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November 21, 2011

VIA HAND DELIVERY

Ms. Ann Cole, Director
Division of the Commission Clerk and
Administrative Services
Florida Public Service Commission
Betty Easley Conference Center, Room 110
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399-0850

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COMMISSION
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Re: Docket 11 0309-E1
***In re: Florida Power & Light Company's Petition to Determine Need for
Modernization of Port Everglades Plant***

Dear Ms. Cole:

Enclosed for filing on behalf of Florida Power & Light Company ("FPL") are the original and fifteen (15) copies of FPL's Petition To Determine Need for Modernization of Port Everglades Plant, along with the testimony and exhibits of Juan Enjamio, John Gnecco, Kennard F. Kosky, Pedro Modia, Dr. Rosemary Morley, Rene Silva and Heather C. Stubblefield, which support the petition.

Included with this submittal is a disk containing FPL's Petition in Word format. Please contact me if you or your Staff have any questions regarding this filing.

Sincerely,

John T. Butler
John T. Butler

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BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Florida Power & Light Company's
Petition To Determine Need for Modernization
of Port Everglades Plant

Docket No. 110309-E1

Dated: November 21, 2011

PETITION

Pursuant to Sections 366.04 and 403.519, Florida Statutes, and Rules 25-22.080, 25-22.081, 25-22.082 and 28-106.201, Florida Administrative Code, Florida Power & Light Company ("FPL" or the "Company") petitions this Commission for an affirmative determination of need for the modernization of FPL's existing Port Everglades plant in Broward County, Florida.

Florida Power & Light is recognized nationally for its clean generating operations. In recent years, FPL has taken major steps to modernize its power plant fleet to make it even cleaner and more fuel efficient. Modernizations of two of its oldest facilities in Cape Canaveral and Riviera Beach, similar to what is being proposed for the Port Everglades power plant, are already well on their way. By installing state-of-the-art, combined-cycle natural gas turbines at several FPL plants, the company has cut fuel costs by \$5 billion since 2001 and passed those savings on to customers. This has contributed to a typical FPL residential customer bill continuing to be the lowest bill out of all 55 utilities in Florida and more than 20 percent below the national average.

FPL proposes to build, at the existing Port Everglades plant site, a modern, highly efficient, state-of-the-art combined cycle ("CC") natural gas unit with about 1,277 MW (summer) of generation for commercial operation beginning in June 2016. This generation addition will allow FPL to meet a projected need for additional generation resources that begins in 2016 and increases each year thereafter. The modernized facility will be referred to in this

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petition as the Port Everglades Next Generation Clean Energy Center (“PEEC”). In conjunction with this new addition, FPL will dismantle the four 1960s-era oil and natural gas fueled steam electric generating units that are currently in Inactive Reserve status.

PEEC will take advantage of an existing strategically located plant site, and will provide reliable base load generating capacity to serve the most concentrated area of FPL’s customer base, which lies in Miami-Dade and Broward Counties. The modernized facility will benefit customers in many ways. PEEC will improve the fuel efficiency of generation at the Port Everglades site by approximately 35 percent, while reducing customers’ electricity costs. FPL projects that a resource plan that includes PEEC (the “PEEC Resource Plan”) will provide significant savings to customers, as much as \$838 million of cumulative present value revenue requirements in 2011 dollars (“CPVRR”)¹ over alternate resource plans.

PEEC will also improve the environmental profile of FPL’s system. In particular, PEEC will reduce FPL’s electric system carbon dioxide (“CO₂”) emissions by millions of tons over its operating life. This is in addition to other important air emission reductions. Thus, PEEC will contribute significantly toward satisfying, if not exceeding, all applicable local, state and federal environmental requirements. PEEC will achieve all of these benefits without using new land or water resources dedicated to plant use. PEEC will also preserve use of existing infrastructure, including electric transmission facilities and rights of way, thereby saving customers millions of dollars.

The forecasted cumulative fuel cost savings and emission reduction benefits for customers are based on placing the modernized plant into service by June of 2016. In order to secure these benefits for its customers and Florida residents, FPL requests that the Commission

¹ All CPVRR values provided in this Petition are reported in 2011 dollars.

issue an affirmative determination of need for PEEC as requested in this Petition. Denying the requested need determination or deferring PEEC to later years would result in substantially higher electricity costs for customers, much greater use of fuel oil and natural gas, and millions of cumulative tons of lost emission reduction opportunities for FPL customers and all Florida residents.

I. Introduction and Overview

1. Florida is one of the most populous states in the nation, and FPL is expected to continue experiencing growth in its customer base. FPL's customer forecast indicates that by 2019 the number of customer accounts (customers) in FPL's service territory will surpass the five million mark, and the cumulative increase in customers from 2011 to 2021 is expected to reach almost 640,000. Also by 2021, summer peak demands are projected to reach 25,960 MW, an increase of 4,341 MW compared to 2011. FPL will have to make investments in new infrastructure to keep pace with the increasing demand for adequate, reliable power associated with such growth.

2. Based on its 2011 load forecast, FPL projects that by 2016, after accounting for its extensive Demand Side Management ("DSM") reductions as well as significant efficiency improvements from lighting and equipment efficiency standards, FPL will have to add about 284 MW of new generation capacity over and above the capacity that will have been added by 2016 as a result of the previously approved uprates at FPL's existing nuclear units and the modernization of FPL's Cape Canaveral and Riviera Beach plants.

3. FPL's request for an affirmative determination of need for PEEC is the culmination of extensive investigation and analyses designed to identify the best, most cost-effective alternative available to meet FPL's forecasted resource need for new generating

capacity beginning in 2016, after accounting for cost-effective additional DSM measures and renewable resources. That work included FPL's assessment of its capacity need and analysis of various self-build and third party resource plans to select the most cost-effective option for meeting that need.

4. PEEC involves the construction of a CC power plant with a summer capacity rating of about 1,277 MW and a commercial operation date of June 2016. PEEC will replace four dual-fuel fired steam generating units that entered service in the 1960s at FPL's Port Everglades plant in Broward County, Florida. The modernized plant's primary fuel will be natural gas, and it will have the capability to burn a light fuel oil, more specifically a distillate fuel oil with a maximum sulfur content of 0.0015 percent (15 ppm), as a back-up fuel.

5. FPL has previously petitioned the Commission and received an exemption from the requirement of Rule 25-22.082(18), Florida Administrative Code, that a request for proposals (RFP) be conducted for the modernization of Port Everglades. In its order granting the exemption, the Commission reached the following conclusions:

- FPL has demonstrated that PEEC will likely increase the reliable supply of electricity to the utility's ratepayers by providing base load generation to the area of most concentrated use on FPL's system;
- FPL has demonstrated that PEEC will otherwise serve the public welfare by providing benefits beyond the provision of electric service; and
- It is unlikely that a respondent to an RFP could provide similar benefits.

Order No. PSC-11-0360-PAA-EI, dated August 26, 2011, at page 3.

6. Implementation of PEEC by 2016 is an integral part of FPL's plan to meet the growing resource needs of its customers and reduce the emission of CO₂, sulfur dioxide ("SO₂")

and nitrogen oxides (“NO_x”) in the most cost-effective manner, and thereby continue to deliver electricity at a reasonable cost, while complying with both existing and anticipated environmental requirements.

7. An affirmative determination of need for PEEC beginning in 2016 is projected to provide several important benefits to customers and Florida residents that will be reflected in lower bill impacts for all FPL customers:

- First, FPL customers are projected to receive substantial electricity cost savings over the 30-year analysis period.
 - Compared to a resource plan that would return to service the existing Port Everglades Units 1-4 currently in Inactive Reserve status, instead of PEEC (the “Return to Service Resource Plan”), the PEEC Resource Plan is expected to result in savings of approximately \$469 million CPVRR;
 - Compared to a resource plan that would add a new FPL-built CC generating unit at a greenfield site in 2016, instead of PEEC (the “GFCC Resource Plan”), the PEEC Resource Plan is expected to result in savings of approximately \$838 million CPVRR;
 - Compared to a resource plan that would add two new FPL-built combustion turbines (“CT”) in simple cycle mode at a greenfield site in 2016, and delay PEEC’s operation to 2019 (the “GFCT Resource Plan”), the PEEC Resource Plan is expected to result in savings of approximately \$425 million CPVRR. Additionally, if PEEC were deferred, the cost of building PEEC later would likely be greater than currently projected, especially if the economy improved and there were increased competition for the necessary labor and materials.

- The PEEC Resource Plan is also projected to yield substantial customer savings compared to any other resource plan that would include a capacity purchase from a third party due to several additional types of costs the third party would incur, such as the cost of land, water rights acquisition and transmission facilities and gas pipeline system expansion. Thus, even if the third party could build the generating unit itself at the same cost as PEEC, FPL estimates that a new third party generator's incremental capital costs likely would be at least \$900 million higher than PEEC and could potentially exceed \$1.1 billion (both amounts reflect overnight capital cost to build in 2016 dollars).² These higher costs are exclusive of water costs, which also are likely to be higher for third party projects than for PEEC.
- Second, PEEC is projected to provide significant environmental benefits. Compared to the Return to Service Resource Plan, PEEC will reduce CO₂ emissions by about 22 million tons, SO₂ emissions by 41,000 tons and NO_x emissions by 33,000 tons over the thirty-year analysis period. Moreover, the resulting air emission reductions will contribute significantly toward achieving whatever emission limits might be imposed in the future. Lower system emissions translate into lower environmental compliance costs for FPL's customers, and all Florida residents will enjoy the environmental benefits of cleaner air and lower greenhouse gas emissions.
- Third, PEEC will enable FPL to reduce fuel use. The average heat rate will improve by approximately 35 percent over the existing Port Everglades units that

² All capital construction costs hereinafter reflected in this Petition are reported in 2016 dollars.

PEEC will replace, and fuel efficiency will correspondingly improve. As a result, FPL's natural gas usage with PEEC is projected to decrease by about 48 million MMBtu and fuel oil usage is projected to drop by 5.3 million barrels in the first full ten years (2017-2026) alone, compared to the Return to Service Resource Plan. PEEC also substantially reduces fuel use compared to the GFCT Resource Plan.

- Fourth, PEEC is also projected to provide non-economic and societal benefits.
 - PEEC avoids the use of new land, additional allocation of water resources to plant use, and the need for new rights-of-way for transmission facilities and gas pipelines.
 - PEEC's coastal location facilitates waterborne fuel delivery, which further contributes to greater system reliability in the event of a disruption in gas delivery compared to inland plants that must rely solely on truck deliveries.
 - PEEC is projected to create an estimated 650 direct jobs at its peak and an estimated \$20 million in new tax revenue to local governments and school districts during the first full year of operation.

II. The Utility Primarily Affected (Rule 25-22.081(a)(1))

8. The Petitioner's name and address:

Florida Power & Light Company
700 Universe Boulevard
Juno Beach, Florida 33408

9. FPL's representatives who should receive communications regarding this docket:

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10. FPL is a Florida corporation with headquarters at 700 Universe Boulevard, Juno Beach, Florida, 33408. FPL is a utility as defined in Section 366.82(1), Florida Statutes, and is an applicant as defined in Section 403.503(4), for purposes of Section 403.519, Florida Statutes. FPL is the primarily affected utility within the meaning of Rule 25-22.081, Florida Administrative Code.

11. FPL currently serves approximately 4.5 million retail customers throughout Florida. Its service area covers about 27,650 square miles in 35 Florida counties. Approximately nine million people live within the area FPL serves, which spans from St. Johns County in the north to Miami-Dade County in the south, and westward to Manatee County. The largest concentration of electric sales is in Southeast Florida, which consists of the region south and east of, and including FPL's Corbett Substation; geographically, this includes a portion of southern Palm Beach County and all of Miami-Dade and Broward Counties. Miami-Dade and Broward Counties account for 44 percent of the company's recent summer peaks.

12. FPL is part of the nation's Eastern Interconnection transmission network. It has multiple points of interconnection with other utilities that enable power to be exchanged among utilities. The FPL bulk transmission system is comprised of approximately 6,721 circuit-miles of transmission lines. Integration of the generation, transmission and distribution system is achieved through FPL's 586 substations.

13. FPL has one of the cleanest generating fleets in the country, and is an industry leader in energy efficiency, conservation and load management through its DSM programs. FPL meets its customers' energy needs through a mix of fossil and nuclear generating units, renewable generation, purchased power, which also includes renewable generation, and DSM. FPL's existing generation resources are located at sixteen sites distributed geographically throughout its service territory, and also include partial ownership of one unit located in Georgia and two units located in Jacksonville, Florida. At the time of filing this Petition, FPL's active generation fleet totals approximately 22,474 MW (summer) of capacity and its generating units consist of four nuclear steam units, three coal steam units in which it holds partial ownership interests, 15 CC units, five oil/gas steam units, 50 CT units, two solar photovoltaic units and one solar thermal facility. FPL also has 1,922 MW of generating capacity on Inactive Reserve.

14. FPL presently has a long-term Unit Power Sales ("UPS") contract to purchase up to 931 MW of coal-fired generation from Southern Company. However, the UPS contract expires at the end of 2015. FPL also has contracts with Jacksonville Electric Authority for the purchase of 375 MW (summer) of coal-fired generation from St. Johns River Power Park ("SJRPP") Units One and Two. Unfortunately, due to Internal Revenue Service regulations, the total amount of energy that FPL may receive from this purchase is limited. FPL currently projects that this limit will be reached in the first half of 2016.

15. FPL has contracts to purchase firm capacity and energy from cogeneration and small power production facilities (qualifying facilities or “QFs”) totaling 595 MW. FPL currently projects that about 740 MW of firm generation capacity from renewable resources as well as QFs will be available to FPL in 2016. FPL has also fostered the expansion of renewable energy sources through development of its own renewable generation projects. FPL operates three commercial-scale solar generation facilities in Florida. FPL’s two solar photovoltaic facilities generate a combined 35 MW of capacity. The Martin facility provides 75 MW of solar thermal capacity that displaces fossil fuel usage.

III. The Proposed Electrical Power Plant (Rule 25-22.081(1)(b))

16. FPL plans to build a state-of-the-art, highly-efficient, low-emission CC plant located at its Port Everglades site in Broward County. FPL has attained a great deal of experience in building and operating CC plants to achieve the best possible efficiencies. FPL has also proven its ability to implement modernization projects on time and on budget.

17. The Port Everglades plant currently consists of two nominal 200 MW and two nominal 400 MW conventional dual-fuel fired steam generating units that are in Inactive Reserve status. The four existing Port Everglades steam units have a combined peak summer rating of 1,187 MW. Each unit can burn #6 fuel oil and natural gas. These units have an average heat rate of approximately 9,800 Btu/kWh. As part of the modernization project, FPL will dismantle these units.

18. PEEC will be configured as a CC unit, which will use three of the latest generation CTs, three heat recovery steam generators (“HRSGs”) and one steam driven turbine generator (“STG”). Each CT is connected to an electric generator that produces electricity to meet the needs of FPL’s customers. The exhaust gas produced by each CT then passes through

an HRSG and produces steam, which, in turn, is used to drive an STG and produce additional electricity for FPL's customers. This waste heat recovery feature of the CC system improves overall plant efficiency beyond that of simple-cycle CTs or simple-cycle steam plants. The PEEC three-on-one (3x1) CC unit is expected to have a summer peak capacity of about 1,277 MW.

19. Generally, new CC plants can be expected to achieve energy conversion rates (heat rates) of less than 7,000 Btu/kWh. FPL anticipates that PEEC's new CC unit will have a heat rate of approximately 6,330 Btu/kWh, based on an average ambient temperature of 75 degrees. This compares very favorably to heat rate values averaging 9,800 Btu/kWh for the conventional steam electric generating units such as the Port Everglades Units 1-4 that would be removed from service. The PEEC unit will therefore use approximately 35 percent less fuel to produce an equivalent amount of energy.

20. The CTs will use natural gas delivered by pipeline to the plant as their primary fuel. The Port Everglades site has ready access to a gas pipeline for necessary fuel transportation. The only infrastructure upgrades required will be primarily associated with the addition of gas compression, costing an estimated \$48 million in overnight costs. To provide a backup fuel to the unit in the event of an extended disruption of natural gas supply, PEEC will also be designed to burn a light fuel oil, more specifically a light fuel oil with an ultra-low sulfur content (maximum of 0.0015 percent), as a back-up fuel. Light fuel oil will be delivered to the site by truck or barge, and will be stored in sufficient quantities to allow the plant to function at full capacity for approximately 72 hours of continuous operation. The ability to receive backup fuel from waterborne deliveries is a significant advantage over inland plants, particularly in emergency situations.

21. PEEC will connect to the existing Port Everglades transmission switchyard using the infrastructure already in place. The Port Everglades switchyard has voltage transformation to support injecting the output of PEEC into FPL's transmission system at both 230 kV and 138 kV voltage levels. This flexibility is valuable because the ability to split the output of PEEC between the 138 kV and 230 kV voltage levels will defer the need to upgrade the 138 kV transmission system in the local area. The ability to connect at the 230 kV level increases FPL's options for serving the local area, for providing bulk transfer of power to other areas, and for backing up the 500 kV backbone of FPL's transmission system.

22. Modest interconnection and integration upgrades to FPL's transmission system will be required due to PEEC's higher winter capability and the higher fault current. The interconnection facilities required for PEEC consist of four string busses needed to connect the three CT generators and the steam generator to the Port Everglades switchyard at a cost of approximately \$6.9 million in overnight costs. The facilities required in order to fully integrate PEEC into the FPL transmission system include upgrading four existing 138 kV line sections in close proximity to the Port Everglades plant switchyard to accommodate the proposed PEEC unit. In addition, the Port Everglades switchyard will require an upgrade to increase the fault-withstanding capability for faults on or near the switchyard busses. The estimated cost of all integration facility upgrades is about \$25.6 million. The total transmission interconnection and integration upgrades for PEEC amounts to approximately \$32.5 million in overnight costs.

23. In contrast, FPL estimates that the potential costs for a third party to interconnect to the FPL transmission system from a potentially viable site in western Broward County of the same size and scope as PEEC would be approximately \$75 million, and generic integration would range from \$290 to \$406 million in overnight costs. These significantly higher

transmission costs are due to the absence of locations on the transmission system in the Miami-Dade or Broward County area at which generation similar in size to PEEC could be integrated without major system upgrades.

24. No additional water resources will be required for PEEC. In fact, the advanced CC technology of the new units will actually reduce water impacts while generating greater capacity. The cooling water requirements for the combined cycle unit are less than one-half that of the existing facility, yet are projected to be more than sufficient to provide a warm water refuge for manatees during the winter months.

25. The use of natural gas as a primary fuel source with light fuel oil as a backup fuel, combined with combustion control technologies will minimize air emissions from the unit and ensure compliance with applicable emission limiting standards. FPL's environmental compliance expert has conducted an extensive review of the environmental compliance requirements applicable to PEEC and concluded that (a) the selection of advanced combined cycle technology and environmental controls for PEEC not only meets, but is better than the existing environmental regulatory requirements; (b) the technology selected for PEEC is the best available alternative for 2016 from an environmental perspective; and (c) PEEC includes design features that can meet anticipated future environmental requirements.

26. FPL expects that PEEC will be a highly reliable source of energy for FPL's customers. The new CC unit is estimated to have an equivalent availability factor of approximately 95.4 percent based on an estimated average forced outage factor of approximately 1.1 percent and a planned outage factor of 3.5 percent. Adding this highly reliable unit will help maintain the system reliability and integrity of FPL and peninsular Florida.

27. In addition to cost savings, increased reliability and environmental improvements, PEEC is projected to also provide public welfare benefits. The construction of the new plant is projected to create an estimated 650 direct jobs at its peak and to support numerous local businesses. The operation of the new plant will enable FPL to provide more capacity to meet the needs of businesses that seek to expand. In addition, in the new plant's first full year of operation, it is estimated to provide more than \$20 million in new tax revenue to local governments and school districts.

28. FPL estimates that the total construction cost of PEEC will be \$1,185.2 million. Principal components include the power block at \$1,041.1 million, transmission interconnection and integration at \$32.5 million, and allowance for funds used during construction at \$111.6 million. FPL will annually report to the Commission's Director of Economic Regulation the budgeted and actual cost of PEEC, compared to the estimated total in-service cost presented in this Petition.

29. FPL is considering a number of advanced CT designs and has not yet made a final decision for PEEC. The currently projected operational characteristics, installed cost, CPVRR cost savings, and emission reduction benefits presented in this petition and FPL's testimony are based on using "J" class technology CTs. However, FPL will continue to evaluate the type of equipment to be used for PEEC to consider various advanced CT designs from different manufacturers to determine whether even greater benefits could be achieved. FPL also would like to maintain flexibility in selecting and determining the specific CT design and related costs in order to maximize its bargaining position in equipment contracting on behalf of FPL's customers.

30. Accordingly, FPL requests that, as part of the Commission's order granting an affirmative determination of need for PEEC, the Commission provide that its determination is not predicated on the use of a particular CT design, thus ensuring that FPL has the flexibility through its negotiations and analyses to select the CT design that best meets customers' needs in terms of reliability and cost-effectiveness. Of course, FPL would make the decision to use a CT design other than that currently reflected in its analyses only if the analyzed CT technology did not prove to be technically viable or if projected cost to FPL's customers, measured in terms of system CPVRR, would be lower. FPL proposes that, in the event it finalizes the selection of a CT design other than the analyzed technology for PEEC subsequent to the Commission having granted a determination of need, FPL would make an informational filing to the Commission that documents the projected comparative cost advantage of the CT design chosen.

IV. The Need for the Port Everglades Next Generation Clean Energy Center (Rule 25-22.081(1)(c))

31. ***Projected Demand and Energy Growth.*** FPL continually assesses the timing and magnitude of its future resource needs in order to continue to provide reliable electric service to its customers. To determine its future resource needs, FPL first forecasts its customer growth, summer and winter peak demand, and net energy for load ("NEL"). FPL then applies this forecast to a reliability assessment based on a minimum peak period reserve margin of 20 percent and a maximum loss-of-load of 0.1 day per year.

a. ***Customer growth.*** FPL is responsible for serving its existing customers, as well as new customers locating in its service territory. FPL forecasts moderate continued customer growth. Using an econometric model, the Company projects an average annual increase of about 64,000 new customers amounting to an annualized retail customer growth rate

of 1.3 percent between 2011 and 2021, and continued growth thereafter. This 2011-2021 forecasted growth rate is considerably higher than the rate experienced between 2007 and 2010.

b. *Peak Demand and Net Energy for Load.* FPL has forecasted its coincident summer and winter peak demands, as well as its NEL for 2011 through 2021. Each of these forecasts reflects FPL's estimated increase in customers and includes incremental wholesale loads, additional projected load from plug-in electric vehicles, the Economic Development Rider and the Existing Facility Economic Rider, as well as the projected savings from energy efficiency standards. For example, with regard to the summer peak forecast, the input for energy efficiency savings is 3,365 MW by 2021.

- i. *Summer peak.* In 2011, FPL experienced a coincident summer peak demand of 21,619 MW. FPL projects its summer peak demand to increase annually by 1.8 percent between 2011 and 2021. This amounts to an average annual increase of about 434 MW per year. By 2021, the cumulative increase over the 2011 summer peak is projected to be 4,341 MW for a total of 25,960 MW.
- ii. *Winter peak.* In 2011, FPL experienced a coincident winter peak demand of 21,126 MW. FPL projects that its winter peak demand will increase 1.3 percent annually between 2011 and 2021. This amounts to an average annual increase of about 283 MW per year between 2011 and 2021. By 2021, the cumulative increase over the 2011 winter peak is projected to be 2,826 MW for a total of 23,952 MW.
- iii. *Net energy for load.* FPL forecasts energy sales using an econometric model for total NEL that incorporates as principal variables customer

base, the economy, weather, and energy efficiency standards. In 2011, FPL's estimated NEL is estimated to be 111,735 Gigawatt-hours ("GWh"). FPL projects a 1.8 percent annual growth rate in NEL between 2011 and 2021. The forecast shows an annual NEL increase of 2,191 GWh between 2011 and 2021, which is higher than that experienced historically due to a larger customer base.

32. Applying the September 2011 load forecast to its reliability assessment, FPL projects that by 2016 it will have to add about 284 MW of new generation capacity over and above the capacity that will have been added as a result of the previously approved updates at FPL's existing nuclear units and the modernization of FPL's Cape Canaveral and Riviera Beach plants. FPL further projects that its resource needs will increase to 1,468 MW by 2021. Without the proposed modernization, FPL would not maintain a 20 percent reserve margin in 2016. Additionally, without PEEC, FPL's 2016 reserve margin from generation-only resources would fall to 6.3 percent.

33. The resource plan that includes bringing PEEC into service by June of 2016 will not only satisfy FPL's projected resource need, but is also projected to result in substantially greater benefits to FPL's customers than the other resource plans that FPL has evaluated. As set forth in greater detail below, PEEC is projected to save FPL's customers up to an estimated \$838 million CPVRR over resource plans that do not include PEEC, to substantially reduce air emissions, to improve system fuel efficiency, to maintain system reliability, and to provide important public benefits.

IV. FPL's Analysis of Generating Alternatives (Rule 25-22.081(1)(d))

34. Having determined the magnitude and timing of resource needs, FPL next identified competing resource plans and evaluated each plan with reference to economic factors and non-economic system considerations. FPL used a thirty-year period for the analyses, including thirty-year customer and load forecasts, in order to fully capture and fairly compare all of the economic and non-economic impacts of different capacity options that could be added to a utility system.

35. The economic analysis involves a calculation of the CPVRR for each resource plan. The resource plan with the lowest CPVRR also results in the lowest system average electric rates for FPL's customers over the analysis period. The non-economic analysis considers whether a resource plan is suited to address system considerations identified in the planning process.

36. FPL currently has a substantial system concern over the load-generation imbalance in Miami-Dade and Broward Counties. Transmission assessments have identified a finite capability of the transmission system to import power into this area in the future. As the load in the area continues to grow, FPL must either build new generation in this region, make transmission system improvements to increase the transmission import capability, or some combination of both.

37. Lowering system emissions is another important system consideration. To that end, FPL evaluated which resource plans best reduced CO₂ emissions over the long term, as well as SO₂ and NO_x.

38. FPL has evaluated four possible resource plans to meet its need in 2016: the PEEC Resource Plan; the Return to Service Resource Plan; the GFCC Resource Plan; and the

GFCT Resource Plan. Each of these resource plans reflects the removal of Turkey Point Unit 1 from generation service by 2016 because FPL's economic analyses demonstrate that doing so substantially reduces costs to customers under all resource plans. FPL also evaluated possible power purchases from third parties. As set forth in greater detail below, FPL's analyses projected that the PEEC Resource Plan will have the lowest CPVRR and is best-suited to address FPL's system considerations.

A. PEEC Resource Plan vs. Return to Service Resource Plan

39. The Return to Service Resource Plan and PEEC are mutually exclusive, and are the only currently available alternatives that would enable FPL to address the load-generation imbalance in Miami-Dade and Broward Counties without the need for significant transmission upgrades. FPL's economic analysis revealed that the PEEC Resource Plan will result in system savings of \$469 million CPVRR compared to the Return to Service Resource Plan, and FPL customers will enjoy average bill impact savings of \$0.38 per 1000 kWh over the period 2016 to 2047.

40. The four 1960's units that comprise the Return to Service Resource Plan have a cumulative rating of 1,187 MW (summer) and an average heat rate of about 9,800 Btu/kWh. By contrast, the PEEC Resource Plan will place in service the higher efficiency CC generating units with a summer peak rating of about 1,277 MW and a base heat rate of about 6,330 Btu/kWh, approximately 35 percent better than that of the old steam units. FPL's overall system heat rate also improves by 1.3 percent under the PEEC Resource Plan to 8,042 Btu/kWh, compared to 8,145 Btu/kWh under the Return to Service Resource Plan. As described below, this substantial improvement in heat rate will yield several important benefits.

41. FPL has compared the amounts of natural gas and fuel oil used in FPL's system under the PEEC Resource Plan to those under the Return to Service Resource Plan. In the first ten years alone (2017-2026), the PEEC Resource Plan will reduce natural gas use by about 48 million MMBtu compared to the Return to Service Resource Plan. Fuel oil use will also decrease, by about 5.3 million barrels. Over PEEC's thirty-year life, those figures grow to 90 million MMBtu of natural gas and about 10.4 million barrels of fuel oil.

42. During PEEC's 30-year projected life, the PEEC Resource Plan is projected to reduce CO₂ emissions by as much as 22 million tons compared to the Return to Service Resource Plan. As a result, the PEEC Resource Plan will help FPL meet any CO₂ emission targets that may be imposed in the future. The PEEC Resource Plan also will reduce SO₂ emissions by about 41,000 tons and NO_x emissions by approximately 33,000 tons compared to the Return to Service Resource Plan.

43. Reducing emissions, as well as oil and gas use, is a very important benefit to FPL's customers because of the projected rising cost of natural gas and fuel oil in the future, and further because of the risk that environmental compliance costs and actual fuel costs in the future could be even higher than forecasted, thus resulting in CPVRR savings beyond the projected \$469 million.

44. Finally, due to the use of CC technology and the reduced amount of steam-electric generation, operating PEEC will require far less cooling water flow through the facility than is needed to operate the existing Port Everglades units.

B. PEEC Resource Plan vs. Greenfield Combined Cycle Resource Plan

45. FPL's economic analysis results indicate that the cost of the PEEC Resource Plan will be \$838 million CPVRR lower than the cost of the GFCC Resource Plan. FPL customers

would enjoy average monthly bill impact savings of \$0.64 per 1000 kWh over the period from 2016 to 2047.

46. The PEEC Resource Plan and the GFCC Resource Plan would utilize the same generation technology. The GFCC would have a rated capacity of 1,262 MW (summer).³

47. The PEEC Resource Plan will place about 1,277 MW (summer) of new generation in Broward County, in close proximity to the service area with the highest load concentration and a growing load-generation imbalance. FPL has not identified any viable greenfield sites in Miami-Dade or Broward Counties, so placing generation at a new greenfield site under the GFCC Resource Plan would mean that the new generation would be outside the area with the highest load concentration and would aggravate, rather than help reduce, the challenging imbalance. Thus, whereas the PEEC Resource Plan directly addresses the imbalance, the GFCC Resource Plan would require significant transmission upgrades estimated to cost approximately \$638 million (overnight capital costs).

48. Adding new generation outside the Miami-Dade and Broward County area under the GFCC Resource Plan would likely result in higher system transmission losses and, therefore, higher fuel costs than the PEEC Resource Plan.

49. The PEEC Resource Plan will increase FPL's generating capacity without needing to find a new source of cooling water, additional land for a new generating unit, or new rights-of-way for transmission lines or gas pipelines. New generation at a greenfield site cannot match these benefits.

³ FPL believes no coastal greenfield sites are available. Construction of a new CC unit at a non-coastal greenfield site would yield 15 MW less overall capacity than the PEEC plan due to the need to build and operate cooling towers.

50. Furthermore, because of PEEC's capability to receive light fuel oil delivered using waterborne transportation, the PEEC Resource Plan will have much greater backup fuel supply reliability than any other combined cycle unit located at a greenfield site away from the coast where the supply of light fuel oil would be limited exclusively to truck delivery.

C. PEEC Resource Plan vs. Greenfield Combustion Turbine Resource Plan that Defers PEEC to 2019

51. The GFCT Resource Plan involves construction of two new CTs at a greenfield site for commercial operation in 2016. Each turbine would operate in simple cycle mode, with a capacity of 162 MW (summer). As the capacity rating suggests, the GFCT Resource Plan does not displace the need for PEEC. Rather, it delays the need for PEEC to 2019.

52. FPL's economic analysis results indicate that the cost of the PEEC Resource Plan will be \$425 million CPVRR lower than the cost of the GFCT Resource Plan. FPL customers would enjoy average monthly bill impact savings of \$0.42 per 1000 kWh over the period from 2016 to 2047. In addition, if PEEC were deferred, the cost of building PEEC later would likely be greater than currently projected, especially if the economy improves and there is increased competition for labor and materials.

53. Furthermore, a three-year delay in adding generation in the Miami-Dade/Broward County area may not be feasible from a system reliability perspective without either substantial transmission upgrades or incurring additional costs related to keeping Turkey Point Unit 1 in generation service, due to the growing load-generation imbalance in that area.

54. FPL also compared the amounts of natural gas and fuel oil used in FPL's system under the PEEC Resource Plan to those under the GFCT Resource Plan. Between 2016 and 2047, the PEEC Resource Plan will reduce natural gas use by about 40 million MMBtu and will reduce fuel oil use by 5.0 million barrels when compared to the GFCT Resource Plan.

55. These results confirm that proceeding with PEEC for a 2016 in-service date is more cost-effective than deferring the modernization to 2019 by building simple cycle CTs.

D. PEEC Resource Plan vs. Possible Third Party Power Purchases

56. FPL evaluated other possible market alternatives that would substitute for, rather than merely defer, PEEC. A third party could offer to sell to FPL capacity from an existing generator, or offer to build new generating capacity in the form of CTs in single cycle mode or a CC unit at a greenfield site as the source of a firm capacity sale to FPL.

57. *Existing third-party generation sites.* No third party currently owns generation in Miami-Dade or Broward Counties that could be a viable alternative to PEEC. Thus, any generating capacity that could be sold to FPL from an existing generator would have to come from a facility outside that area. Such third party alternatives would fail to address the load-generation imbalance in that critical region of FPL's service area and instead would require approximately \$638 million in overnight capital costs for transmission upgrades to increase import capability.

58. Neither does any third party currently own an advanced CC unit anywhere else in Florida that would be available for delivering generation to FPL. Therefore, any offer from a Florida generator would involve using one or more CTs in single cycle mode, which would have a much higher heat rate than PEEC. Generation from outside Southeast Florida also would likely contribute to higher system transmission line losses than would be the case with PEEC as part of the system. These two disadvantages would make energy costs much higher for any third party alternative compared to the PEEC Resource Plan.

59. *New third-party generation.* While a third party theoretically could build a new generating unit at a site in Miami-Dade or Broward Counties, that possibility is unlikely. It is

especially unlikely that such a project could be completed in time to meet FPL customers' needs in 2016.

60. Moreover, even if a third party could complete construction of a generating unit by 2016 in Miami-Dade or Broward County, that undertaking would be very costly. The third party would have to obtain land and water for a new plant, site and construct new transmission facilities, including transmission lines to connect to the FPL system, and establish an expanded natural gas transportation system to deliver fuel to the plant. Thus, even if a third party could build the generating unit itself at the same cost as PEEC, FPL estimates that the additional capital costs would be at least \$900 million and potentially could exceed \$1.0 billion in overnight costs, exclusive of water-related costs. Building this generator in Miami-Dade or Broward Counties would also require permits to build the generating facility where no similar facility exists, as well as obtaining an approved transmission corridor for the transmission lines and an approved corridor for the gas pipeline expansion, both through the most densely populated area of Florida.

61. A new third-party generator built outside Miami-Dade and Broward Counties would also incur initial capital costs higher than that of PEEC due to the cost of land and transmission facilities, including the cost of the transmission upgrades that would be required to address the growing load-generation imbalance. FPL estimates these initial capital costs would be at least \$950 million and may potentially exceed \$1.1 billion in overnight costs, not including the cost of water or that of a gas lateral. The higher capital costs are in addition to any higher costs for generation equipment and construction of such greenfield units described above.

62. By contrast, the PEEC Resource Plan entails no cost for new land, no cost for water access, very limited or no cost for a new gas pipeline to deliver fuel, and very limited costs

for connecting and integrating with the FPL transmission system. These items would add significant costs to any third party proposal, even assuming the third party could build the generator at the same cost as FPL. FPL does not believe that any third party could overcome this substantial cost disadvantage to sell power to FPL at a cost less than PEEC.

E. Results of the Analyses of Alternatives

63. The results of the foregoing economic analyses demonstrate that the PEEC Resource Plan is projected to be the best, most cost effective alternative. The PEEC Resource Plan is projected to save FPL's customers \$425 million to \$838 million CPVRR compared to the alternate resource plans. The results indicate that even a short delay in the addition of PEEC would unnecessarily increase costs to customers. In addition, if PEEC were to be deferred for any period of time, the cost of building PEEC would likely be greater than currently projected, especially if the economy improved and there were increased competition for the necessary labor and materials. Therefore, the adverse consequences of a delay could be even greater than reflected above.

64. FPL's customers will begin realizing these savings, as reflected in their electric bills, very quickly. Likewise, because of the inherent and unmatched advantages of PEEC, third party alternatives that substitute for PEEC are projected to result in significantly higher costs to FPL's customers.

65. Furthermore, no alternative is projected to offer any non-economic advantage over the PEEC Resource Plan. Only resource plans that include PEEC (in 2016 or later) or the more expensive Return to Service Resource Plan would avoid the need for approximately \$638 million (overnight costs) in transmission investments by 2020 in order to address the growing load-generation imbalance in Miami-Dade and Broward Counties. The PEEC Resource Plan is

projected to far outperform the Return to Service Resource Plan in the important areas of emission reduction, fuel reduction and heat rate improvement.

66. In conclusion, the results of FPL's economic and non-economic analyses establish that the PEEC Resource Plan is projected to be by far the best, most cost-effective alternative to meet FPL customers' needs for additional resources.

VII. FPL's Analysis of Non-Generating Alternatives (Rule 25-22.081(1)(e))

67. FPL employs comprehensive and cost-effective DSM programs to reduce peak load requirements and reduce energy consumption. Without its DSM achievements, FPL would require far more additional capacity to meet its present and projected needs. Since the inception of its DSM programs through 2010, FPL has achieved 5,245 MW (at the generator) of summer peak demand reduction and an estimated cumulative energy savings of approximately 55,462 GWh (at the generator). FPL has achieved this level of demand reduction through DSM programs designed to reduce electric rates for all customers, DSM participants and non-participants alike.

68. FPL's forecast of resource needs takes into account all projected DSM from cost-effective programs approved by the Commission. This assumes that an estimated 109 MW of capacity will be avoided as a result of DSM additions in January through July of 2011 and an additional 817 MW of capacity will be avoided by DSM in the period between August of 2011 and August of 2016. Thus, FPL and its customers will have avoided a total of 6,171 MW of generating capacity by 2016 as a result of DSM programs. This amount of peak demand reduction (at the generator, after taking into account the 20 percent reserve margin requirement) has eliminated the need for the equivalent of 15 new 400 MW generating units. Indeed, without any DSM additions, FPL's total 2016 generation capacity need would be 1,101 MW.

69. FPL has not currently identified additional cost-effective DSM beyond that already reflected in FPL's reliability assessment calculations. Additional cost-effective DSM cannot be counted on to contribute to system reliability, and there is no evidence to suggest that additional DSM could provide economic or environmental benefits to FPL's customers that could in any way diminish the unquestionable benefits projected to be provided by PEEC beginning in 2016.

70. Similarly, all anticipated cost-effective firm generating capacity that will be available from renewable resources and QFs through 2016 has already been reflected in FPL's resource plan. FPL is currently pursuing discussions that could lead to power purchase agreements for firm capacity and energy from biomass renewable resources potentially totaling up to an additional 180 MW. However, if FPL enters into these agreements, it is unlikely that FPL would receive any firm capacity under them until the summer of 2019, at the earliest. Therefore, such additional renewable capacity cannot be relied on to contribute to system reliability in 2016 through 2018. Furthermore, any future non-firm renewable resources that could cost-effectively provide energy would complement – not compete with – the benefits provided by PEEC.

71. Taking these benefits into consideration, the interests of FPL's customers are best served by placing PEEC in commercial operation in June of 2016.

VII. Adverse Consequences of Delay (Rule 25-22.081(f))

72. If an affirmative determination of need for PEEC in 2016 is not granted, FPL's customers would face adverse consequences. Without placing PEEC in service in 2016, FPL customers would lose significant cost savings and would feel the impact on their electric bills as early as 2016. The estimated incremental cost to FPL's customers ranges from \$425 million to

\$838 million CPVRR. Moreover, fuel charges on customers' bills would be higher because, FPL's system would be considerably less fuel-efficient without PEEC. The lower system efficiency would consequently increase the use of and dependency on fuel oil and natural gas in the future.

73. Without PEEC, FPL's customers and all Floridians would lose the benefit of reduced system emissions and cleaner air. Furthermore, if environmental compliance costs, natural gas prices, or both climb higher than currently projected, the cost penalty to FPL's customers would be even greater. Delaying PEEC would also result in higher costs to FPL's customers, especially if the economy improved and there were increased competition for the necessary labor and materials.

74. If FPL or a third party were to build a new unit at a greenfield site instead of proceeding with PEEC, they would be forced to utilize new land and new Florida water resources and to obtain new rights-of-way for transmission and gas pipeline facilities to achieve the same generation capacity increase that could be achieved with the land and water resources that are already dedicated to energy generation at Port Everglades – but at a much higher cost. Furthermore, unless new generation is added in the Miami-Dade and Broward County area, FPL would have to implement very costly transmission upgrades in the near future to mitigate the growing imbalance between generation and load in that area.

75. In summary, FPL's customers would be harmed if the Commission were to deny FPL's request for an affirmative determination of need for PEEC with a planned commercial operation date of June 2016.

VIII. Disputed Issues of Material Fact

76. FPL is presently unaware of any disputed issues of material fact affecting this proceeding. FPL will demonstrate that approving a need determination for PEEC in 2016 will best serve FPL's customers by providing substantial economic benefits as well as reducing FPL's system emissions, while using an existing generating station site and other existing committed resources. FPL also will demonstrate that there are no reasonably available renewable resources, DSM or other non-generation alternative that would significantly mitigate the need for PEEC.

CONCLUSION

As proposed, PEEC is a highly cost-effective and environmentally positive choice for serving FPL's customers. The modernization presents several key advantages to FPL and its customers. PEEC is projected to deliver major cost savings to benefit FPL's customers, provide firm capacity needed to serve FPL's customers and reduce FPL's system emissions by millions of tons, all while making use of an existing generating plant site and transmission facilities.

Based upon the foregoing and the more detailed information in the pre-filed testimony and exhibits submitted contemporaneously with this Petition, FPL requests that the Commission grant FPL an affirmative determination of need for PEEC in 2016. FPL will annually report to the Commission's Director of Economic Regulation updates to the budgeted and actual cost of PEEC, compared to the estimated total in-service cost presented in this Petition.

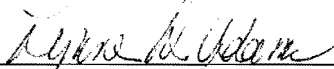
FPL also requests that, as part of the Commission's Order granting an affirmative determination of need for PEEC, the Commission provide that its determination is not predicated on FPL's selection of a particular CT design or model, thus providing FPL the flexibility through its negotiations and analyses to select the turbine design that best meets FPL customers' needs in

terms of reliability and cost-effectiveness. Of course, FPL would select a CT design or model different than the "J" class technology only if that design did not prove to be technically viable or if the projected cost to FPL's customers measured in terms of system CPVRR would be lower as a result of the use of the alternate CT design or model, taking into account any changes in the capital costs attributable to the choice of turbine design. In the event that FPL selects a CT design other than the analyzed technology subsequent to the Commission having granted a determination of need for PEEC, FPL proposes to make an informational filing to the Commission that documents the projected comparative cost advantage of the alternate CT technology chosen.

WHEREFORE, FPL respectfully requests that the Commission grant an affirmative determination of need for PEEC beginning in 2016 that is not limited to a particular CT design, but rather would allow FPL to select a design other than analyzed technology if the Company could demonstrate that the projected CPVRR to FPL's customers would be lower.

Respectfully submitted this 21st day of November, 2011.

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