit (FESOP) to keep emissions less than 100 tons per year for any air pollutant regulated under the Clean Air Act.

The applicable units at the St. Lucie Plant in regard to air emissions consist of eight large main plant diesel engines, two smaller diesel engines, and various general-purpose diesel engines. The air emissions from these engines are limited by the use of 0.05-percent sulfur diesel fuel and good combustion practices. Best Available Control Technology (BACT) is not applicable to these existing emission units.

Nitrogen oxide (NOx) emissions from the operation of the diesel engines comprise the limiting pollutant for these diesel units at the St Lucie Plant. The FDEP FESOP limits NOx emissions to 99.4 tons, which includes fuel use limits on the large main plant emergency diesel engines of 97,000 gallons in any 12-month consecutive period and the smaller building and general purpose diesel engines of 190,000 gallons in any 12-month consecutive period. Also, the Plant may choose to combine the diesel units' fuel-tracking, which then limits the NOx totals for a 12-month consecutive period to a maximum of 80 tons. There will be no change in the operation or emissions of the diesel engines resulting from either the nuclear capacity uprates or the wind turbines. In addition, neither of these types of generation capacity additions will result in an increase of carbon dioxide (CO_2) or other greenhouse gas emissions. In fact, both of these increases in generation capacity are projected to result in decreased FPL system emissions of CO_2 and other greenhouse gases.

q. **Noise Emissions and Control Systems**

A field survey and impact assessment of noise expected to be caused by construction activities at the site was conducted in regard to both types of generation capacity additions. Predicted noise levels are not expected to result in adverse noise impacts in the vicinity of the site during construction or operation of either generating capacity additions.

r. **Status of Applications**

In regard to the nuclear capacity uprates, a Site Certification Application (SCA) under the Florida Electrical Power Plant Siting Act was filed on December 13, 2007. The FPSC voted to approve the need for the St. Lucie (and Turkey Point) uprates and the final order approving the need for these units was issued on January 7, 2008. In regard to the wind turbines, a Site Certification Application is not required.

Preferred Site # 3: Turkey Point Plant, Miami-Dade County

The Turkey Point Plant site is located on the west side of Biscayne Bay, 25 miles south of Miami. The site is directly on the shoreline of Biscayne Bay and is geographically located approximately 9 miles east of Florida City on Palm Drive. Public access to the plant site is limited due to the nuclear units located there. The land surrounding the site is owned by FPL and acts as a buffer zone. The site is comprised of two nuclear units (Units 3 & 4) and two natural gas/oil conventional boiler units (Units 1 & 2), one combined cycle natural gas unit (Unit 5), the cooling canals, an FPL-maintained natural wildlife area, and wetlands that have been set aside as the Everglades Mitigation Bank (EMB).

Turkey Point Units 3 & 4 have been in operation since 1972 and 1973, respectively. The Turkey Point site has been selected as a Preferred Site for the increase in the capacity of its two existing nuclear generating units by approximately 103 to 104 MW each. This work will involve changes to several existing main components within the existing facilities to increase their capability to produce steam for the generation of electricity. No new or expanded facilities are required as part of this capacity "uprate." This capacity uprate, along with a similar capacity uprate of FPL's existing St. Lucie nuclear units, was approved by the FPSC in January 2008. The capacity uprates at Turkey Point are projected to be in-service in 2012.

a. **U.S. Geological Survey (USGS) Map**

A USGS map of the Turkey Point plant site is found at the end of this chapter.

b. Proposed Facilities Layout

A map of the general layout of the Turkey Point Units 3 & 4 generating facility at the site is found at the end of this chapter.

c. Map of Site and Adjacent Areas

An overview map of the site and adjacent areas is also found at the end of this chapter.

d. Existing Land Uses of Site and Adjacent Areas

The five existing power generation units and support facilities occupy approximately 150 acres of the 11,000-acre Turkey Point Plant. Support facilities include service buildings, an administration building, fuel oil tanks, water treatment facilities, circulating water intake and outfall structures, wastewater treatment basins, and a system substation. The cooling canal system occupies approximately 5,900 acres. The two 400-megawatt (MW) (nominal) fossil fuel-fired steam electric generation units at the Turkey Point Plant have been in service since 1967 (Unit 1) and 1968 (Unit 2). These units currently burn residual fuel oil and/or natural gas with a maximum equivalent sulfur content of 1 percent. The two 700-MW (nominal) nuclear units have been in service since 1972 (Unit 3) and 1973 (Unit 4). Turkey Point Units 3 & 4 are pressurized water reactor (PWR) units. Turkey Point Unit 5 is a nominal 1,150-MW combined cycle unit that began operation in 2007. Significant features in the vicinity of the site include Biscayne National Park, the Miami-Dade County Homestead Bayfront Park, and the Everglades National Park.

e. General Environment Features On and In the Site Vicinity

1. Natural Environment

The prominent structures and enclosed facilities and equipment associated with Units 3 & 4 include: the containment building, which contains the nuclear steam supply system, including the reactor, steam generators, reactor coolant pumps, and related equipment; the turbine generator building, where the turbine generator and associated main condensers are located; the auxiliary building, which contains waste management facilities, engineered safety components, and other facilities; and the fuel handling building, where the spent fuel storage pool and storage facilities for new fuel are located. Prominent features beyond the power block area include the intake system, cooling canal system, switchyard, spent fuel storage facilities, and technical and administrative support facilities.

2. **Listed Species**

The construction during the uprating of the units, and operation of the units after the capacity uprating is completed, are not expected to adversely affect any rare, endangered, or threatened species. Listed species known to occur in the nearby Biscayne National Park that could potentially utilize the site include the peregrine falcon *(Falco peregrinus)*, wood stork *(Mycteria americana)*, American crocodile *(Crocodylus acutus)*, mangrove rivulus *(Rivulus marmoratus)*, roseate spoonbill *(Ajaja ajaja)*, limpkin *(Aramus guarauna)*, little blue heron *(Egretta caerulea)*, snowy egret *(Egretta thula)*, American oystercatcher *(Haematopus palliates)*, least tern *(Sterna antillarum)*, the white ibis *(Eudocimus albus)*, and bald eagle *(Haliaeetus leucocephalus)*. No bald eagle nests are known to exist in the vicinity of the site. The federally listed, endangered American Crocodile thrives at the Turkey Point site, primarily in and around the southern end of the cooling canals which lie south of the project area. The entire site is considered crocodile habitat due to the mobility of the species and use of the site for foraging, traversing, and basking. FPL manages a program for the conservation and enhancement of the American crocodile.

3. **Natural Resources of Regional Significance Status**

Significant features in the vicinity on the site include Biscayne National Park, the Miami-Dade County Homestead Bayfront Park, and the Everglades National Park. The portion of Biscayne Bay adjacent to the site is included within the Biscayne National Park. Biscayne National Park contains 180,000 acres, approximately 95% of which is open water interspersed with over 40 keys. The Biscayne National Park headquarters is located approximately 2 miles north of the Turkey Point plant and is adjacent to the Miami-Dade County Homestead Bayfront Park which contains a marina and day use recreational facilities.

4. **Other Significant Features**

FPL is not aware of any other significant features of the site.

f. **Design Features and Mitigation Options**

Turkey Point Units 3 & 4 uses cooling water from a closed-cycle cooling canal system to remove heat from the main (turbine) condensers, and to remove heat from other auxiliary equipment. The existing cooling canals will accommodate the increase in heat load that is associated with the increased capacity from the uprates. The maximum predicted increase in water temperature entering the cooling canal system from the units resulting from the uprates is predicted to be about 2.5°F, from 106.1 to 108.6°F. The associated maximum increase in water temperature returning to the units is about 0.9°F, from 91.9 to 92.8°F.

g. **Local Government future Land Use Designations**

Local government future land use plan designates most of the site as IU-3 "Industrial, Unlimited Manufacturing District." There are also areas designated GU – "Interim District." Designations for the surrounding area are primarily GU – "Interim District."

h. **Site Selection Criteria Process**

The site has been selected as a Preferred Site for the nuclear capacity uprates because it is an existing nuclear plant site and, therefore, offers the opportunity for increased nuclear capacity.

i. **Water Resources**

Unique to Turkey Point plant site is the self-contained cooling canal system that supplies water to condense steam used by the plant's turbine generators. The canal system consists of 36 interconnected canals each five miles long, 200 feet wide, and approximately four feet deep. The system performs the same function as a giant radiator. The water is circulated through the canals in a two-day journey, ending at the plant's intake pumps.

j. **Geological Features of Site and Adjacent Areas**

The Turkey Point Plant lies upon the Floridian Plateau, a partly-submerged peninsula of the continental shelf. The peninsula is underlain by approximately 4,000 to 15,000 feet of sedimentary rocks consisting of limestone and associated formations that range in age from Paleozoic to Recent. Little is known about the basement complex of Paleozoic igneous and metamorphic rocks due to their great depth.

Generally in Miami-Dade County, the surficial aquifer (Biscayne Aquifer) consists of a wedge-shaped system of porous clastic and carbonate sedimentary materials, primarily limestone and sand deposits of the Miocene to late Quaternary age. The Biscayne Aquifer is thickest along the eastern coast and varies in thickness from 80 to 200 feet thick. The surficial aquifer is typically composed of Pamlico Sand, Miami Limestone (Oolite), the Fort Thompson and Anastasia Formations (lateral equivalents), Caloosahatchee Marl, and the Tamiami formation. The lower confining layers below the surficial aquifer range in thickness from 350 to 600 feet and are composed of the Hawthorn Group. Beneath the Hawthorn Group, the Floridan Aquifer System (FAS) ranges from 2,800 to 3,400 feet thick and consists of Suwannee Limestone, Avon Park Limestone, and the Oldsmar Formations.

k. Projected Water Quantities for Various

The addition of nuclear generating capacity as a result of the uprates will not cause any changes in the quantity or characteristics of industrial wastewaters generated by the facility; therefore, no change in that compliance achievement status is expected. The uprates will not cause any changes in hydrologic or water quality conditions due to diversion, interception, or additions to surface water flow. The Turkey Point Plant does not directly withdraw groundwater under its current operations and it will not do so after the capacity uprates. Locally, groundwater is present beneath the Site in the surficial or Biscayne Aquifer and in deeper aquifer zones that are part of the Floridan Aquifer System. There will be no effects on those deeper aquifer zones from the capacity uprates.

l. Water Supply Sources and Type

The source of cooling water for Turkey Point Units 3 & 4 is the cooling canal system. There will be no increase in the amount of water withdrawn as a result of the capacity uprates. General plant service water, fire protection water, process water, and potable water are obtained from Miami-Dade County. Process water uses include demineralizer regeneration, steam cycle makeup, and general service water use for washdowns. The water use for the facility will not change as a result of the capacity uprates.

m. Water Conservation Strategies

The existing water resources will not change as a result of the uprates.

n. Water Discharges and Pollution Control

Heated water discharges are dissipated using the existing closed cooling water system and the cooling canal system.

The facility employs a Best Management Practices (BMP) plan and Spill Prevention, Control, and Countermeasure (SPCC) plan to control the inadvertent release of pollutants.

o. Fuel Delivery, Storage, Waste Disposal, and Pollution Control

Turkey Point Units 3 & 4 utilize uranium-dioxide fuel that is slightly enriched uranium-235. The uranium-dioxide fuel is in the form of pellets contained in Zircaloy tubes with welded end plugs to confine radionuclides. The tubes are fabricated into assemblies designed for loading into the reactor core.

FPL currently replaces approximately one-third of the fuel assemblies in each reactor at intervals of approximately 18 months. FPL operates the reactors such that the average fuel usage by the reactors is approximately 45,000 megawatt-days per metric ton of uranium. Following completion of the uprates, more nuclear fuel will be used to increase the capacity of each unit. No changes in the fuel handling facilities are required.

Diesel fuel is used in a number of emergency generators that include four main emergency generators, five smaller emergency generators and various general purpose diesel engines. The emergency generators will not be changed as a result of the capacity uprates. These emergency generators are for stand-by use only and only operated for testing purposes to assure reliability and for maintenance. Diesel fuel for the emergency generators is delivered to the Turkey Point Plant by truck as needed, and stored in tanks with secondary containment.

p. Air Emissions and Control Systems

The normal operation of Turkey Point Units 3 & 4 does not create fossil fuel-related air emissions. However, there are nine emergency generators associated with Units 3 & 4. Four main plant emergency generators are rated at 2.5 MW. Five smaller emergency generators are associated with the security system. In addition, various general purpose diesel are used as needed for Units 3 & 4.

Turkey Point Plant Units 3 & 4's associated emergency generators and diesel engines, together with Units 1, 2, and 5, are classified as a major source of air pollution. FDEP has issued a separate Title V Air Operating Permit for the Turkey Point Nuclear Plant (Permit Number 0250003-004-AV). There are no operating limits for the emergency generators or diesel engines. NOx emissions are regulated under Reasonably Available Control Technology (RACT) requirements in Rule 62-296.570(4)(b)7 F.A.C., which limit NOx emissions to 4.75 lb/MMBtu. The use of 0.5 percent sulfur diesel fuel and good combustion practices serve to keep NOx emissions under this limit.

q. Noise Emissions and Control Systems

A field survey and impact assessment of noise expected to be caused by activities associated with the uprates was conducted. Predicted noise levels are not expected to result in adverse noise impacts in the vicinity of the site..

r. Status of Applications

A Site Certification Application (SCA) under the Florida Electrical Power Plant Siting Act was filed on January 18, 2008. The FPSC voted to approve the need for the Turkey Point (and St. Lucie) uprates and the final order approving the need for these units was issued on January 7, 2008.

IV.F.2 Potential Sites for Generating Options

Eight (8) sites are currently identified as Potential Sites for near-term future generation additions to meet FPL's capacity and energy needs[2]. These sites have been identified as Potential Sites due to considerations of location to FPL load centers, space, infrastructure, and/or accessibility to fuel and transmission facilities. These sites are suitable for different capacity levels and technologies.

Each of these Potential Sites offer a range of considerations relative to engineering and/or costs associated with the construction and operation of feasible technologies. In addition, each Potential Site has different characteristics that will require further definition and attention. Solely for the purpose of estimating water requirements for each site, it was assumed that either one dual-fuel (natural gas and light oil) simple cycle combustion turbine (CT) or a natural gas-fired combined cycle unit (CC) would be constructed at the Potential Sites. A simple cycle CT would require approximately 50 gallons per minute (gpm) for both process and cooling water (assuming air cooling). A CC unit would require approximately 150 gpm for service and process water and approximately 14 million gallons per day (mgd) for cooling water depending upon the water source and associated water quality. If an existing power plant site is ultimately selected for repowering of an existing unit(s), the water requirements discussed above for a CC unit would be approximately correct for the repowered unit. If a renewable energy generating

[2] As has been described in previous FPL Site Plans, FPL also considers a number of other sites as possible sites for future generation additions. These include the remainder of FPL's existing generation sites and other greenfield sites.

technology, such as photovoltaic and solar thermal, is ultimately selected for one of these sites, the water requirements would be less than those for CT or CC facilities.

Permits are presently considered to be obtainable for each of these sites. No significant environmental constraints are currently known for any of these sites. The Potential Sites briefly discussed below are presented in alphabetical order. At this time FPL considers each site to be equally viable.

Potential Site # 1: West Broward, Broward County

FPL has identified the Andytown Substation property in western unincorporated Broward County as a potential site for the addition of new generating capacity and FPL refers to this potential site as the West Broward site. Current facilities on-site include an electric substation. The existing site is an area accessible to both natural gas and electrical transmission through existing structures or through additional lateral connections.

a. U.S. Geological Survey (USGS) Map

A USGS map of the site has been included at the end of this chapter.

b. Land Uses

The land uses for the potential site were designated as agricultural use.

c. Environmental Features

Extensive low-quality wetlands are present on the site. Construction and operation of a new facility on this site would not be expected to adversely affect any rare, endangered, or threatened species.

d. Water Quantities

As previously discussed, needed water quantities would be up to 150 gallons per minute (gpm) for both process and cooling water (assuming air cooling) and up to 14 million gallons per day (mgd) for cooling water.

e. Supply Sources

Groundwater from the shallow aquifer or a local source of reclaimed (reuse) water has been identified as potential water sources. The Floridan Aquifer has also been identified as a potential cooling water source.

Potential Site # 2: Cape Canaveral Plant, Brevard County

The FPL Cape Canaveral Plant property is located in unincorporated Brevard County. The city of Port St. Johns is located less than a mile away. The site has direct access to a four-lane highway (U.S. 1). A rail line is located near the plant. The existing facility consists of two 400 MW (approximate) steam boiler type generating units.

a. **U.S. Geological Survey (USGS) Map**

A USGS map of the site is found at the end of this chapter.

b. **Land Uses**

The land is primarily dedicated to industrial use; i.e., FPL's existing Cape Canaveral power plant Units 1 & 2. It is surrounded by grassy areas and a few acres of remnant pine forest. The land adjacent to the site is dedicated to light commercial and residential use.

c. **Environmental Features**

The site is located on the Intra-coastal waterway which provides warm water refugia for manatees during cold winter days.

d. **Water Quantities**

As previously discussed, if additional water is needed beyond the currently permitted amount, then the water quantities would be up to 150 gallons per minute (gpm) for both process and cooling water (assuming air cooling) and up to 14 million gallons per day (mgd) for cooling water.

e. **Supply Sources**

Existing on-site wells, reclaimed (reuse) water, public supply water, and the existing once-through cooling water system are potential water supply sources.

Potential Site # 3: Desoto County Greenfield Site

This site is a "Greenfield" undeveloped site located on a 13,515 acre property in unincorporated Desoto County. The site is adjacent to portions of the Peace River and lies on both the east and west sides of U.S. Highway 17 approximately 3 to 5 miles north of the City of Arcadia. There are currently no utility facilities on the site.

a. <u>U.S. Geological Survey (USGS) Map</u>

A USGS map of the site is found at the end of this chapter.

b. <u>Land Uses</u>

A portion of the land on the site is currently dedicated to agricultural use (sod farming, cattle grazing, and truck crops). The remaining land is undeveloped.

c. <u>Environmental Features</u>

Developed portions of the adjacent properties are primarily agricultural (sod farms, citrus groves, and cattle grazing). Undeveloped portions include mixed scrub with some hardwoods and a few small isolated wetlands.

d. <u>Water Quantities</u>

As previously discussed, needed water quantities would be up to 150 gallons per minute (gpm) for both process and cooling water (assuming air cooling) and up to 14 million gallons per day (mgd) for cooling water.

e. <u>Supply Sources</u>

Groundwater from the upper and lower Floridan Aquifer, or if available and practicable, a local source of reclaim (reuse) water are potential water sources.

Potential Site # 4: Fort Myers Plant Site, Lee County

FPL's existing 460-acre Fort Myers property is located just east of Interstate 75 in Lee County and is adjacent to the Caloosahatchee River. The existing facilities on the site include one 1,440 MW (approximate) combined cycle unit, 12 gas turbines, each with an approximate capacity of 54 MW, and 2 combustion turbines, each with an approximate capacity of 160 MW.

a. <u>U.S. Geological Survey (USGS) Map</u>

A USGS map of the Fort Myers plant site is found at the end of this chapter.

b. <u>Land Uses</u>

The land on the site is currently dedicated to industrial use with surrounding grassy and landscaped areas. Much of the site has been used in recent years for direct plant construction activities. The adjacent land uses include light commercial and retail to the east of the property, plus some residential areas located toward the west.

c. **Environmental Features**

Mixed scrub with some hardwoods can be found to the east and further south.

d. **Water Quantities**

As previously discussed, needed water quantities would be up to 150 gallons per minute (gpm) for both process and cooling water (assuming air cooling) and up to 14 million gallons per day (mgd) for cooling water.

e. **Supply Sources**

The available water source is the Caloosahatchee River and the available groundwater source is the sandstone aquifer.

Potential Site # 5: Lauderdale Plant, Broward County

The Lauderdale site is located in Eastern Broward County approximately 5 miles inland from Dania Beach and less than 2 miles west of Ft. Lauderdale International Airport. The site is bounded on the south by Dania Cutoff Canal, the east by S.W. 30th Avenue, and the North by I-595.

The existing approximately 1,700 MW of generating capacity at FPL's Lauderdale site occupies a portion of the approximately 210 acres that are wholly owned by FPL. The generating capacity is made up of two combined cycle units (Units 4 & 5), and 24 simple cycle gas turbine (GT) units.

a. **U.S. Geological Survey (USGS) Map**

A USGS map of the site is found at the end of this chapter.

b. **Land Uses**

The existing power plant facilities are located on approximately 130 acres. The existing site has been in use since the 1920s and is adjacent to a county resource recovery project.

c. **Environmental Features**

To the north of the power plant is an area of mixed uplands with a scattering of small wetlands.

d. **Water Quantities**

As previously discussed, needed water quantities would be up to 150 gallons per minute (gpm) for both process and cooling water (assuming air cooling) and up to 14 million gallons per day (mgd) for cooling water.

e. **Supply Sources**

Existing groundwater or the municipal water supply are potential water sources.

Potential Site # 6: Martin Plant, Martin County

The Martin site is located approximately 40 miles northwest of West Palm Beach, 5 miles east of Lake Okeechobee, and 7 miles northwest of Indiantown in Martin County, Florida. The site is bounded on the west by the Florida East Coast Railway (FEC) and the adjacent South Florida Water Management District (SFWMD) L-65 Canal, on the south by the St. Lucie Canal (C-44 or Okeechobee Waterway), and on the northeast by SR 710 and the adjacent CSX Railroad.

The existing approximately 3,700 MW of generating capacity at FPL's Martin site occupies a portion of the approximately 11,300 acres that are wholly owned by FPL. The generating capacity is made up of two steam units (Units 1 & 2), plus three combined cycle units (Units 3, 4, & 8). In addition, a 10 kilowatt (kw) photovoltaic (PV) facility also in operation at the south end of the site. The site includes a 6,800-acre cooling pond (6,500 acres of water surface and 300 acres of dike area) and approximately 300 acres for the existing power plant units and related facilities.

a. **U.S. Geological Survey (USGS) Map**

A USGS map for the site is found at the end of this chapter.

b. **Land Uses**

A major portion of the site consists of a 6,800-acre cooling pond. The existing power plant facilities are located on approximately 300 acres.

c. **Environmental Features**

To the east of the power plant there is an area of mixed pine flat wood with a scattering of small wetlands. To the north of the cooling pond there is a 1,200-acre area which has been set aside as a mitigation area. There is a peninsula of wetland forest on the West Side of the reservoir that is named the Barley Barber Swamp. The Barley Barber Swap encompasses 400 acres and is preserved as a natural area. There is also a 10-kilowatt (kW) photovoltaic energy facility at the south end of this site.

d. **Water Quantities**

As previously discussed, needed water quantities would be up to 150 gallons per minute (gpm) for both process and cooling water (assuming air cooling) and up to 14 million gallons per day (mgd) for cooling water.

e. **Supply Sources**

Surface water resources currently used at the Martin facility include the cooling pond which takes its water from the St. Lucie canal. The available ground water resource is the surficial aquifer system which is used as a source of potable and service water.

Potential Site # 7: Port Everglades Plant, Broward County

The 94-acre FPL Port Everglades plant site is located at Port Everglades in Broward County. The site has convenient access to State Road (S.R.) 84 and I-595. Rail line is located near the plant. The existing plant consists of four steam boiler generating units: two 200 MW (approximate) and two 400 MW (approximate) sized units. The four steam boilers are capable of firing residual fuel oil, natural gas, or a combination of both. The site also is home to 12 simple cycle gas turbine (GT) peaking units of 30 MW (approximate) each. The GT units are part of the Gas Turbine Power Park that is made up of 24 GTs at the Lauderdale Plant site and the 12 GTs at the Port Everglades site. The GTs are capable of firing either natural gas or liquid fuel.

a. **U.S. Geological Survey (USGS) Map**

A map of the site is found at the end of this chapter.

b. **Land Uses**

The land on this site is primarily industrial. The adjacent land uses are port facilities and associated industrial activities, oil storage, cruise ships, and light commercial.

c. **Environmental Features**

The shoreline of the intake and discharge canal banks are vegetated with fringing mangrove, with some open, maintained grass areas on the side.

d. **Water Quantities**

As previously discussed, needed water quantities would be up to 150 gallons per minute (gpm) for both process and cooling water (assuming air cooling) and up to 14 million gallons per day (mgd) for cooling water.

e. **Supply Sources**

Existing groundwater or the municipal water supply could be used for industrial process and makeup water. Industrial cooling water needs could be met using the existing once-through cooling water system.

Potential Site # 8: Riviera Plant, Palm Beach County

The FPL Riviera Plant property is located in Riviera Beach in Palm Beach County. The site has direct access to a four-lane highway, U.S. 1, and barge access is available. A rail line is located near the plant. The facility currently houses two operational 300 MW (approximate) steam boiler generating units and one retired 50 MW generating unit.

a. **U.S. Geological Survey (USGS) Map**

A USGS map of the site is found at the end of this chapter.

b. **Land Uses**

The land on the site is primarily covered by the existing generation facilities. Adjacent land uses include port facilities and associated industrial activities, as well as light commercial and residential development. The plant property contains some open, maintained grass area.

c. **Environmental Features**

The site is located on the Intra-coastal waterway near the Lake Worth Inlet which provides warm water refugia for manatees during cold winter days.

d. **Water Quantities**

As previously discussed, if additional water is needed beyond the currently permitted amount, then water quantities would be up to 150 gallons per minute (gpm) for both process and cooling water (assuming air cooling) and up to 14 million gallons per day (mgd) for cooling water.

e. <u>Supply Sources</u>

The existing municipal water supply could be used for industrial processing water. Industrial cooling water needs could be met using the existing once-through cooling water system from Lake Worth.

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Environmental and Land Use Information: Supplemental Information

Preferred Site: West County Energy Center

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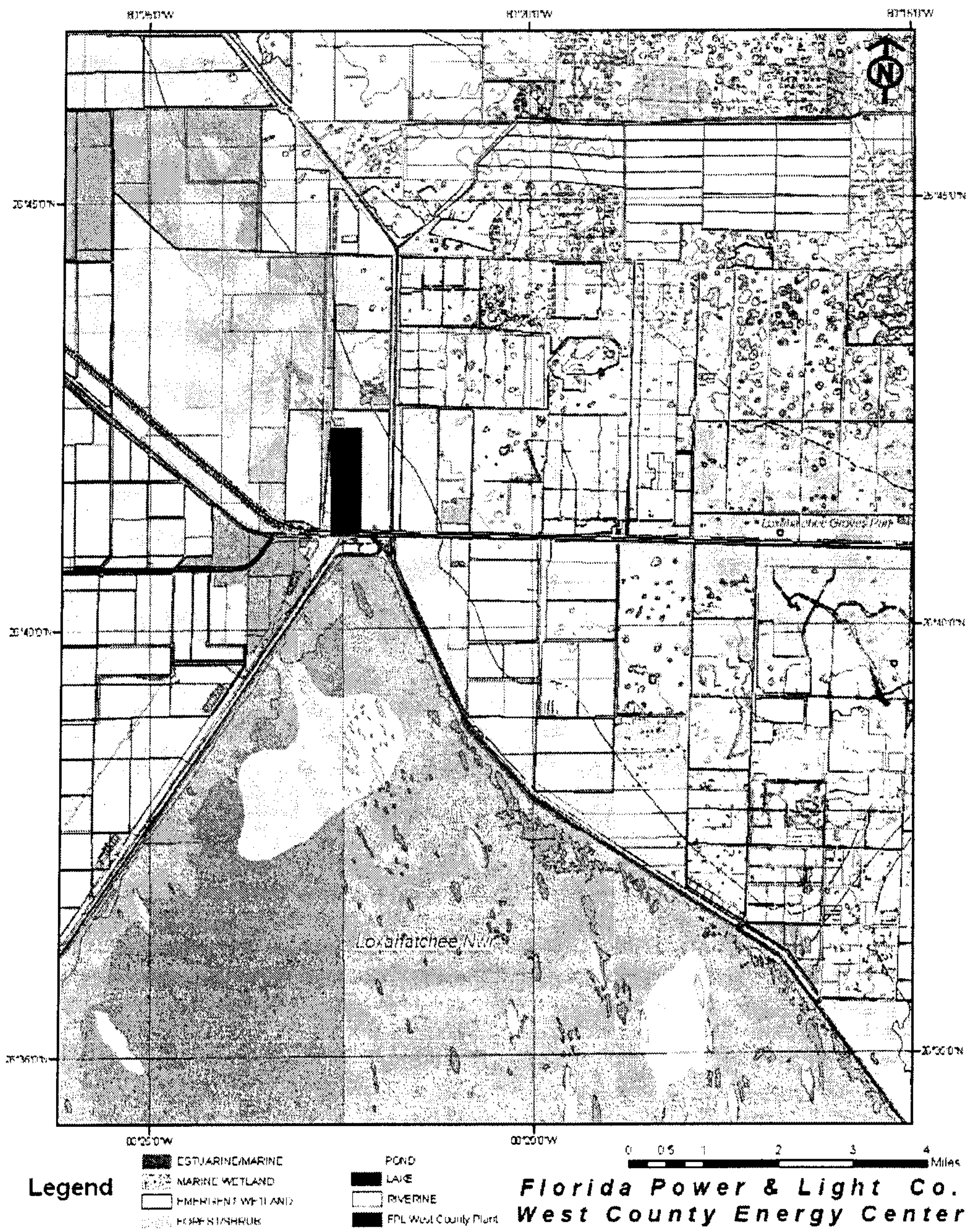
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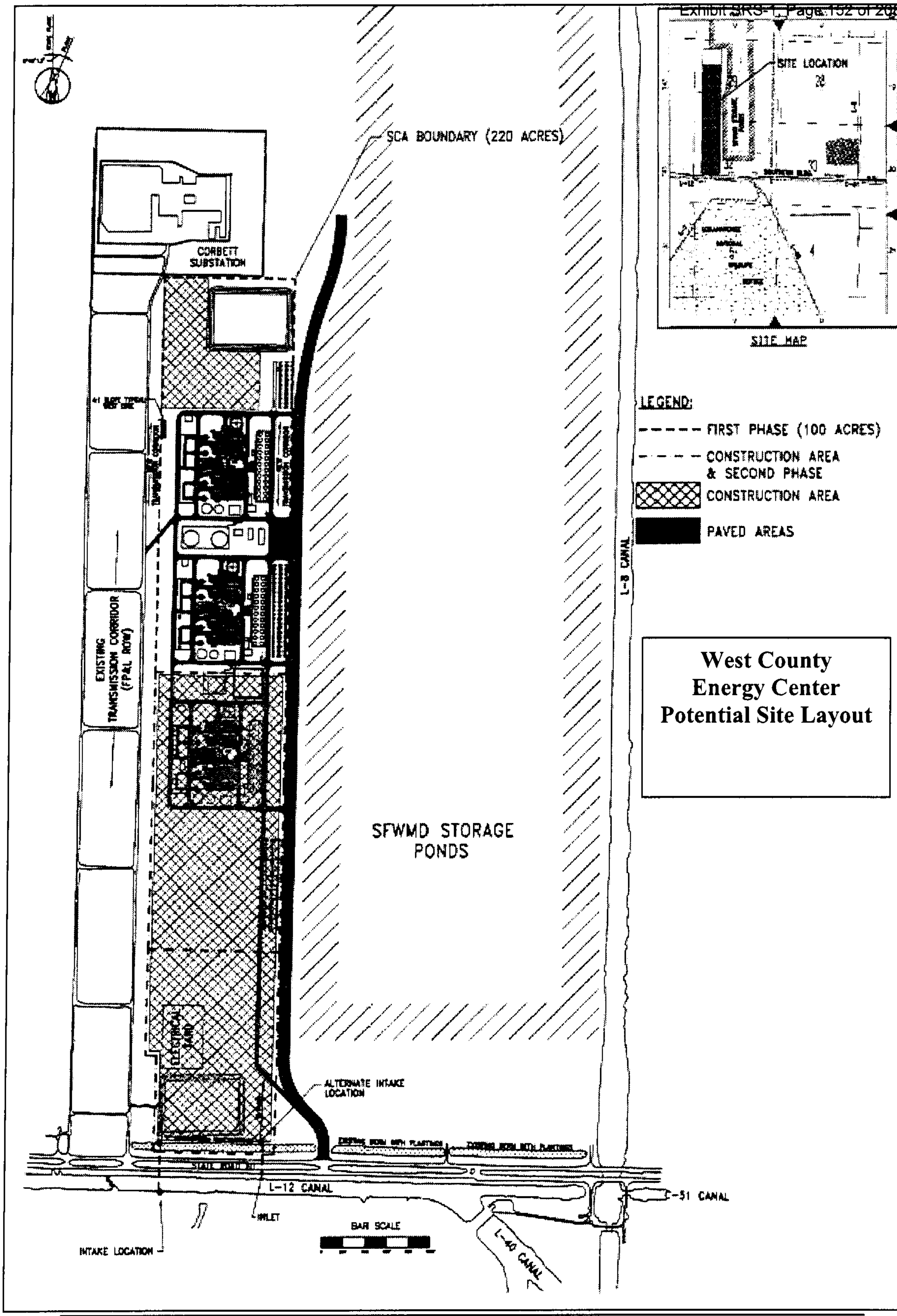
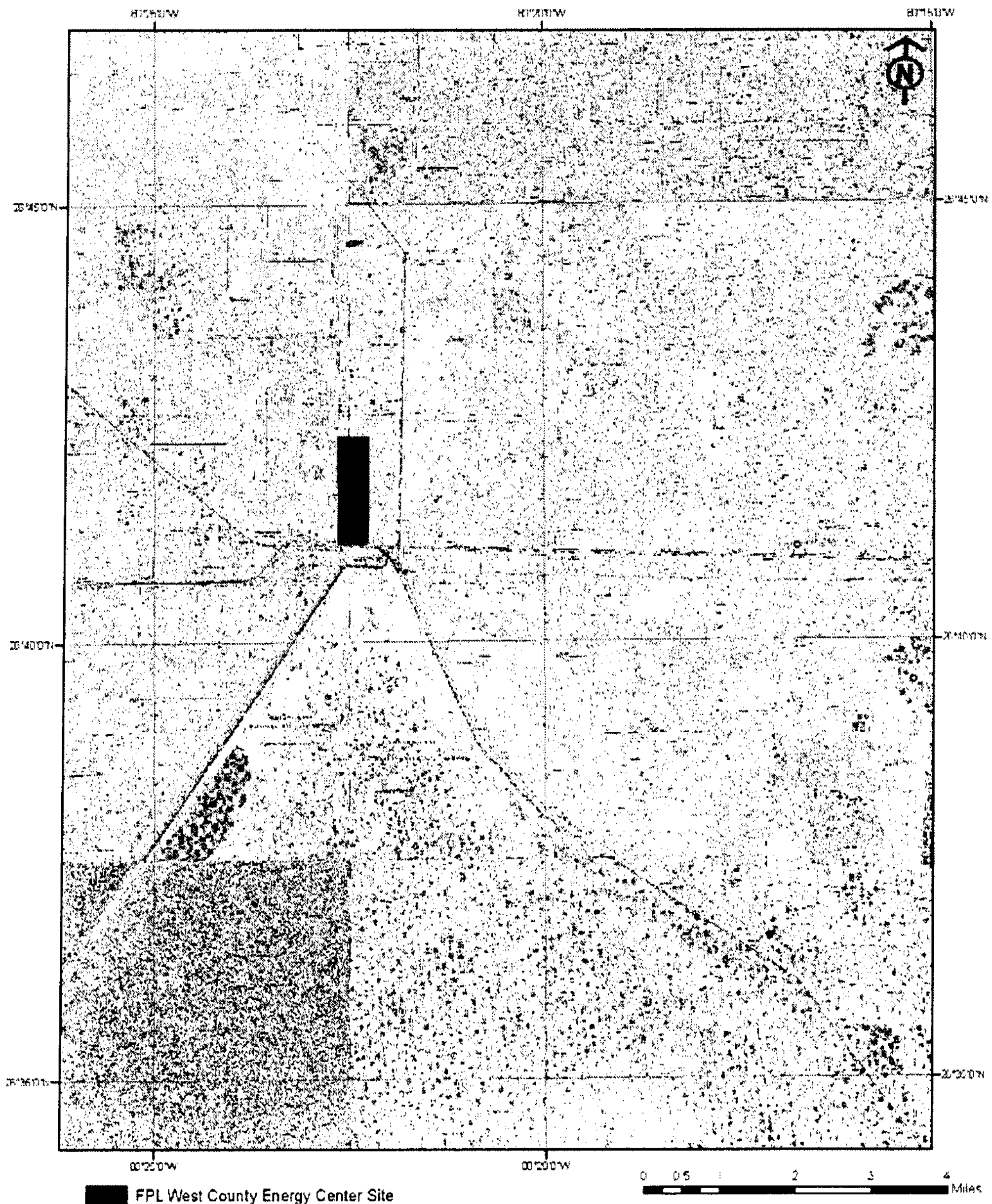
FPL West County Plant
Florida Power & Light Co.
West County Energy Center



West County Energy Center Potential Site Layout



Florida Power & Light Co.
West County Energy Center

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Environmental and Land Use Information:

Supplemental Information

Preferred Site: St. Lucie Plant

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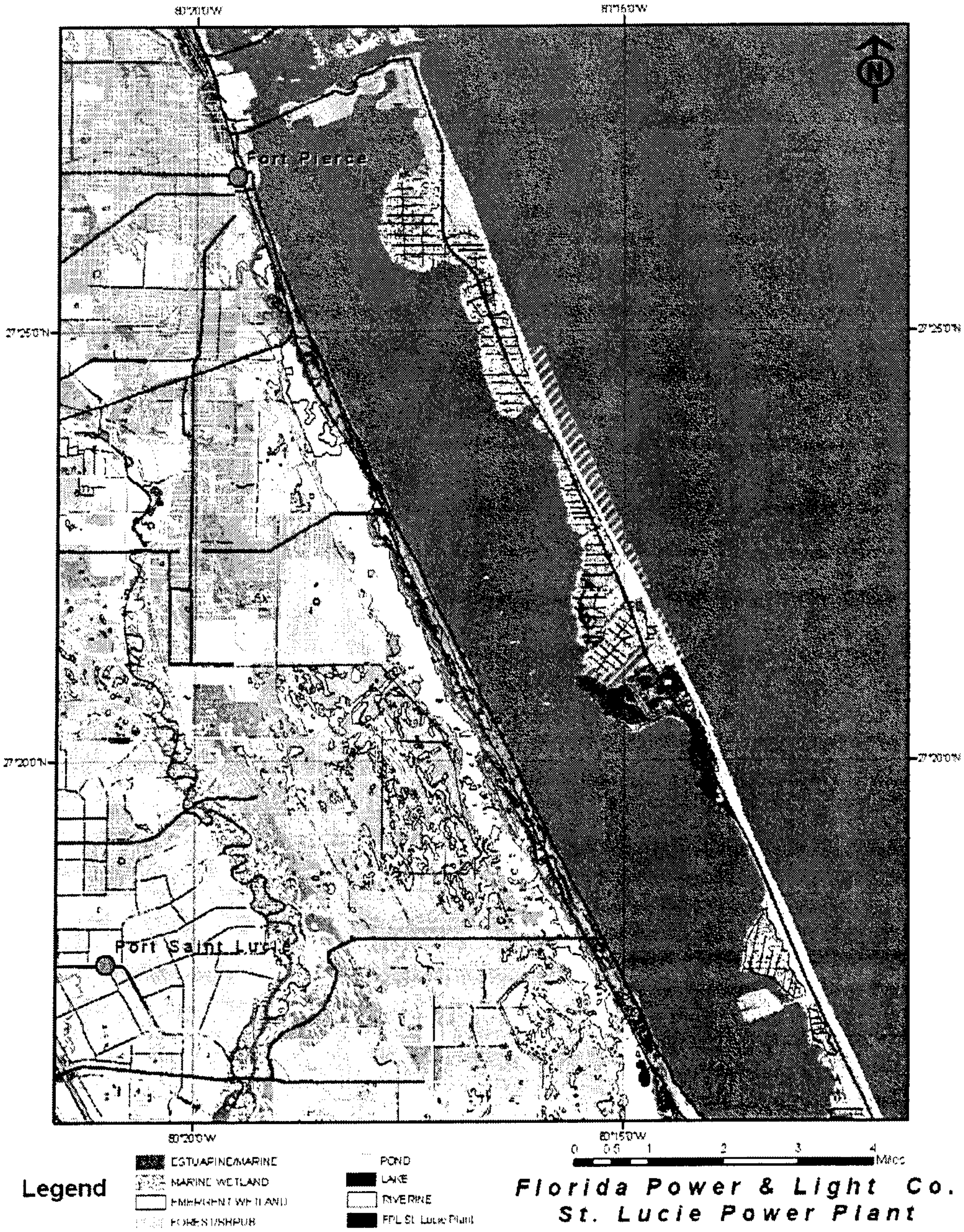
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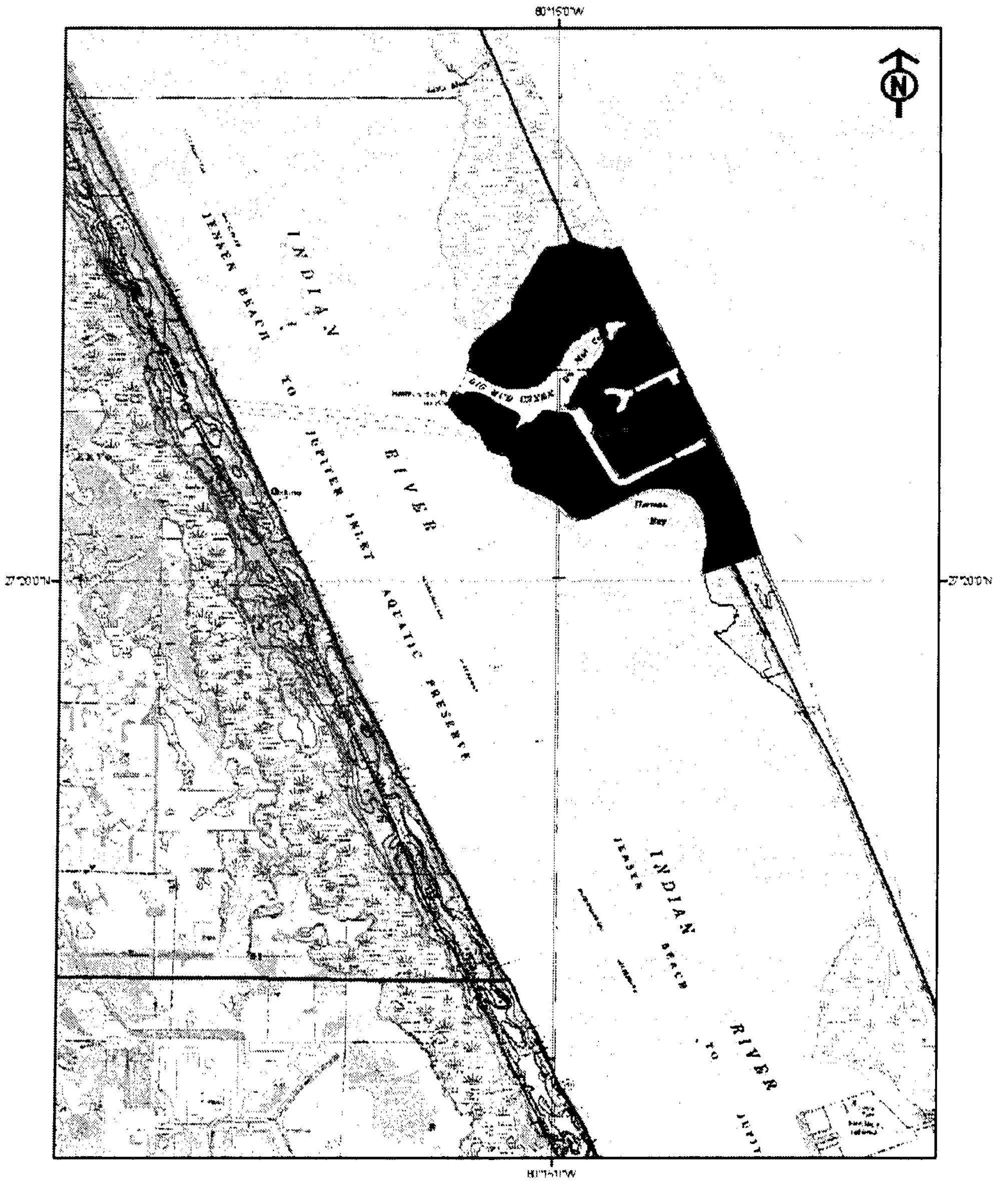
FPL St. Lucie Plant
Florida Power & Light Co.
St. Lucie Power Plant



Site Layout

FPL St. Lucie Plant

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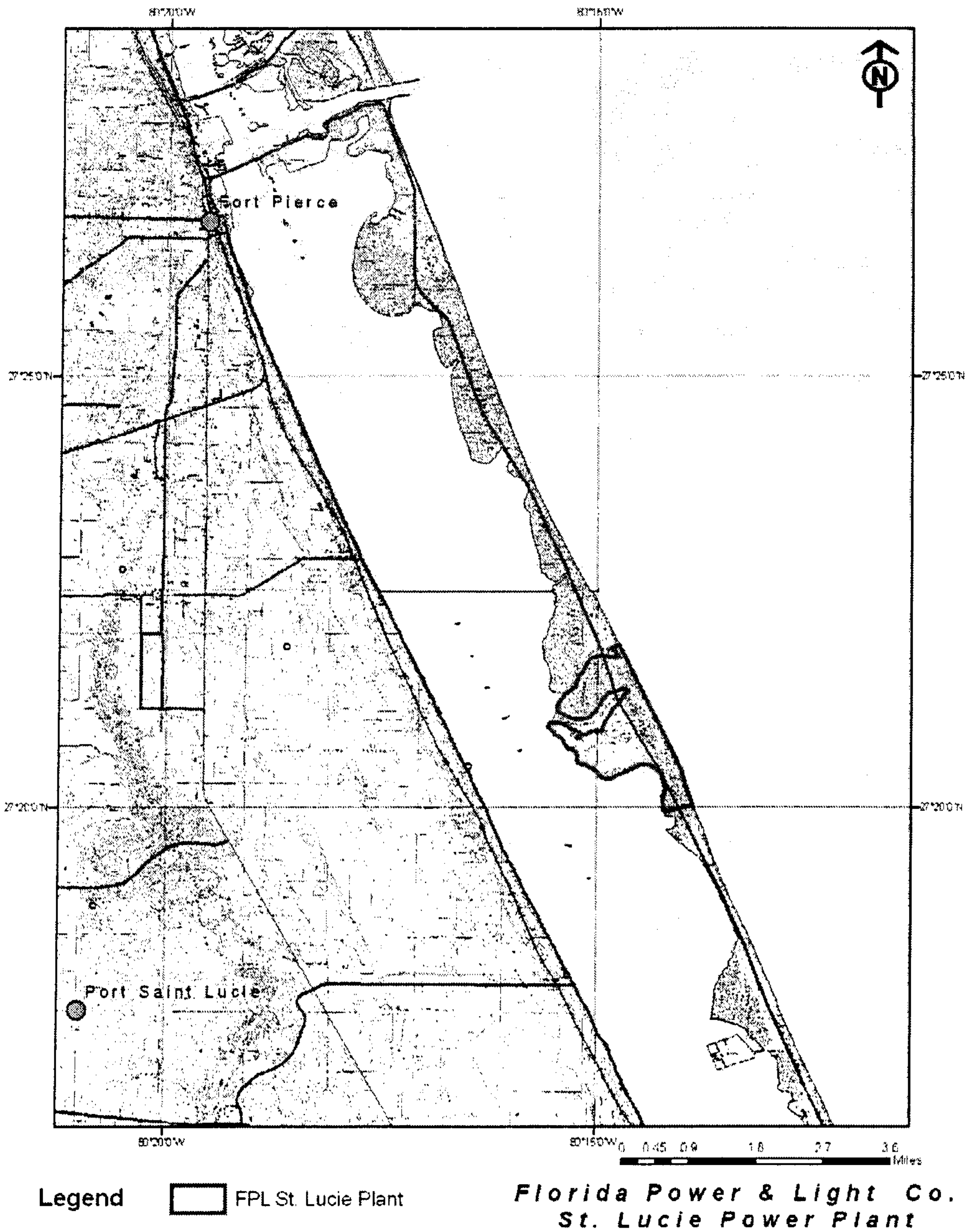
Florida Power & Light Co.
St. Lucie Power Plant



Florida Power & Light Co.
St. Lucie Power Plant

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Environmental and Land Use Information: Supplemental Information

Preferred Site: Turkey Point Plant

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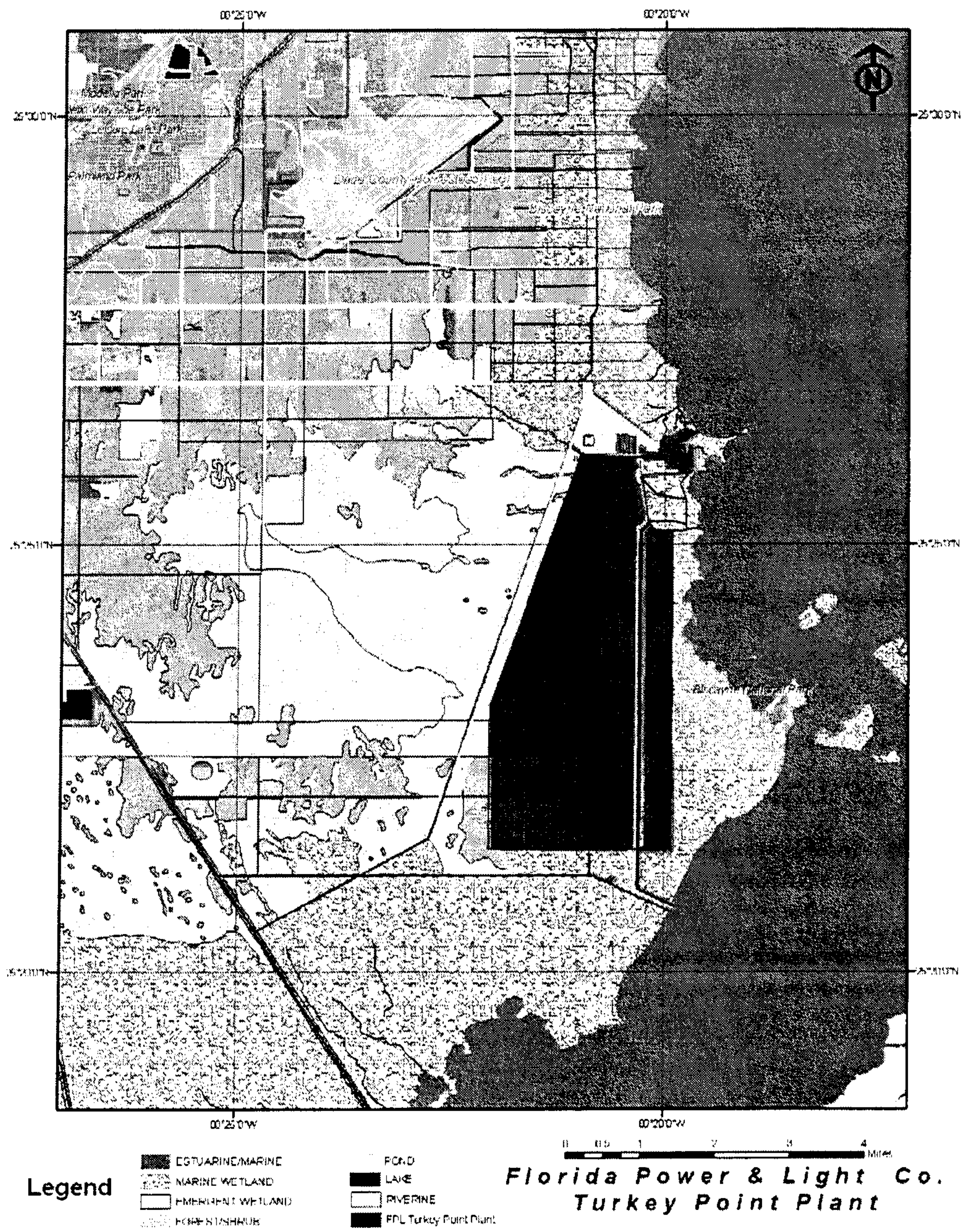
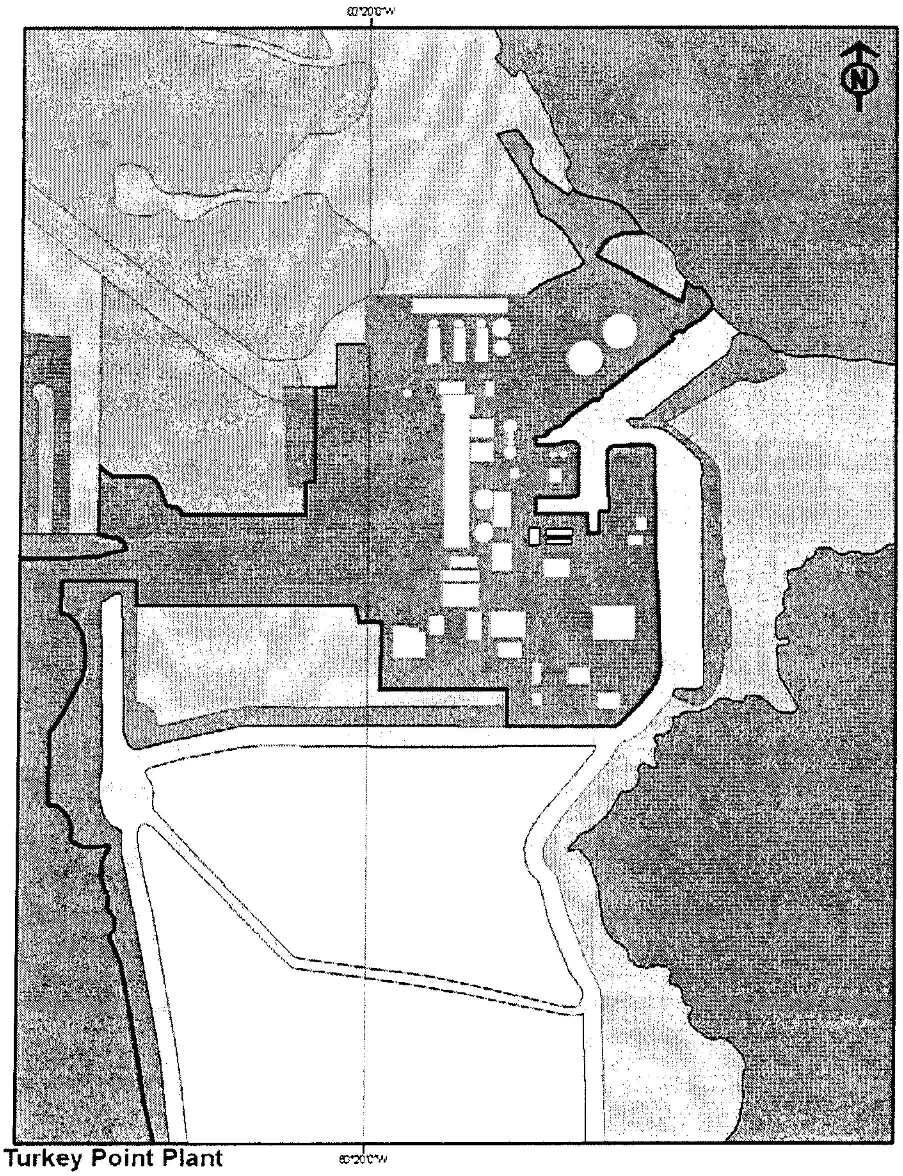

Legend
ESTUARINE/MARINE
MARINE WETLAND
EMERGENT WETLAND
FOREST/SHRUB
POND
LAKE
RIVERINE
FPL Turkey Point Plant
Miles
Florida Power & Light Co.
Turkey Point Plant

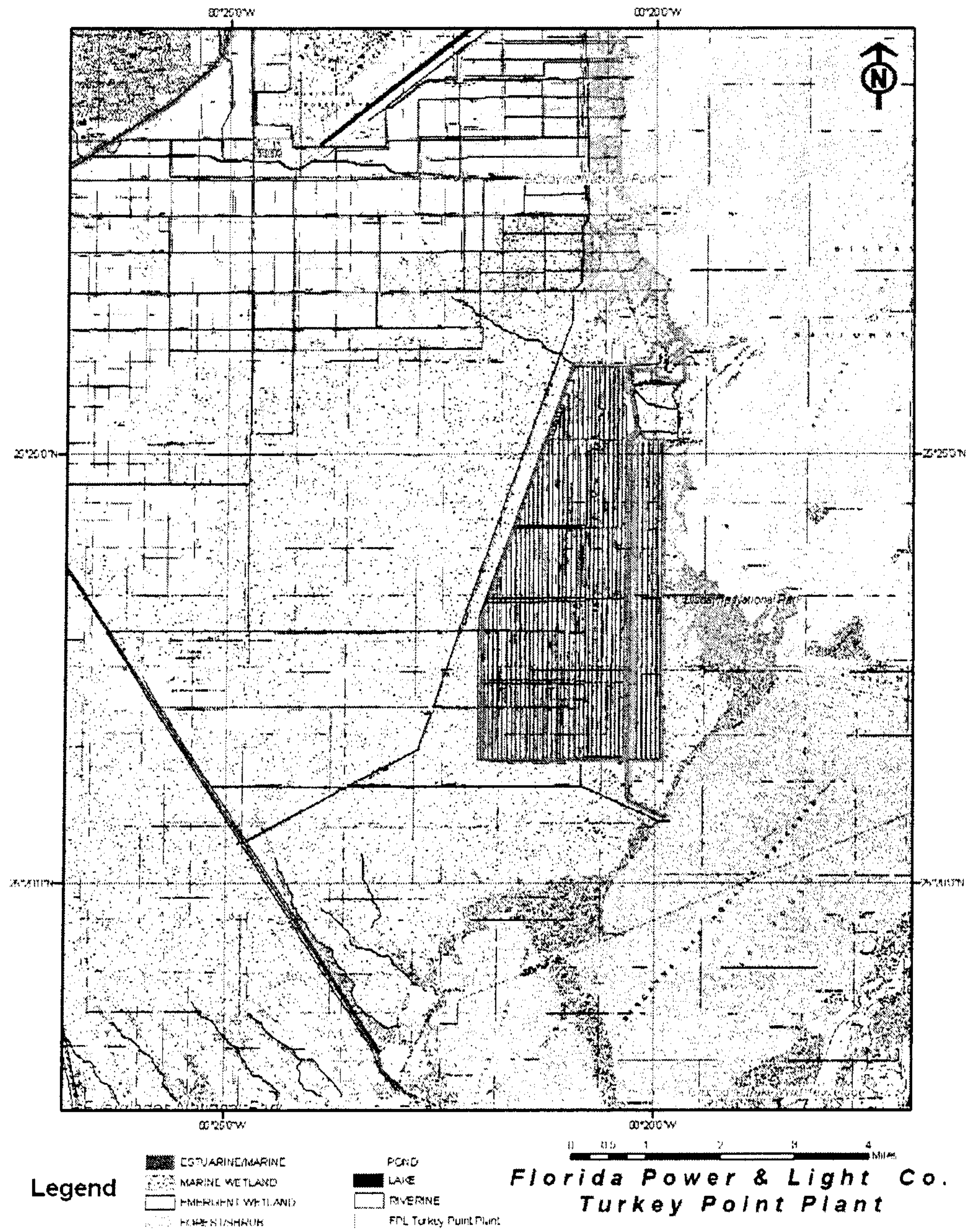


Turkey Point Plant
Facility Layout

Turkey Point Plant Site

Facility Structures

Florida Power & Light Co.
Turkey Point Plant



Florida Power & Light Co.
Turkey Point Plant

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Environmental and Land Use Information: Supplemental Information

Potential Site #1: Cape Canaveral Plant

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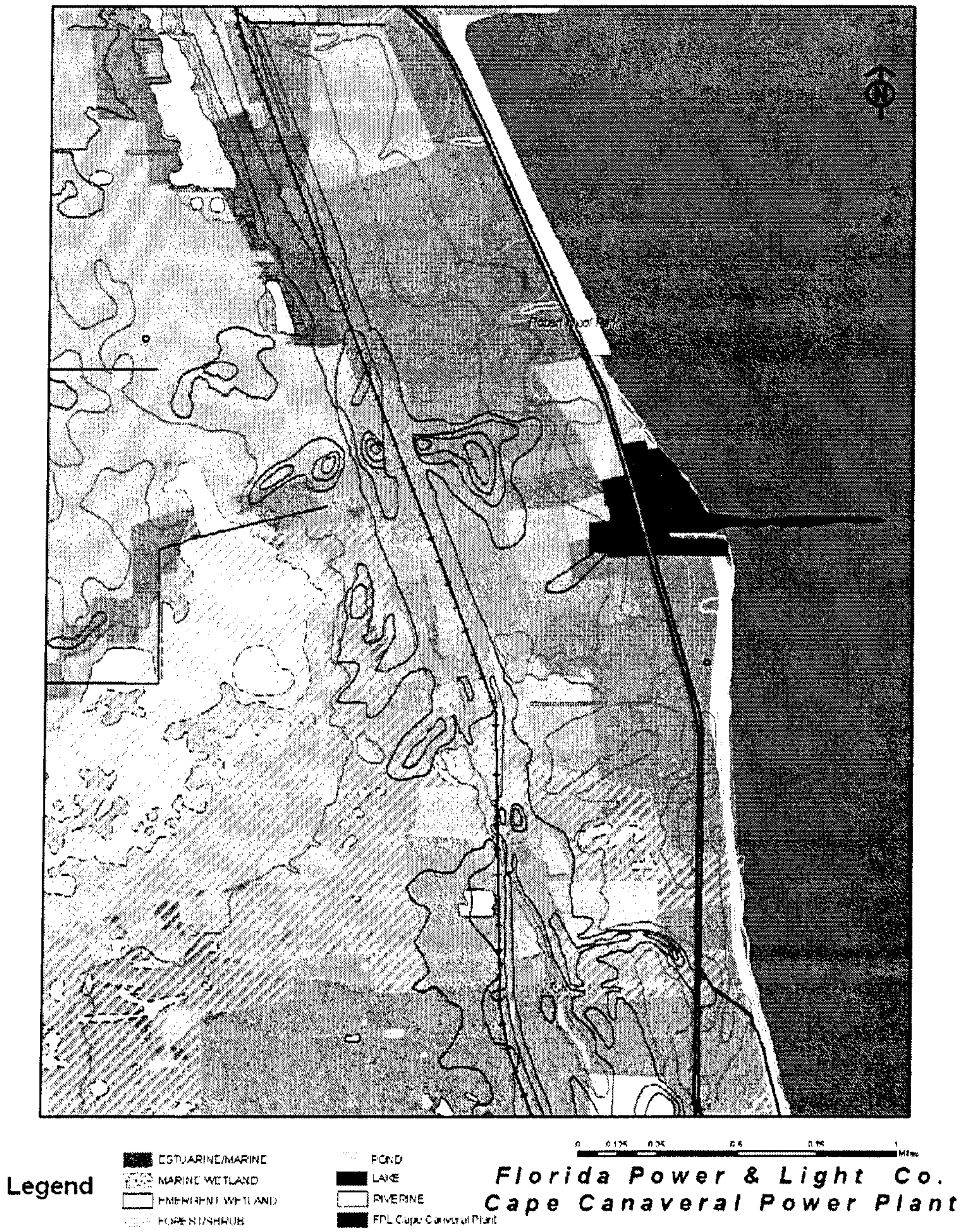
Legend
ESTUARINE/MARINE
MARINE WETLAND
EMERGENT WETLAND
FOREST/SHRUB
POND
LAKE
RIVERINE
FPL Cape Canaveral Plant
Florida Power & Light Co.
Cape Canaveral Power Plant

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Environmental and Land Use Information:

Supplemental Information

Potential Site #2: Desoto County

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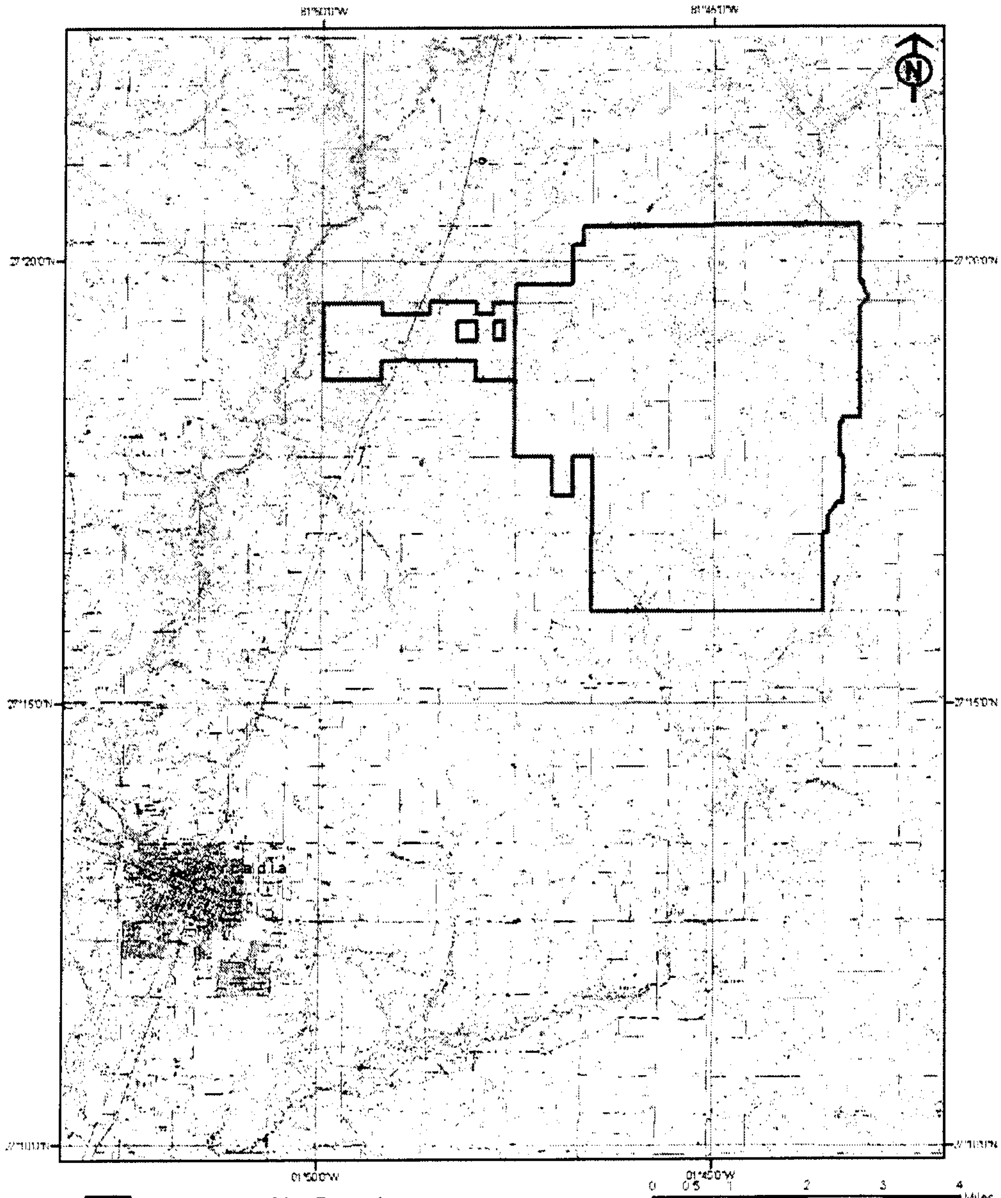

FPL Desoto Site Boundary

Florida Power & Light Co.
Desoto Greenfield Site

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Environmental and Land Use Information:

Supplemental Information

Potential Site #3: Ft. Myers Plant

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Florida Power & Light Co.
Ft. Myers Plant Site

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Environmental and Land Use Information:

Supplemental Information

Potential Site # 4: Lauderdale Plant

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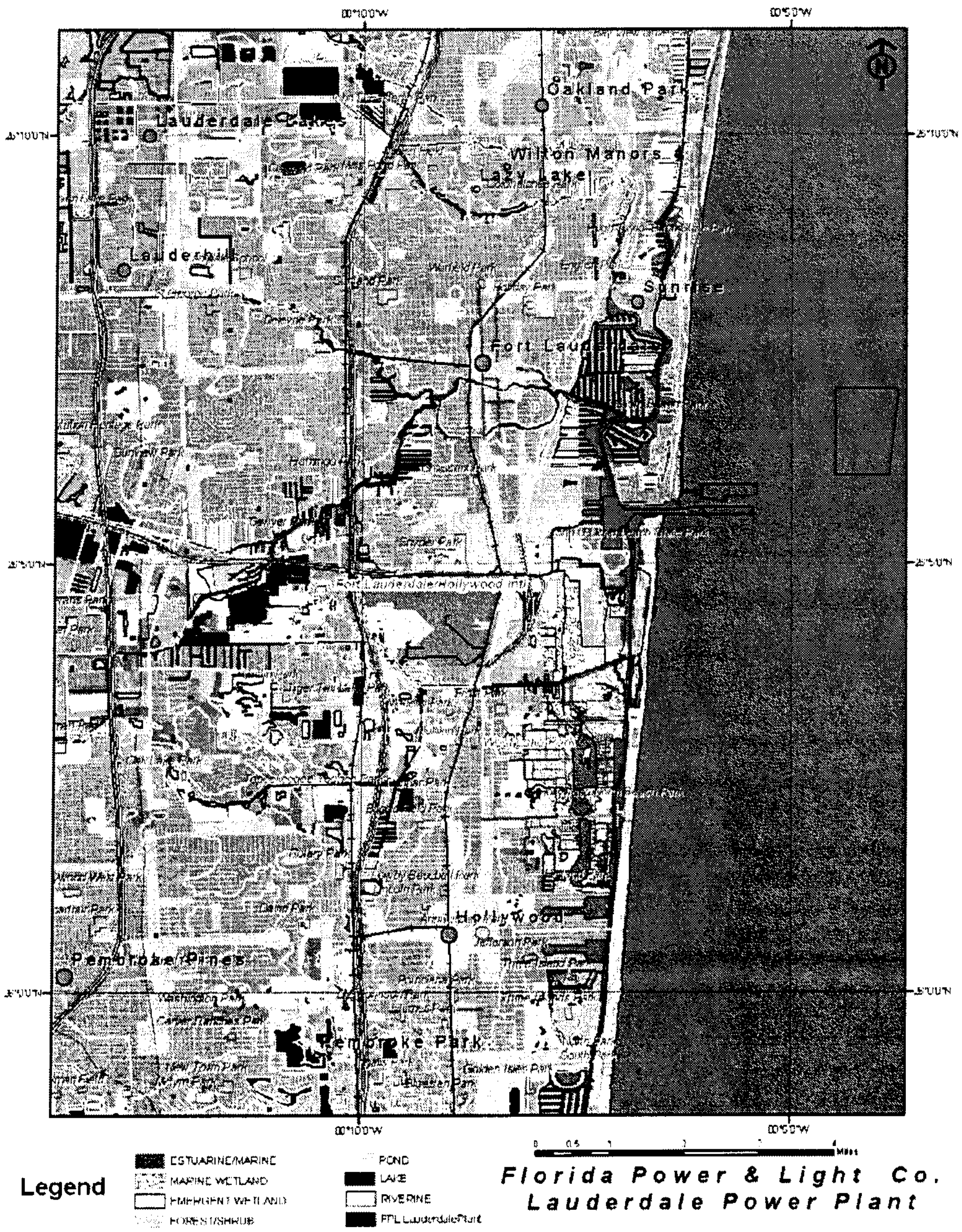

Florida Power & Light Co.
Lauderdale Power Plant

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Environmental and Land Use Information: Supplemental Information

Potential Site #5: Martin County

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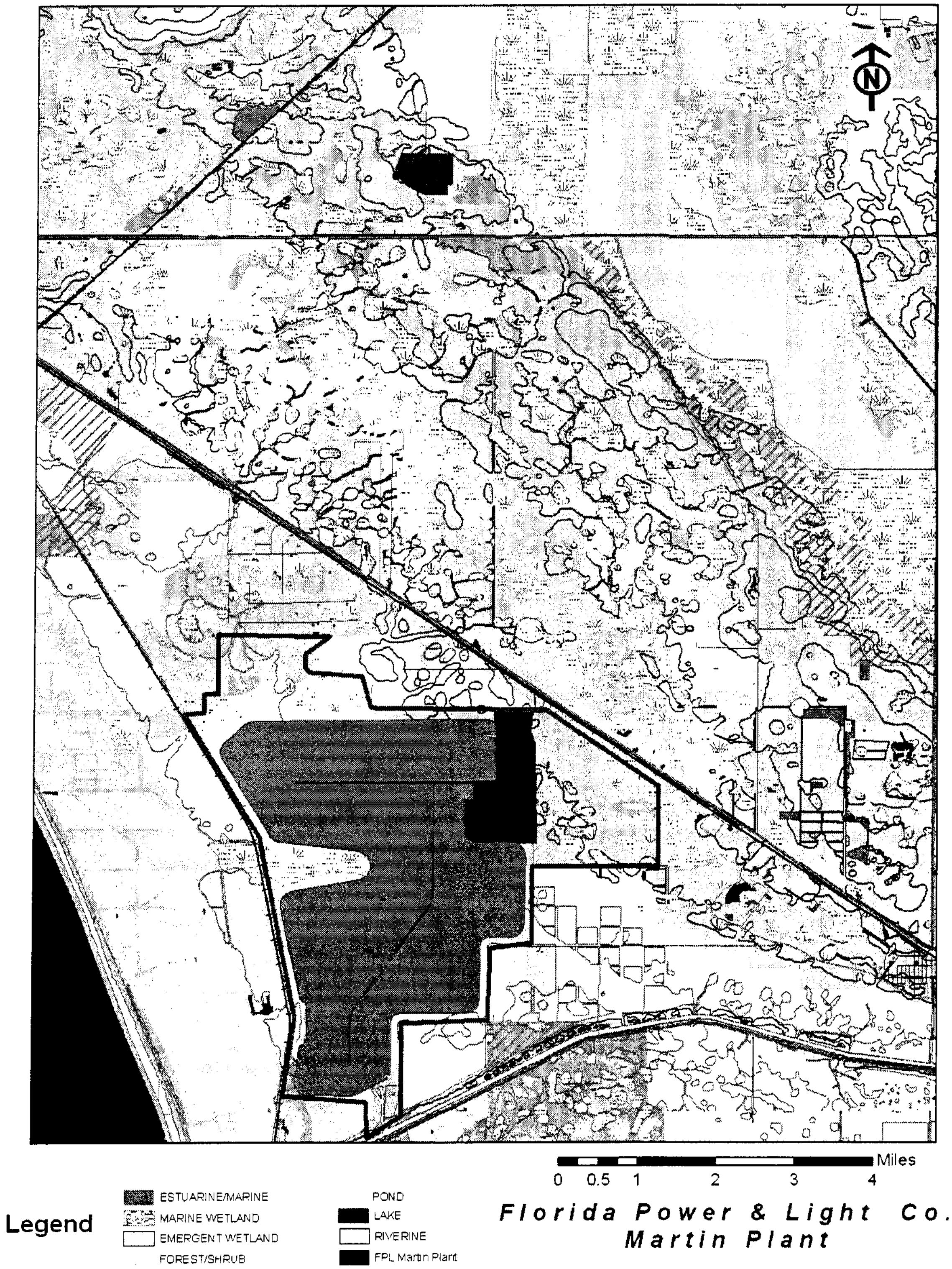
N
Miles
0 0.5 1 2 3 4
Legend
ESTUARINE/MARINE
MARINE WETLAND
EMERGENT WETLAND
FOREST/SHRUB
POND
LAKE
RIVERINE
FPL Martin Plant
Florida Power & Light Co.
Martin Plant

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Environmental and Land Use Information: Supplemental Information

Potential Site #5: Port Everglades

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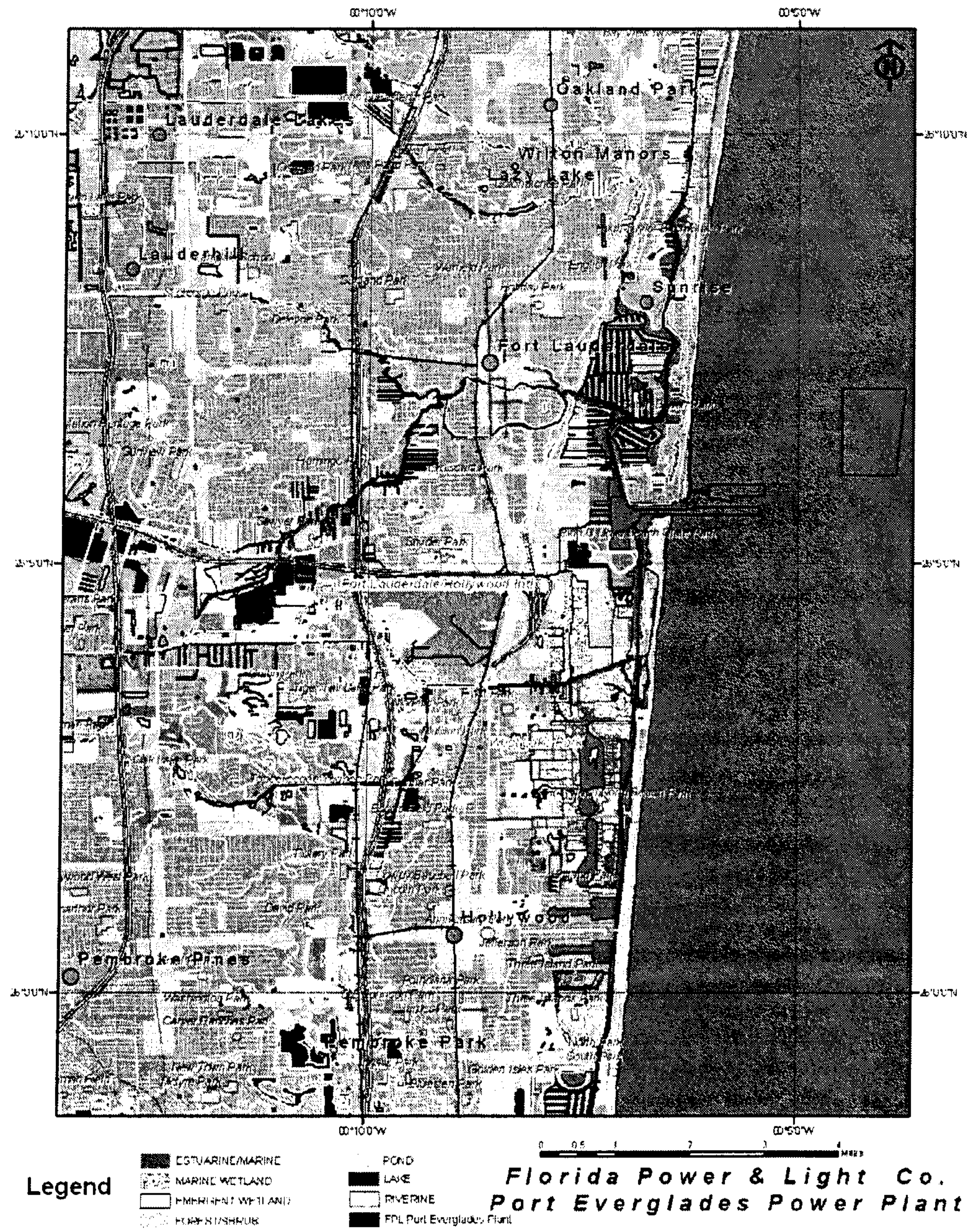
Oakland Park
Lauderdale Lakes
Wilton Manors
Lazy Lake
Lauderhill
Hollywood
Pembroke Pines
Pembroke Park
Legend
ESTUARINE/MARINE
MARINE WETLAND
EMERGENT WETLAND
FOREST/SHRUB
POND
LAKE
RIVERINE
FPL Port Everglades Plant
Florida Power & Light Co.
Port Everglades Power Plant

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Environmental and Land Use Information:

Supplemental Information

Potential Site #6: Riviera Plant

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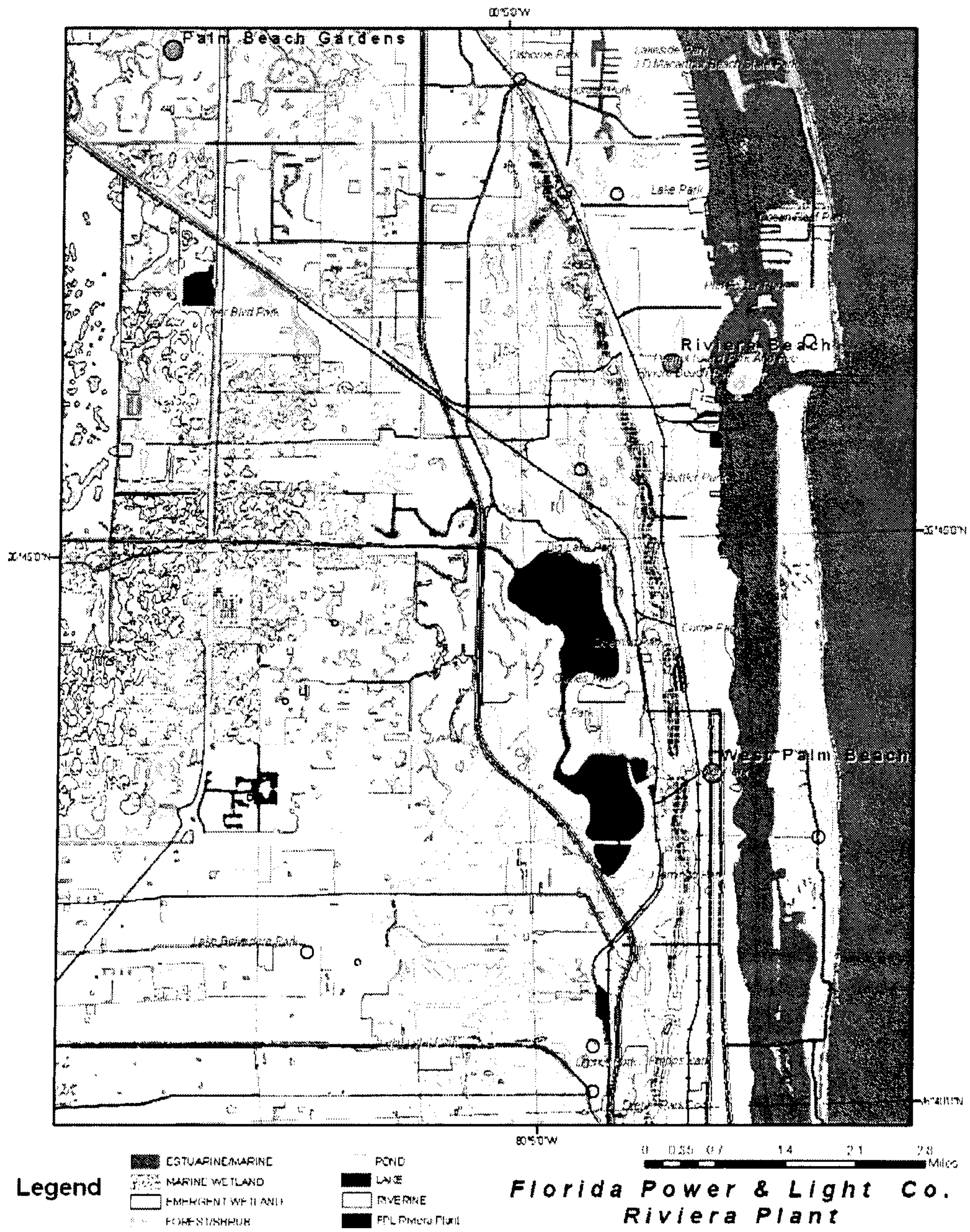

Florida Power & Light Co.
Riviera Plant

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Environmental and Land Use Information:

Supplemental Information

Potential Site #7: West Broward

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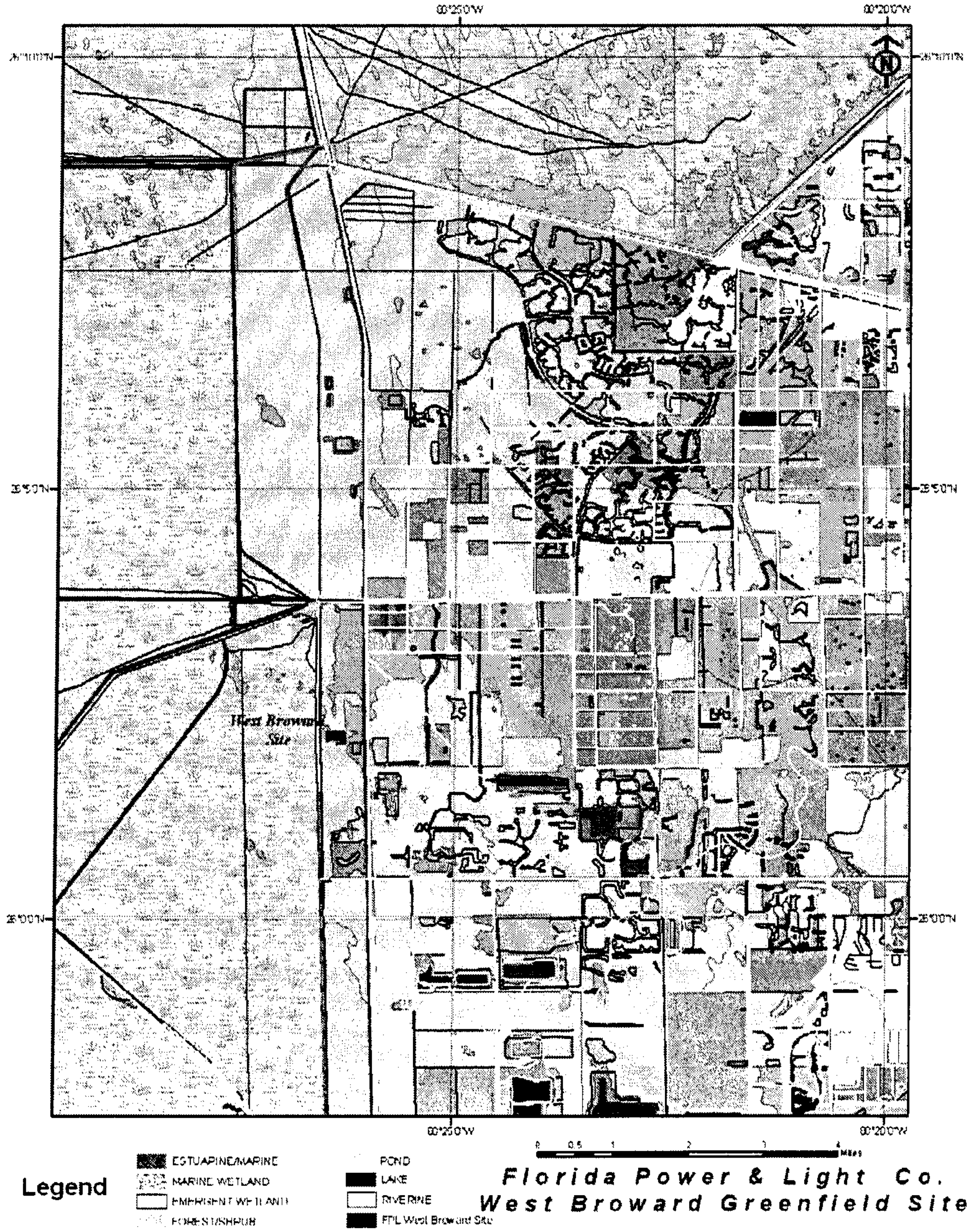
West Broward Site
Legend
ESTUARINE/MARINE
MARINE WETLAND
EMERGENT WETLAND
FOREST/SHRUB
POND
LAKE
RIVERINE
FPL West Broward Site
Miles
Florida Power & Light Co.
West Broward Greenfield Site

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CHAPTER V

Other Planning Assumptions & Information

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Introduction

The Florida Public Service Commission (FPSC), in Docket No. 960111-EU, specified certain information that was to be included in an electric utility's Ten Year Power Plant Site Plan filing. Among this specified information was a group of 12 items listed under a heading entitled "Other Planning Assumptions and Information". These 12 items basically concern specific aspects of a utility's resource planning work. The FPSC requested a discussion or a description of each of these items.

These 12 items are addressed individually below as separate "Discussion Items".

Discussion Item # 1: Describe how any transmission constraints were modeled and explain the impacts on the plan. Discuss any plans for alleviating any transmission constraints.

FPL's resource planning work considers two types of transmission limitations/constraints. External limitations deal with FPL's ties to its neighboring systems. Internal limitations deal with the flow of electricity within the FPL system.

The external limitations are important since they affect the development of assumptions for the amount of external assistance which is available to the FPL system and the amount and price of economy energy purchases. Therefore, these external limitations are incorporated both in the reliability analysis and economic analysis aspects of resource planning. The amount of external assistance which is assumed to be available is based on the projected transfer capability to FPL from outside its system as well as historical levels of available assistance. In its reliability analyses, FPL models this amount of external assistance as an additional generator within FPL's system which provides capacity in all but the peak load months. The assumed amount and price of economy energy are based on historical values and projections from production costing models.

Internal transmission limitations are addressed by identifying potential geographic locations for potential new units that may not adversely impact such limitations. The internal transmission limitations are also addressed by developing the direct costs for siting new units at different locations and by evaluating the cost impacts created by the new unit/unit location combination on the operation of existing units in the FPL system. Both site- and system-related transmission costs are developed for each different unit/unit location option or groups of options. In addition, transfer limits for capacity and energy that can be imported into the Southeastern region of FPL's system are also developed for use in FPL's production costing analyses. (A further discussion of the Southeastern Florida region and transmission imports is found in Section III.C.)

FPL's annual transmission planning work determines transmission additions needed to address limitations and to maintain/enhance system reliability. FPL's planned transmission facilities to interconnect and integrate FPL's resource plans and those that must be certified under the Transmission Line Siting Act are presented in Section III.E.

Discussion Item # 2: Discuss the extent to which the overall economics of the plan were analyzed. Discuss how the plan is determined to be cost-effective. Discuss any changes in the generation expansion plan as a result of sensitivity tests to the base case load forecast.

FPL typically performs economic analyses of competing resource plans using as an economic criterion FPL's levelized system average electric rates (i.e., a Rate Impact Measure or RIM approach). In addition, for analyses in which DSM levels are not changed, FPL uses the equivalent criterion of the cumulative present value of revenue requirements for the FPL system.[3]
In its resource planning work in 2007, FPL utilized the load forecast that was presented in FPL's Determination of Need filings to the FPSC for advanced technology coal units, capacity uprates to FPL's existing nuclear units, and for two new nuclear units. In its resource planning work in early 2008, FPL utilized an updated load forecast. Both forecasts were considered the base forecast at those times and no sensitivity tests to either of those load forecasts were developed or utilized.

[3] FPL's basic approach in its resource planning work is to base decisions on a lowest electric rate basis. However, when DSM levels are considered a "given" in the analysis, the lowest rate basis and the lowest system revenue requirements basis are identical. In such cases FPL evaluates options on the simpler – to – calculate (but equivalent) lowest system revenue requirements basis.

Discussion Item # 3: Explain and discuss the assumptions used to derive the base case fuel forecast. Explain the extent to which the utility tested the sensitivity of the base case plan to high and low fuel price scenarios. If high and low fuel price sensitivities were performed, explain the changes made to the base case fuel price forecast to generate the sensitivities. If high and low fuel price scenarios were performed as part of the planning process, discuss the resulting changes, if any, in the generation expansion plan under the high and low fuel price scenario. If high and low fuel price sensitivities were not evaluated, describe how the base case plan is tested for sensitivity to varying fuel prices.

The basic assumptions FPL used in deriving its fuel price forecasts are discussed in Chapter III of this document. FPL's 2007 and early 2008 resource planning work utilized up to four different fuel cost forecasts (and four different environmental compliance cost forecasts). Detailed discussions of those fuel cost forecasts, and the results of utilizing them on the resource plans being analyzed in each filing, were presented to the FPSC in FPL's filings for Determination of Need for advanced technology coal units, capacity uprates to FPL's existing nuclear units, and for two new nuclear units.

Discussion Item # 4: Describe how the sensitivity of the plan was tested with respect to holding the differential between oil/gas and coal constant over the planning horizon.

As described above in the answer to Discussion Item #3, FPL used up to four fuel forecasts in the filings for Determination of Need for advanced technology coal units, capacity uprates to FPL's existing nuclear units, and for two new nuclear units. While these forecasts did not represent a constant cost differential between oil/gas and coal, a variety of fuel cost differentials were represented in these forecasts.

Discussion Item # 5: Describe how generating unit performance was modeled in the planning process.

The performance of existing generating units on FPL's system was modeled using current projections for scheduled outages, unplanned outages, capacity output ratings, and heat rate information. Schedule 1 and Schedule 8 present the current and projected capacity output ratings of FPL's existing units. The values used for outages and heat rates are generally consistent with the values FPL has used in planning studies in recent years.

In regard to new unit performance, FPL utilized current projections for the capital costs, fixed and variable operating & maintenance costs, capital replacement costs, construction schedules, heat rates, and capacity ratings for all construction options which were considered in the resource planning work. A summary of this information for the new capacity options FPL projects to add, for planning purposes, over the planning horizon is presented on the Schedule 9 forms.

Discussion Item # 6: Describe and discuss the financial assumptions used in the planning process. Discuss how the sensitivity of the plan was tested with respect to varying financial assumptions.

In its 2007 and early 2008 resource planning work, FPL used a variety of key financial assumptions as forecasts changed. A 44.2% debt and 55.8% equity FPL capital structure was used throughout. In analysis for the advanced coal technology units, FPL used a 7.2% projected debt, an equity return of 12.3%, and after-tax discount rate of 8.93% for generation costs and 8.82% for all other costs. In analysis for the combined cycle units, FPL used a 6.43% projected debt, an equity return of 11.75%, and after-tax discount rate of 8.4% for generation costs and 8.3% for all other costs. FPL did not test the sensitivity of a specific resource plan to varying financial assumptions.

Discussion Item # 7: Describe in detail the electric utility's Integrated Resource Planning process. Discuss whether the optimization was based on revenue requirements, rates, or total resource cost.

FPL's integrated resource planning (IRP) process is described in detail in Chapter III of this document.

The standard basis for comparing the economics of competing resource plans in FPL's basic IRP process is the impact of the plans on FPL's electricity rate levels with the intent of minimizing FPL's levelized system average rate (i.e., a Rate Impact Measure or RIM approach). As discussed in response to Discussion Item #2, both the electricity rate perspective and the cumulative present value of system revenue requirement perspective are identical when DSM levels are unchanged between competing plans. Therefore, in planning work in which DSM levels were unchanged, the equivalent cumulative present value of revenue requirements perspective was utilized.

Discussion Item # 8: Define and discuss the electric utility's generation and transmission reliability criteria.

FPL uses two system reliability criteria in its resource planning work. One of these is a minimum 20% Summer and Winter reserve margin. The other reliability criterion is a maximum of 0.1 days per year loss-of-load-probability (LOLP). These reliability criteria are discussed in Chapter III of this document.

In regard to transmission reliability, FPL has adopted transmission planning criteria that are consistent with the planning criteria established by the Florida Reliability Coordinating Council (FRCC). The FRCC has adopted transmission planning criteria that are consistent with the reliability standards established by the North American Electric Reliability Corporation (NERC) in its *Reliability Standards*. FPL has applied these planning criteria in a manner consistent with prudent utility practice. The *NERC Reliability Standards* are available on the internet (http://www.nerc.com/.)

In addition, FPL has developed a *Facility Connection Requirements* (FCR) document as well as a *Transmission Facility Rating Methodology* document that are also available on FPL's Open Access Same Time Information System (OASIS) at https://www.oatioasis.com/FPL/index.html.

The normal voltage criteria for FPL stations is given below:

Voltage Level (kV)	Vmin (p.u.)	Vmax (p.u.)
69, 115, 138	0.95/0.95	1.05/1.07
230	0.95/0.95	1.06/1.07
500	0.95/0.95	1.07/1.09

There may be isolated cases for which FPL may determine it prudent to deviate from the general criteria stated above. The overall potential impact on customers and the probability of an outage actually occurring, as well as other factors, would influence the decision in such cases.

Discussion Item # 9: Discuss how the electric utility verifies the durability of energy savings for its DSM programs.

The impact of FPL's DSM Programs on demand and energy consumption is revised periodically. Engineering models, calibrated with field-metered data, are updated when significant efficiency changes occur in the marketplace. Participation trends are tracked for all of the FPL DSM programs in order to adjust impacts each year for changes in the mix of efficiency measures being installed by program participants.

Survey data is collected from non-participants in order to establish the baseline efficiency. Participant data is compared against non-participant data to establish the demand and energy saving benefits of the utility program versus what would be installed in the absence of the program. For these DSM measures which involve the utilization of load management, FPL conducts periodic tests of the load control equipment to ensure that it is functioning correctly.

Discussion Item # 10: Discuss how strategic concerns are incorporated in the planning process.

The Executive Summary provides a discussion of two system concerns that are typically addressed in FPL's resource planning work: (1) maintaining/enhancing fuel diversity in the FPL system, and (2) maintaining a balance between load and generating capacity in Southeastern Florida. In addition, the Executive Summary also presented a discussion of a new factor introduced in 2007 that impacts FPL's resource planning work, the Executive Order issued by Florida's Governor Crist in July 2007 that, in part, called for a significant reduction in greenhouse gas emissions in Florida and for an increase in the amount of energy provided by renewable, non-emitting sources.

In addition to these system concerns/issues, there are other strategic factors FPL typically considers when choosing between resource options. These include the following: (1) technology risk; (2) environmental risk, and (3) site feasibility. The consideration of these factors may include both economic and non-economic aspects.

Technology risk is an assessment of the relative maturity of competing technologies. For example, a prototype technology which has not achieved general commercial acceptance has a higher risk than a technology in wide use and, therefore, is less desirable.

Environmental risk is an assessment of the relative environmental acceptability of different generating technologies and their associated environmental impacts on the FPL system, including environmental compliance costs. Technologies regarded as more acceptable from an environmental perspective for a plan are those which minimize environmental impacts for the FPL system as a whole through highly efficient fuel use and state of the art controls.

Site feasibility assesses a wide range of economic, regulatory, and environmental factors related to successfully developing and operating the specified technology at the site in question. Projects that are more acceptable have sites with few barriers to successful development.

All of these factors play a part in FPL's planning and decisions, including its decisions to construct capacity or to purchase power.

Discussion Item # 11: Describe the procurement process the electric utility intends to utilize to acquire the additional supply-side resources identified in the electric utility's ten-year site plan.

As has been previously discussed, elements of FPL's capacity additions include the construction of new generating capacity at the West County Energy Center (WCEC) site, WCEC Units 1 & 2. This generation construction projects was selected after evaluating competing bids received in response to Requests for Proposals (RFP) issued by FPL. The FPSC subsequently approved FPL's decision to construct these new combined cycle units in Determination of Need dockets. FPL has followed a virtually identical RFP process in reaching its WCEC 3 decision.

The construction capacity addition decisions projected in this document for 2014 and beyond are expected to be conducted in a manner consistent with the Commission's Bid Rule.

Identification of self-build options beyond those units already approved by the FPSC and Governor and Siting Board, or units for which FPL is currently seeking approval, in FPL's Site Plan is not an indication that FPL has pre-judged any capacity solicitation it may conduct. The identification of future capacity units is required of FPL and represents those alternatives that appear to be FPL's best, most cost-effective self-build options at this time. FPL reserves the right to refine its planning analyses and to identify other self-build options. Such refined analyses have the potential to yield a variety of self-build options, some of which might not require an RFP. If an RFP is issued for supply-side resources, FPL reserves the right to choose the best alternative for its customers, even if that option is not an FPL self-build option.

Discussion Item # 12: Provide the transmission construction and upgrade plans for electric utility system lines that must be certified under the Transmission Line Siting Act (403.52 – 403.536, F. S.) during the planning horizon. Also, provide the rationale for any new or upgraded line.

---

(1) FPL identified the need for a new 230kV transmission line (by December 2008) that required certification under the Transmission Line Siting Act which was issued on April 21, 2006. The new line, when completed, will connect FPL's St. Johns Substation to FPL's proposed Pringle Substation (also shown on Table III.E.1). The construction of this line is necessary to serve existing and future customers in the Flagler and St. Johns areas in a reliable and effective manner.

(2) FPL has identified the need for a new 230kV transmission line (by December 2011) that requires certification under the Transmission Line Siting Act. The new line will connect FPL's Manatee Substation to FPL's proposed BobWhite Substation (also shown on Table III.E.1). The construction of this line is necessary to serve existing and future customers in the Manatee and Sarasota areas in a reliable and effective manner.

Projection of FPL's Capacity Needs: 2008 - 2017
(Without New Resource Additions *)

Summer

	(1)	(2)	(3) = (1)+(2)	(4)	(5)	(6)=(4)-(5)	(7)=(3)-(6)	(8)=(7)/(6)	(9)=((6)*1.20)-(3)
August of the Year	Projections of FPL Unit Capability (MW)	Projections of Firm Purchases (MW)	Projection of Total Capacity (MW)	Peak Load Forecast ** (MW)	Summer DSM Forecast *** (MW)	Forecast of Firm Peak (MW)	Forecast of Summer Reserves (MW)	Forecast of Summer Res. Margins w/o Additions (%)	MW Needed to Meet 20% Reserve Margin (MW)
2008	22,149	2,993	25,142	22,356	1,908	20,448	4,693	23.0%	(604)
2009	23,369	2,562	25,931	22,792	2,034	20,758	5,172	24.9%	(1,021)
2010	24,588	2,205	26,793	23,554	2,146	21,408	5,384	25.2%	(1,103)
2011	24,588	2,237	26,825	24,191	2,264	21,927	4,898	22.3%	(512)
2012	24,898	2,175	27,073	24,837	2,388	22,449	4,624	20.6%	(134)
2013	25,002	2,175	27,177	25,414	2,516	22,898	4,278	18.7%	**301**
2014	25,002	2,175	27,177	26,576	2,651	23,925	3,251	13.6%	**1,534**
2015	25,002	2,175	27,177	27,241	2,790	24,451	2,726	11.1%	**2,165**
2016	25,002	864	25,866	27,932	2,910	25,022	844	3.4%	**4,161**
2017	25,002	864	25,866	28,621	3,030	25,591	275	1.1%	**4,844**

Winter

	(1)	(2)	(3) = (1)+(2)	(4)	(5)	(6)=(4)-(5)	(7)=(3)-(6)	(8)=(7)/(6)	(9)=((6)*1.20)-(3)
January of the Year	Projections of FPL Unit Capability (MW)	Projections of Firm Purchases (MW)	Projection of Total Capacity (MW)	Peak Load Forecast ** (MW)	Winter DSM Forecast *** (MW)	Forecast of Firm Peak (MW)	Forecast of Winter Reserves (MW)	Forecast of Winter Res. Margins w/o Additions (%)	MW Needed to Meet 20% Reserve Margin (MW)
2008	23,535	3,026	26,561	22,332	1,649	20,683	5,878	28.4%	(1,741)
2009	23,563	2,700	26,263	22,755	1,750	21,005	5,258	25.0%	(1,057)
2010	24,898	2,239	27,137	23,454	1,814	21,640	5,497	25.4%	(1,169)
2011	26,233	2,238	28,471	23,971	1,883	22,088	6,383	28.9%	(1,965)
2012	26,337	2,364	28,701	24,487	1,954	22,533	6,168	27.4%	(1,661)
2013	26,647	2,184	28,831	24,976	2,028	22,948	5,883	25.6%	(1,293)
2014	26,647	2,184	28,831	26,290	2,106	24,184	4,647	19.2%	**190**
2015	26,647	2,184	28,831	26,979	2,188	24,791	4,040	16.3%	**919**
2016	26,647	1,254	27,901	27,690	2,264	25,426	2,475	9.7%	**2,611**
2017	26,647	864	27,511	28,418	2,334	26,084	1,427	5.5%	**3,790**

* No new FPL generating unit additions after WCEC 1 in 2009 and WCEC 2 in 2010 are assumed to be added. 269 MW of renewable energy firm capacity starting in the 2009 - 2012 time frame are assumed to be added. 414 MW of nuclear uprates is assumed. Approximately 104 MW are added in December 2011, 103 MW in May 2012, 103 MW in June 2012, and 104 MW by December 2012.

* * The Peak Load Forecast is FPL's Feb 2008 load forecast that includes Lee County load.

* * * DSM values shown represent cumulative load management and incremental conservation capability.

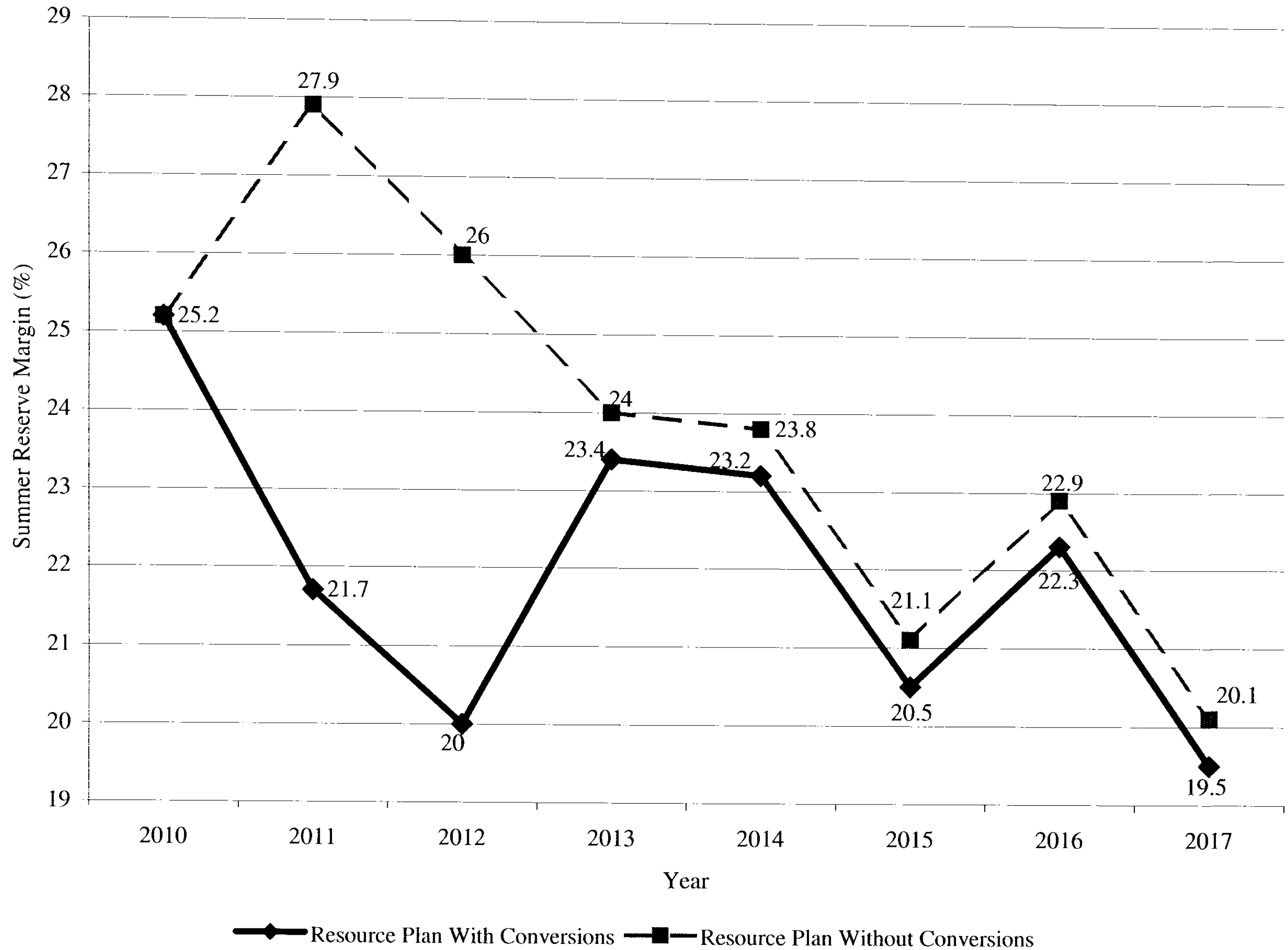
Resource Plans Utilized in the Analyses: 2010 - 2040

Plan with Conversions	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021 - 2040
- unit(s) added and removed	WCEC 2 CC added *	WCEC 3 CC added; Cape Canaveral & Riviera removed *	---	Cape Canaveral Conversion	Riviera Conversion	---	2 - 3x1 CC	---	Turkey Point 6	One-Year 500 MW Purchase	Turkey Point 7 & One-Year 250 MW Purchase	42 - 2x1 CC
- annual MW added	1,219	(138)	0	1,219	1,207	0	2,438	0	1,100	500	1,350	23,226
- permanent MW added	1,219	1,081	1,081	2,300	3,507	3,507	5,945	5,945	7,045	7,045	8,145	31,371
- Reserve Margin	25.2%	21.7%	20.0%	23.4%	23.2%	20.5%	22.3%	19.5%	21.1%	20.0%	20.1%	(all meet criteria)

Plan without Conversions	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021 - 2040
- unit(s) added	WCEC 2 CC	WCEC 3 CC	---	---	3x1 CC	---	2 - 3x1 CC	---	Turkey Point 6	One-Year 345 MW Purchase	Turkey Point 7	42 - 2x1 CC
- annual MW added	1219	1,219	0	0	1,219	0	2,438	0	1,100	345	1,100	23,226
- permanent MW added	1219	2,438	2,438	2,438	3,657	3,657	6,095	6,095	7,195	7,195	8,295	31,521
- Reserve Margin	25.2%	27.9%	26.0%	24.0%	23.8%	21.1%	22.9%	20.1%	21.6%	20.0%	19.7%	(all meet criteria)

* The projected schedule for taking existing units out of service in the Plan with Conversions is as follows: Cape Canaveral Plant (792 MW summer) in September, 201(and Riviera Plant (565 MW summer) in April 2011. For summer reserve margin calculation purposes, the impacts of taking Cape Canaveral Plant and Riviera Plant out of service will both occur in 2011.

Comparison of Two Resource Plans:
Projection of Annual Summer Reserve Margins 2010 - 2017



Docket No. 08 ______-EI
Comparison of Two Resource Plans:
Projection of Annual Summer Reserve
Margins 2010- 2017
Exhibit SRS-4, Page 1 of 1

Economic Evaluation Results for Two Resource Plans - Generation System Costs Only

(Millions, CPVRR, 2008$, 2008 - 2040)

	(1)	(2)	(3)	(4)	(5)	(6)	(7) = sum of (1) thru (6)	(8)
		Transmission-Related Costs						
Resource Plan	**Generation System Costs ***	**Integration * ***	**Peak Hour Capacity Losses**	**Annual Energy Losses**	**Upstream Gas Pipeline Costs * * ***	**Net Equity Adjustment * * * ***	**Total**	**Difference from Lowest Cost Resource Plan**
Plan with Conversions	166,930	0	0	0	0	0	166,930	0
Plan without Conversions	167,292	0	0	0	0	0	167,292	362

* Generation system results include: generation capital, fixed O&M, capital replacement, variable O&M, project fuel, FPL system fuel, firm gas transportation, transmission interconnection capital, startup costs, system emissions, and proposal payments.

* * Transmission Integration costs are already included in the Generation System Costs in Column (1). Therefore, there are no additional transmission integration costs.

* * * Firm gas transportation costs are already included in the Generation System Costs in Column (1). Therefore, there are no additional upstream gas pipeline costs.

* * * * Neither resource plan has a projected firm power purchase that is longer than 5 months. Therefore, there are no net equity adjustment costs.

Economic Evaluation Results for Two Resource Plans - All Costs

(Millions, CPVRR, 2008$, 2008 - 2040)

	(1)	(2)	(3)	(4)	(5)	(6)	(7) = sum of (1) thru (6)	(8)
		Transmission-Related Costs						
Resource Plan	**Generation System Costs ***	**Integration * ***	**Peak Hour Capacity Losses * * * * ***	**Annual Energy Losses * * * * ***	**Upstream Gas Pipeline Costs * * ***	**Net Equity Adjustment * * * ***	**Total**	**Difference from Lowest Cost Resource Plan**
Plan with Conversions	166,930	0	0	0	0	0	166,930	0
Plan without Conversions	167,292	0	6	89	0	0	167,387	457

* Generation system results include: generation capital, fixed O&M, capital replacement, variable O&M, project fuel, FPL system fuel, firm gas transportation, transmission interconnection capital, startup costs, system emissions, and proposal payments.

* * Transmission Integration costs are already included in the Generation System Costs in Column (1). Therefore, there are no additional transmission integration costs.

* * * Firm gas transportation costs are already included in the Generation System Costs in Column (1). Therefore, there are no additional upstream gas pipeline costs.

* * * * Neither resource plan has a projected firm power purchase that is longer than 5 months. Therefore, there are no net equity adjustment costs.

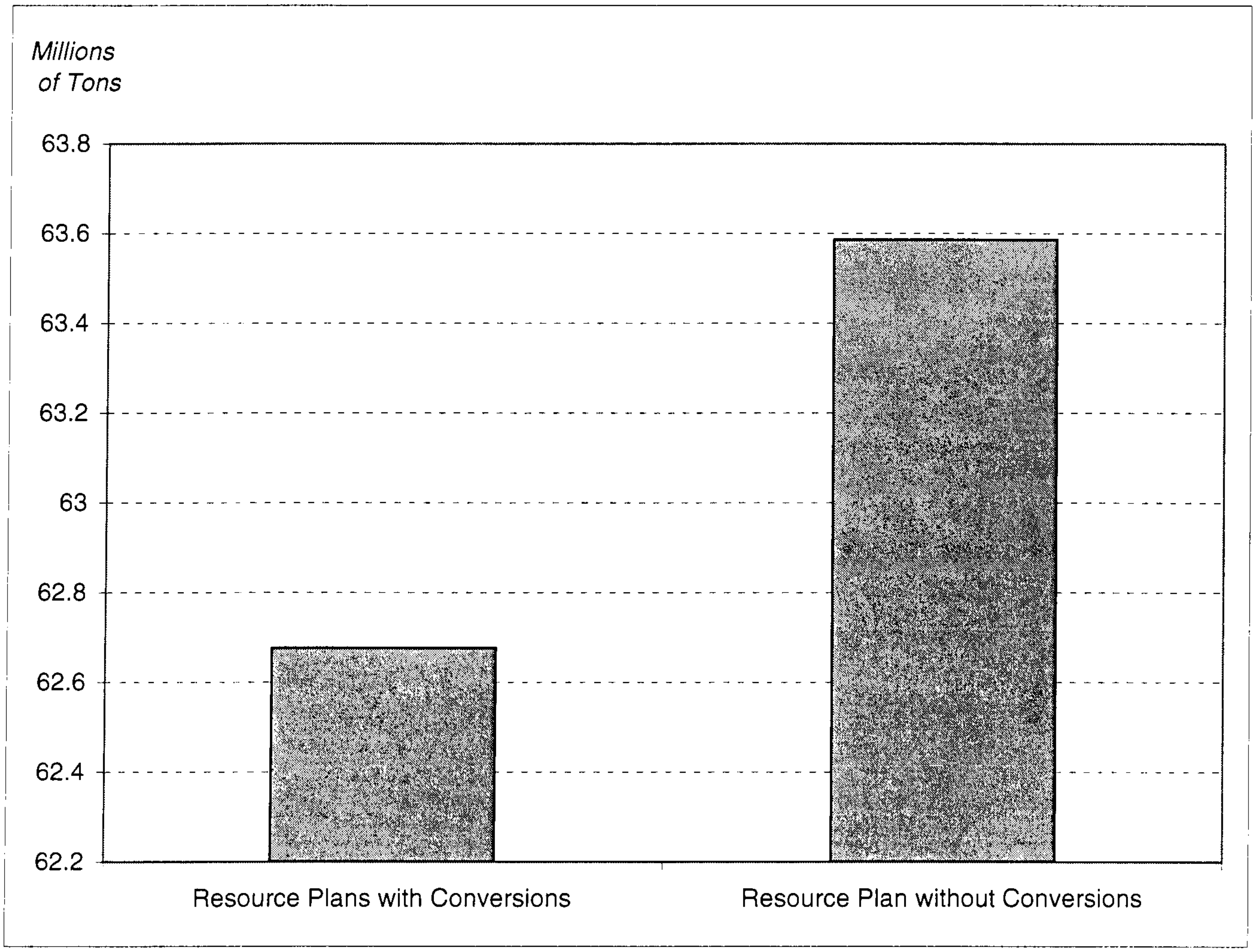
* * * * * The transmission-related costs of losses are relative to the costs for the Plan with Conversions

Comparison of Two Resource Plans: Projection of System Emissions 2010-2017

	(1) Resource Plan with Conversions			(2) Resource Plan without Conversions			(3) = (1) - (2) Difference		
Year	SO_2 (tons)	NOX (tons)	CO_2 (million tons)	SO_2 (tons)	NOX (tons)	CO_2 (million tons)	SO_2 (tons)	NOX (tons)	CO_2 (million tons)
2010	76,410	25,591	60.01	76,414	25,594	60.01	(4)	(3)	0.01
2011	52,891	19,606	57.85	52,890	19,614	57.85	1	(8)	0.00
2012	52,940	18,600	58.78	52,938	18,604	58.78	2	(4)	0.00
2013	49,679	15,597	59.13	54,614	18,769	59.93	(4,935)	(3,172)	(0.80)
2014	49,021	14,565	61.47	53,363	18,992	62.50	(4,342)	(4,427)	(1.03)
2015	49,718	15,067	63.05	55,277	19,366	64.13	(5,559)	(4,299)	(1.08)
2016	40,221	13,300	61.99	44,685	17,399	62.98	(4,464)	(4,099)	(0.99)
2017	38,696	12,387	62.68	42,624	16,008	63.59	(3,928)	(3,621)	(0.91)
2013-2017 Total =	-----	-----	-----	-----	-----	-----	(23,228)	(19,618)	(4.80)
2013-2017 Avg =	-----	-----	-----	-----	-----	-----	(4,646)	(3,924)	(0.96)

In addition, FPL projects that over the life of the analyses the Resource Plan with Conversions is projected to save approximately 60,300 tons of SO_2, 55,300 tons of No_x, and 15.7 million tons of CO_2, compared to the Resource Plan without Conversions.

Comparison of Two Resource Plans: Projected 2017 System CO_2 Emission Levels



Comparison of Two Resource Plans: Projection of System Oil and Natural Gas Usage 2013-2017

	(1)		(2)		(3) = (1) - (2)	
	Resource Plan with Conversions		Resource Plan without Conversions		Difference	
Year	Oil (mmBTU)	Natural Gas (mmBTU)	Oil (mmBTU)	Natural Gas (mmBTU)	Oil (mmBTU)	Natural Gas (mmBTU)
2013	6,131,000	655,112,000	16,294,000	653,550,000	(10,163,000)	1,562,000
2014	4,592,000	697,382,000	13,465,000	701,592,000	(8,873,000)	(4,210,000)
2015	5,864,000	722,485,000	17,336,000	723,947,000	(11,472,000)	(1,462,000)
2016	7,234,000	769,625,000	16,441,000	772,842,000	(9,207,000)	(3,217,000)
2017	6,453,000	792,697,000	14,547,000	795,993,000	(8,094,000)	(3,296,000)
2013-2017 Total =	-----	-----	-----	-----	(47,809,000)	(10,623,000)
2013-2017 Avg =	-----	-----	-----	-----	(9,561,800)	(2,124,600)