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Nuclear Plant Development New Nuclear Baseload Generation Project Progress Energy Florida, Inc.

Business Analysis Package (Revision 2)

Treasury Control Number: TCN 2008-1316

Sponsoring Business Unit: Nuclear Generation Group (NGG)

Funding Legal Entity: Progress Energy Florida, Inc.

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New Nuclear Baseload Generation Project
Progress Energy Florida, Inc.
Business Analysis Package

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Section 1 - Project Overview

1.1 Key Project Information

This Revision 2 to the March 2006 Business Analysis Package (BAP) provides the approval mechanism and the official documentation to continue moving forward with development of new nuclear generation at the Levy County Site and to specifically authorize funding above the amounts approved in the March 2006 BAP as modified by the September 2007 Revision 1 to the March 2006 BAP. In accordance with [the Major Capital Projects Integrated Project Plan (IPP) Policy ADM_SUBS_0080, going forward, the BAP process will be replaced by the Company's new Integrated Project Plan (IPP) process under which all future formal approvals will be documented. This BAP represents only the funding requirements necessary for generation and does not include funding for transmission. This BAP incorporates the cost associated with the Letter of Intent (LOI) dated March 28, 2008 authorizing WEC to start supply chain activities (i.e., Quality Assurance, project management, and engineering services as necessary to negotiate and establish manufacturing agreements, etc.) for a limited scope of long-lead equipment associated with the AP1000 reactor technology. This LOI also includes limited Levy site specific development activities. [redacted]

As noted above in the March 2006 BAP, the company authorized the development of (1) the Combined Operation License Application (COLA), (2) selection of the preferred generation technology, (3) review and identification of suitable plant sites, (4) pursuit of required land use authorizations and subsequent preparations for acquisition of property. A BAP Revision 1 was completed in September 2007 to incorporate additional land costs, the need to start the Site Certification Application (SCA) process earlier than planned to support the 2016 commercial operation date, new FEMA fee requirements, and additional COLA scope items.

The purpose of this BAP revision is to segregate the authorization of Progress Energy Carolinas (PEC) and Progress Energy Florida (PEF) COLA costs and seek approval to fund additional PEF work scope items required to preserve the new nuclear option and preserve the 2016 commercial operation date. This BAP Revision 2 incorporates, among other things, the best available information known at this time on the ability to permit plants, load forecasts, projected plant cost, available power generation alternatives including renewable energy technologies, radioactive waste disposal status, projected costs of key commodities including generation fuel options, current and potential environmental compliance costs, viable non-generating conservation, renewable energy and demand-side management alternatives, and the adverse consequences that will result if the plants are not added in the 2016 to 2017 timeframe. The initial economic analysis of the nuclear generation option has been reviewed and in view of all of these factors, including those set forth in Florida statutes, the analysis supports the continuation of the project into its next key phases of development

to preserve the ability to meet the need for power beginning in 2016 with the nuclear generation option.

1.1.1 Nuclear COLA BAP – Establishing the Current Project Scope:

The following activities and accomplishments have moved the project forward to aid in defining the project scope and refining the Company's understanding of the timeframe and resources required to continue with development:

(A) In support of pursuing new nuclear generation for PEF, a COLA is being developed for the Levy County Site in Florida. The COLA will be developed per the requirements of 10 CFR Part 52, using the guidance of NEI 04-01, Industry Guideline for Combined License Applicants under 10 CFR Part 52. Under the new U.S. Nuclear Regulation Commission (NRC) licensing process, a single license is now issued for both the construction phase and operating phase of a new nuclear power reactor. The Levy COLA is scheduled to be submitted to the NRC July 31, 2008. The project scope for development of the COLA for Florida is encompassed in the work scope approved in the initial BAP (1) dated 3/10/06.

(B) The work performed under the authorization of the 2006 COLA BAP identified suitable sites in both the Carolinas and Florida for new nuclear generation. In Florida, NGG performed a detailed analysis of potentially viable sites within and near PEF's service area. NGG performed the analysis consistent with the requirements of the NRC. The site selection process included, among other things, detailed evaluations of various site technical parameters (geology, seismology, hydrology, cooling water, environmental, etc.), consideration of business strategic considerations (land acquisition and ownership, leveraging existing nuclear facilities and support systems, etc.), and a high-level evaluation of the likely transmission system upgrades required. The analysis resulted in the ultimate selection of an approximately 3,105 acre parcel in Levy County (the Rayonier Property) as the preferred site. In addition, PEF purchased an additional approximately 2,159 acre tract contiguous with the southern boundary of the Rayonier site, which secures necessary access to a gulf water supply, as well as transmission exits from the plant site.

(C) Concurrently, under the COLA BAP, the Nuclear Plant Development (NPD) organization conducted a detailed review and analysis of potential advanced nuclear power reactor technologies. The technologies evaluated included the Westinghouse Electric Company, LLC (WEC) Advanced Passive AP-1000, General Electric's (GE) Economic Simplified Boiling Water Reactor (ESBWR) and AREVA's European Power Reactor (EPR). In addition, the Company reviewed the viability and cost-effectiveness of the GE Advanced Boiling Water Reactor (ABWR) design. The advanced nuclear power plant designs have been significantly improved by use of passive design safety features that reduce the total number of active components (pumps, motors, and valves, etc.) in the plant. This reduces the relative plant equipment costs, and correspondingly reduces future operating and maintenance costs.

After a thorough analysis, PEF has initially selected the Westinghouse AP1000 technology for the basis of the COL application. Progress Energy is currently negotiating the terms and conditions for an EPC contract for this technology.

(D) **The NPD organization is preparing a Site Certification Application for Levy.** The SCA is being prepared pursuant to the requirements established in FDEP Form 62-16.900. The need for the project, environmental impacts, construction impacts, and operational impacts are key components addressed in the SCA application.

As a result of the work authorized and performed to date, the requirements for design and construction of a new nuclear generating facility in Florida have been more clearly defined. The next phase of authorization, as outlined in this BAP revision, is to approve funding above the amounts approved in the March 2006 BAP as modified by the September 2007 Revision 1 to the March 2006 BAP. A new authorization request will be prepared upon successful completion of EPC negotiations to transition to the new Integrated Project Plan (IPP) Process to proceed further with design finalization, permitting, pre-construction, and construction requirements of the new facility.

1.1.2 PEF Nuclear Project Total Project Scope:

The current total project scope of the PEF Nuclear Project is defined as:

WEC and Shaw Stone & Webster (SS&W) will provide services to PEF to design and construct a two unit Westinghouse Advanced Passive AP 1000 nuclear power generating station at a site selected in Levy County.

The scope also includes WEC design finalization, SS&W site specific engineering (make-up and blowdown systems, cooling towers, plant site preparations, etc.), and associated transmission line direct connections/upgrades.

All other owner costs and a staffing plan to fully staff the two unit station are also included in the project scope.

The table below describes the overall project activity structure: A detailed project milestone schedule is currently being refined to encompass specific control points for key reviews and required approval decisions.

Levy County Nuclear Plant – List of Key Work Activities		
Key Activities	***Examples of Key Work Activities***	***Estimated Timeframe***
COLA Development & **Approval / Land Acquisition** *(approved in the initial COLA BAP & COLA BAP Rev 1)*	Reactor Technology Evaluation Site Selection COLA Preparation and Review by the NRC EPC Contract Development Site Certification Project Cost Analysis (Price Certainty) Conceptual Design to support COLA prep	2005 – 2012
Design & Site Engineering	Westinghouse Design Finalization Site Specific Layout Cooling Tower Design Intake and Discharge Structure Design Permanent Facility Design	2007 - 2011
Site Permitting	Site Certification Approval Federal, State, & Local Permit Approval	2007 - 2017
Procurement of Long Lead Equipment	Procurement Planning Order Long Lead Equipment Manufacture & Ship Long Lead Equipment	2008 - 2012
Project Management	Construction Staffing Project Oversight Legal Services NRC Inspections Taxes & Insurance	2007 - 2017
Site Prep	Site Clearing & Grading Site Access & Roads Remedial Work for Plant Foundation	2009 - 2012
On-Site Construction Facilities	Warehouses & Fab Shops Laydown & Module Fabrication Area Temporary Power	2009 - 2011
Staffing/Training	Implement site staffing and training plan Operational/Control Programs	2007 - 2017
Construction of AP-1000 Power Block	Containment Building Auxiliary Building Turbine Building Diesel Generators	2012 - 2017
Construction of Site Infrastructure (Facilities, Rail, Cooling Tower)	Construct Cooling Towers Construct Intake and Discharge structures Construct Permanent Warehouses & Buildings Construct Major Linear Facilities	2009 - 2016
Initial Core/Fuel Load	Initial Core Complete Pre-Operations Testing Power Ascension Testing	2015 (U1) 2016 (U2)
Transmission (Currently under separate authorization)	Route Selection Survey & Appraisals Transmission Facilities Design Right of Way Acquisitions Tower Fabrication & Installation Substation Construction & Commissioning	2007 - 2015

In total, nuclear power plant licensing, construction, and start-up activities are estimated to require approximately 10 years for completion.

The construction duration for a new nuclear facility is longer than for the other generation alternatives being considered. PEF will continue to monitor the feasibility of the nuclear generation project. Since the approval and construction timeframes for conventional gas combined cycle and/or simple cycle combustion turbine power plants are shorter than the timeframe for nuclear generation, these options will remain viable alternatives for a period of time if conditions warrant reconsideration of continuation with nuclear construction.

1.1.3 PEF Nuclear Project Scope of This Authorization Request:

COLA Phase I Preparation - Additional scope is necessary to complete the COL application development for Levy. This includes, but is not limited to, an alternative blowdown pipeline route, constructing and testing services for various concrete pads (used as engineering backfill), site foundation & sub-grade remediation work, and additional environmental evaluations.

Site Certification Application - Additional work has been identified as necessary to support the SCA submittal in June 2008. Part of this scope includes the preparation of the Environmental Resource Permit (ERP) application package, development of a wetlands mitigation plan, and preparation of any Federal Permits required to support the SCA.

Owner Engineer Support – Owner Engineer support is needed to support ongoing EPC negotiations and site-specific engineering, as well as other potential licensing and engineering work that requires special technical expertise or supplements NPD resources.

Limited Work Authorization – The LWA will be developed and submitted concurrent to the NRC concurrent with the Levy COLA - An approved LWA will allow work to begin on specific items defined in the LWA such as installation of a permanent concrete diaphragm wall, roller compacted concrete placement under the nuclear island and installation of foundation pilings for the Annex, Radwaste, and Turbine Buildings.

Price Certainty Update - Price books were developed by the technology vendor to determine and document both nuclear island and site-specific project estimated costs. The price books also provide insight needed for EPC negotiations, and are a key input to the total project cost information update provided in the March 11, 2008 Need Determination filing.

Letter of Intent (LOI) on Long Lead Equipment - In order to maintain the nuclear option available to meet PEF's need in 2016, certain procurement and engineering activities must start in early 2008. Specifically, on March 28, 2008, PEF executed a letter of intent (LOI) with WEC and Shaw. [redacted]

Detailed Design of Site Permanent Structures – Identified site specific development and engineering activities not included in the LOI that need to proceed during 3rd & 4th quarters in 2008 to ensure the 2016 COD remains viable. Examples of these activities include clearing, grading, excavation, subsurface preparation, and site building design and permitting.

1.2 Recommendation and High Level Discussion

It is recommended that this BAP Revision 2 be approved for the authorization of initial long lead AP-1000 equipment procurement per the terms of the WEC/SSW LOI, additional COLA funding, and other scope for the items provided in Section 1.1.3 of this BAP Revision and is also documented on the Project Authorization Revision (PAR). An additional authorization request will be prepared upon completion of EPC negotiations pursuant to the new IPP Process.

Based upon current capacity and energy forecasts, PEF has identified that additional generation capacity will be needed in the 2016 to 2018 timeframe to meet the needs of the Company's customers in Florida. The planned nuclear capacity additions of 1092 MW in 2016 for Unit 1 and 1092 MW in 2017 for Unit 2 will meet the needs identified in the 2016 timeframe. To preserve the ability to meet this future generation need with nuclear capacity, PEF must commence the capital funding requested in this BAP at this time. If authorization is not provided, the nuclear generation option will not be available to PEF in the 2016 timeframe. Instead, PEF will be limited to natural gas based generation alternatives to meet the need for generation in that timeframe. Taking into account current environmental requirements for fossil fuel emissions, the potential for green house gas (GHG) regulations, and the federal legislative incentives for new nuclear generation, among other factors, new advanced nuclear generation is the most cost-effective, reasonable alternative to meet this need. At this time, additional advantages supporting the commitment to continue to pursue the nuclear generation option to meet PEF's future generation needs include:

- The need for continued fuel diversity and security
- The need for improved stability of energy prices
- The need for baseload generating capacity
- The need to reduce PEF's dependence on volatile fossil fuel supplies (particularly oil and natural gas)
- The need to reduce GHG and other air emissions, and
- The need to contribute to the long term stability and reliability of our electric grid

1.3 Funding Requirements and Source

This BAP Revision 2 includes funding for specific items necessary to ensure that the nuclear option remains open to PEF in the 2016-2017 timeframe.

Table 1.3-1 lists the funding requirements identified in this BAP revision. The table includes actual cost incurred to date, as well as the projected spend for the remainder of 2008 required to preserve Levy's position in the AP-1000 plant manufacturer's U.S. queue, lock in 2007 price quotes on certain major components, and continue with limited Levy site development activities.

Table 1.3-2 lists the total project cost estimate for Levy 1 and 2 as of February 2008, included with the Need Determination filing submitted March 11, 2008 to FPSC. A new authorization request will be required to further continue with the design, permitting, pre-construction, and construction requirements of the new facility, and will be prepared upon successful completion of EPC negotiations pursuant to the new IPP Process (ACT-SUBS-0080).

Table 1.3-1

Funding Requirements Included in This BAP Revision (Bridge to IPP)	Estimated Amount ($ M)	Applicable Spending Years
COLA, Technology and Site Selection & Land Exp (includes escalation & contingencies)	[redacted]	2005 - 2012
Letter of Intent (LOI) on Long Lead Equip.	[redacted]	2008
Detailed Design of Site Permanent Structures	[redacted]	2008
AFUDC (on items above)	[redacted]	2005 - 2012
Total	[redacted]	

Table 1.3-2

Total Project Cost Estimate As of February 2008	Estimated Amount ($ M)	Applicable Spending Years
COLA, Technology and Site Selection and Land Expenses	[redacted]	2005 - 2012
Construction of Westinghouse Shaw Stone & Webster AP1000 Power Block – Units 1 & 2	[redacted]	2008 - 2017
Construction of Site Infrastructure (Facilities, Rail, Cooling Tower, etc)	[redacted]	2008 - 2016
Staffing & Training	[redacted]	2008 - 2017
Project Management	[redacted]	2010 - 2017
Initial Core/Fuel Load	[redacted]	2015 - 2017
Permits, Insurance, Fees, & Taxes	[redacted]	2007 - 2017
Escalation & Contingencies	[redacted]	2007 - 2017
AFUDC	[redacted]	2007 - 2017
Total Project Cost Estimate	[redacted]	

	2007 Project to Date	2008	2009	2010	2011	2012+	Total
Costs ($ M)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

The previous project authorization did not include a projection for AFUDC. This authorization incorporates an estimate for AFUDC to better reflect the total anticipated cost for the project. This estimate is subject to change based on actual cash flows and the classification of costs as pre-construction versus construction. There is currently some outstanding questions which could impact cash flow and total project AFUDC, however, that total project estimate is consistent with the estimate provided for the Need Determination Filing on March 11, 2008.

1.3.1 Specific Project Cost Items and Clarifications

Transmission Improvements: Transmission costs of $2.5 billion (excluding AFUDC) for the units are included in the economic analysis presented in this BAP based on project cost estimates provided by Transmission Department in February 2008. These costs reflect full ownership by PEF and support the system requirements for both new units at Levy County. As the transmission design and licensing efforts progress, more detailed cost estimates will be available for further refinement of the economic analysis. It is assumed that transmission work will be completed approximately one year prior to the commercial operation date of the plants.

This BAP represents only the funding requirements necessary for the nuclear generating station, and does not include funding for transmission system upgrades beyond the Levy switchyard.

Non- Capital Expenses: The following items/activities are considered non-capital expenses and are not included in this BAP:

- NuStart Energy Development, LLC related member company fees and associated expenses.
- Other non-capital expenses (e.g., standard attire, relocation, general training, etc.) for PGN personnel

Internal Support Departmental Labor Costs: Internal labor costs *(non-incremental)* for support groups such as Corporate Communications, Regulatory Affairs, System Planning, Accounting, etc., are not included in this BAP. NPD utilizes a Baseload Generation Charging Matrix, a detailed breakdown of work activities by organization which is appropriate to capture capital project costs. Property Plant Accounting, Material Accounting, Regulatory Accounting, and NGG Business Operations will periodically update this listing as appropriate.

1.3.2 Project Cost Update Timeline:

The schedule below based on the best information currently available, outlines the current timeline for establishing and updating project cost as the project progresses:

Levy County Nuclear Plant – Timeline for Project Cost Updates	
June 2005	Initial CapEx from RFQ provided. Initial AP-1000 Business Plan submitted by WEC. *(Completed)*
December 2006	Update to CapEx from WEC, Levy Purchase Agreement finalized, initial total cost estimate completed (includes Sargent &Lundy estimate for site specific items) *(Completed)*
February 2007	Update to Technology Evaluation completed, GFF input provided to System Planning *(Completed)*
June 2007	Updated cost estimate for total project cost at time of approval for BAP *(Completed)*
December 2007	Pricing update from WEC addressing the AP1000 Nuclear Island. (Completed)
February 2008	AP 1000 Price Book Levy Units 1 &2. Includes indicative price for a two unit AP1000 Plant including site specific considerations. (Completed)
Mid 2008	EPC projected to be signed.
[redacted]	[redacted]
[redacted]	[redacted]

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1.3.3 Cash Flow Charts:

The chart provided below shows the current estimated costs included in this BAP for a two unit WEC AP-1000 nuclear power generating station in Levy County Florida. The graph shows yearly annual estimates as well as the cumulative total cost of the units (excluding transmission costs). The charts below are consistent with costs supplied for the Mar 11th, 2008 Need Determination filing , but are adjusted for 2008 funding requirements necessary to preserve Levy's position in the AP1000 manufacturer's queue, lock in price quotes on certain major components, and continue with limited Levy site development activities.

Figure 1 – Cash Flow of Current Estimated Total Project Cost (by Year)

(Note: Transmission Costs are NOT Included)

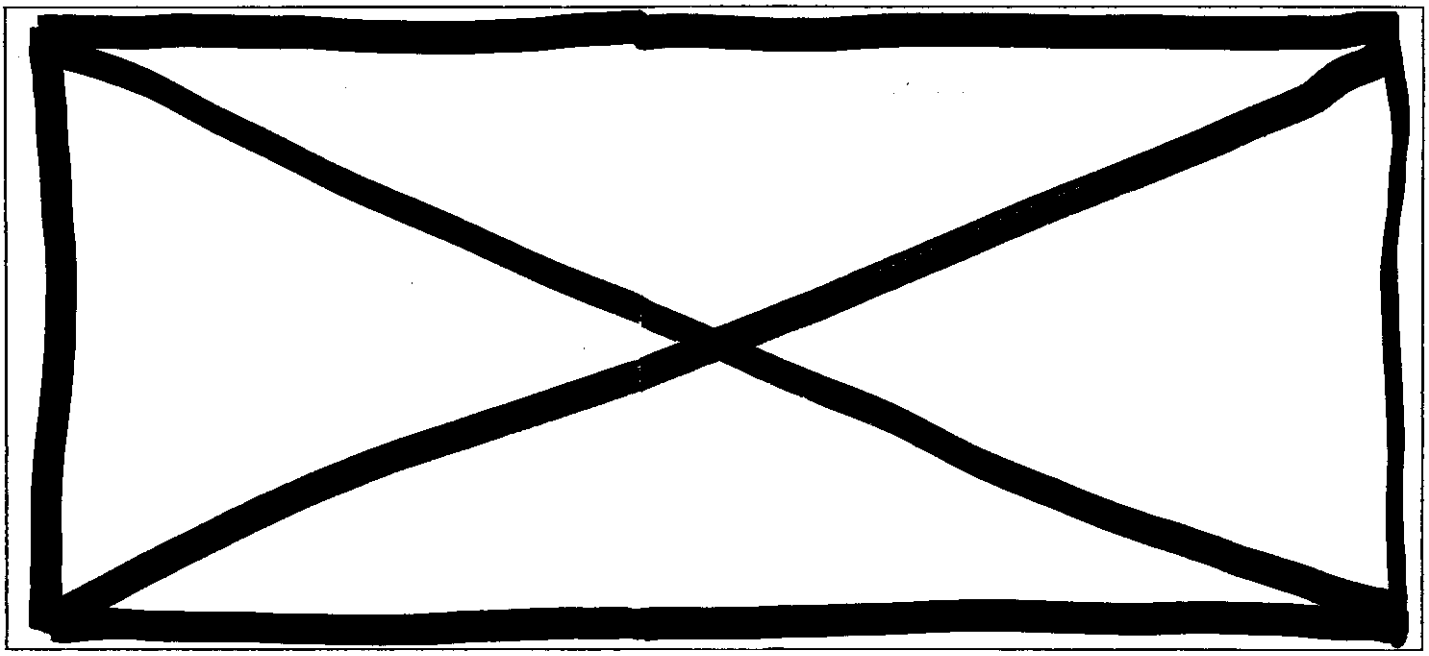
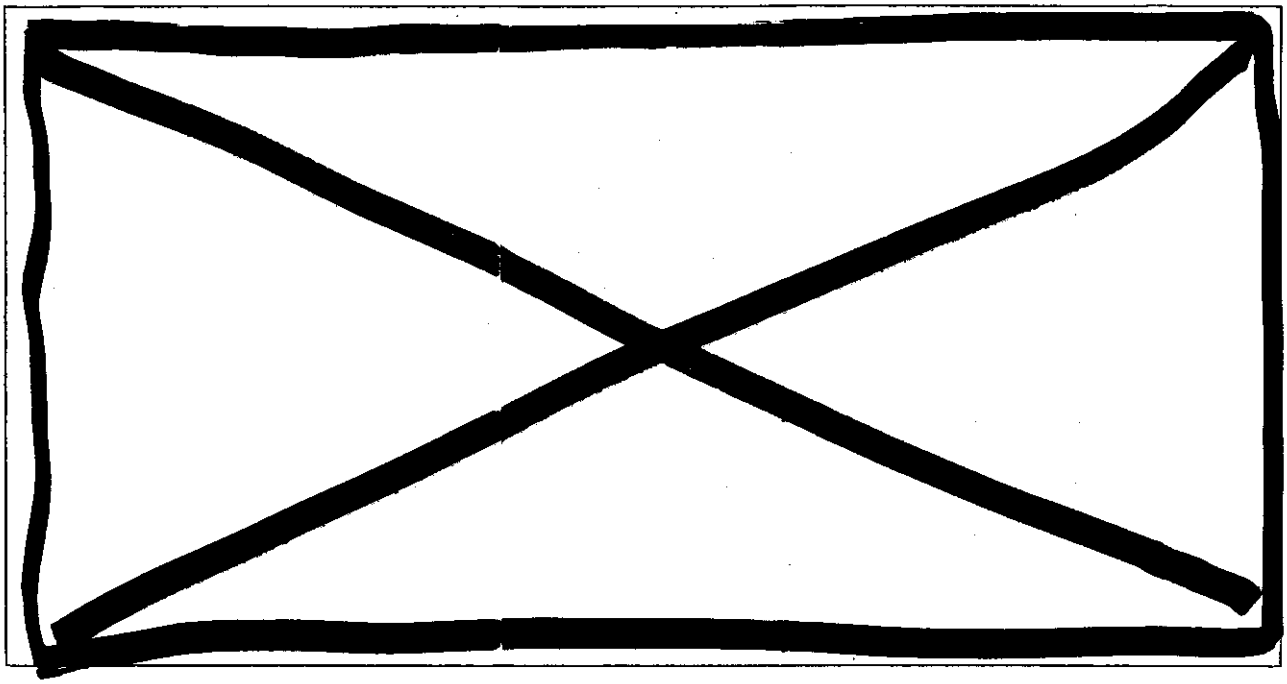


Figure 2 – Cash Flow of Cumulative Estimated Total Project Cost REDACTED

(Note: Transmission Costs are Not Included)

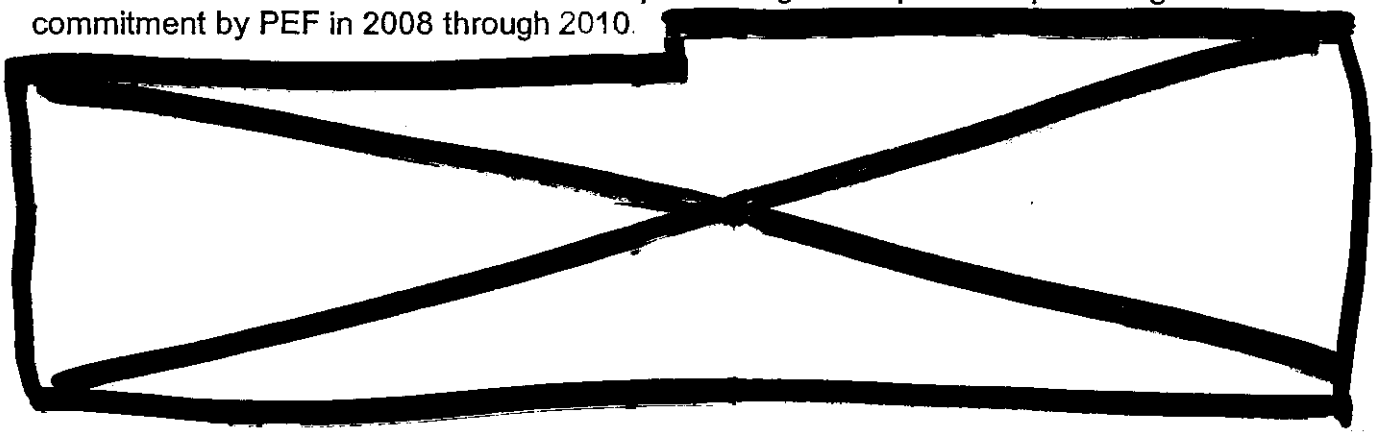


1.4 Project Scope & Schedule Details

1.4.1 Long Lead Equipment and Pre-Construction:

Prior to construction, procurement of large long lead equipment components is a key requirement to secure PEF's position in the queue for nuclear generation plant equipment necessary to complete the new generating units in Florida in the timeframe needed to meet PEF's need.

Based on limitations of industrial forging capacity in the world, particularly with ultra-large metal forgings (~600 tons), these long lead orders must be placed several years prior to construction commencement. The current purchasing assumptions require a significant cash commitment by PEF in 2008 through 2010.



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The long lead equipment items identified by WEC for the project include, but are not limited to [redacted]

Based on estimates developed in discussions with WEC, the cost of the second nuclear unit is projected to be substantially less on a $/kW basis than the first unit if the second unit enters commercial service within 12 to 18 months of the first unit. The projected cost savings are based on anticipated efficiencies for concurrent manufacturing of large key components and continuous mobilization for on-site construction of both units. As a result, PEF is planning to procure the long lead equipment items for both nuclear units concurrently to gain these economies of scale and significantly lower the overall cost of the project. Senior Management will review and approve the actual terms and conditions for the funding of long lead equipment items.

1.4.2 Sequence and Schedule - Levy County Site Development

The Integrated Master Plan provides the timeline and the major milestones necessary to engineer, procure, and construct the new nuclear units. It is anticipated that the significant site pre-construction activities will start roughly 1.5 to 2 years before the COL is expected to be issued. Planning activities associated with the new Training Facility is also in progress. Certain non-safety related pre-construction activities may proceed following Florida Department of Environmental Protection and U.S. Army Corps of Engineers approval prior to NRC authorization. These include activities such as clearing, earthwork grading, excavation, subsurface preparations, and on-site module construction. The pre-construction phase also includes site specific engineered items such as the intake, discharge, and cooling towers. Also included in this phase of the project is putting the staffing infrastructure in place to support construction activities for the site. As part of the price certainty work authorization, a Levy Integrated project schedule has been delivered by Westinghouse. The schedule integrates the AP1000 Engineering, Procurement, Construction, and includes Levy site specific activities. NPD is in the process of reviewing the schedule for updating the Integrated Master Plan. (Reference Appendix C for the current Integrated Master Plan).

The planned start of safety related construction is expected to begin after NRC COL issuance. Upon receipt of the COL, which is anticipated in early 2012, safety related construction can begin. This includes "1st concrete", and the modules that make up the Containment Building, Auxiliary Building, Turbine Building, Radwaste Building, and Diesel Generator Building. This starts the nuclear deployment period where the largest financial commitments are expected to be made. It is expected that Senior Management will review and give final approval prior to commencing safety related construction. NPD is in the process of preparing a Limited Work Authorization (LWA) that will be submitted to the NRC at the same time the Levy COLA is submitted. An approved LWA should allow work to begin on specific items defined in the LWA such as installation of a permanent concrete diaphragm wall, roller

compacted concrete placement under the nuclear island and installation of foundation pilings for the Annex, Radwaste, and Turbine Buildings. This LWA work would commence in advance of the COL issuance and allow the excavation and engineered backfill to be in place to support 1st concrete upon COL issuance.

Following the completion of safety related construction, Start-Up activities will commence. These activities include pre-operational testing, nuclear fuel load, and power ascension testing, which leads to commercial operation.

Progress Energy is a member of NuStart Energy Development, LLC, a consortium formed to further develop and license nuclear technologies that will be the "next generation" of nuclear reactors. This project will closely follow the activities of NuStart to promptly adopt lessons learned and industry determined best practices. In addition, PEF is dependent upon certain NuStart deliverables related to first-of-a-kind (FOKE) engineering on the advance reactor technologies that is ultimately necessary to complete the Progress Energy plant deployment in Florida.

1.4.3 Project and Plant Staffing, Training and Security:

Staffing for Design and Construction Management

The Nuclear Projects and Construction Department will have primary responsibility for development of the site and construction and commissioning of the new units. Most of the current activities are being managed in the Nuclear Plant Development area, but plans are being developed to transition primary control to Nuclear Projects and Construction when the project management and support requirements for construction begin to ramp up. Project development and design activities will be performed in several locations, including the WEC and Shaw corporate headquarters, the supplier's locations, the Raleigh Corporate Headquarters, the Crystal River 3 site, and the Levy County site. As the project progresses, it is anticipated that a Florida Project Office will be established.

Staffing and Training for Commercial Operations

The Levy Nuclear Plant Staffing & Training Plan will be developed prior to Commercial Operation. The initial Operating Plant staffing and training plans for the Levy Nuclear Plant were developed within the AP1000 Builders Group (BG) for Plant Operations. The five utility members (Progress Energy, TVA, Duke, SCANA, and Southern) reviewed existing plant staffing plans, INPO ACAD training and accreditation requirements, NRC licensing requirements (10 CFR Parts 52 and 55), and AP1000 design and operation attributes to determine an appropriate plant staff size. Additionally, a phased staffing timeline was created which includes experience needs.

Based on current estimates from the AP 1000 Builders Group, plant staffing requirements for a two unit site would nominally be approximately 700 utility personnel once the plant is in full commercial operation. This staffing estimate does not include nuclear security since each site will be staffed per the site-specific security plan. It also does not include the personnel used for tasks such as housekeeping, painting, pipe coverers, and radwaste handling since each of the 5 utilities in the Builders Group manages these tasks differently.

There are minimal staffing needs for the period 2007 to 2010 to support training program development, site engineering and construction planning, long lead component procurement activities, and licensing actions. Appendix H includes details for the expected staffing requirements during this period. The more significant portion of the staffing build up will be in the 2010 to 2016 time period. The staffing timeline reflects training and qualification of personnel required to support the major milestones and plant commercial operations which are currently projected for June 2016 for Unit 1 and June 2017 for Unit 2.

Training programs for the Levy Nuclear Plant are required to be in place and accredited prior to training commencing in 2011. Both INPO and the NRC are using the current training programs as guides and expectations for the new plants' programs. The BG in conjunction with NEI and INPO has developed a template for simulator development, Operations Training program development and implementation, and Technical Training program development and implementation. These templates show the first Operator license class starting in January 2011 for the Levy Nuclear Plant.

Plant Security Requirements

Site-specific security plans are being developed to address the construction timeframe and the operations timeframe.

Section 2 - Strategic Fit

Based upon current capacity and energy forecasts, PEF has identified through its integrated resource planning that additional generation capacity will be needed in the 2016 to 2018 timeframe and beyond to meet the needs of the Company's customers in Florida. The objectives of the Company's integrated resource planning approach are to:

- Maintain a diverse supply-side portfolio to help manage risk of fuel price volatility and minimize the potential for energy supply interruptions in Florida
- Establish a strong and reliable generation fleet to insure cost-effective energy supplies to support a strong and growing Florida economy
- Develop and support cost-effective and reliable renewable energy resources to meet demand
- Continue to support and pursue opportunities to increase energy conservation and demand side management programs
- Continue PEF's responsible environmental stewardship.

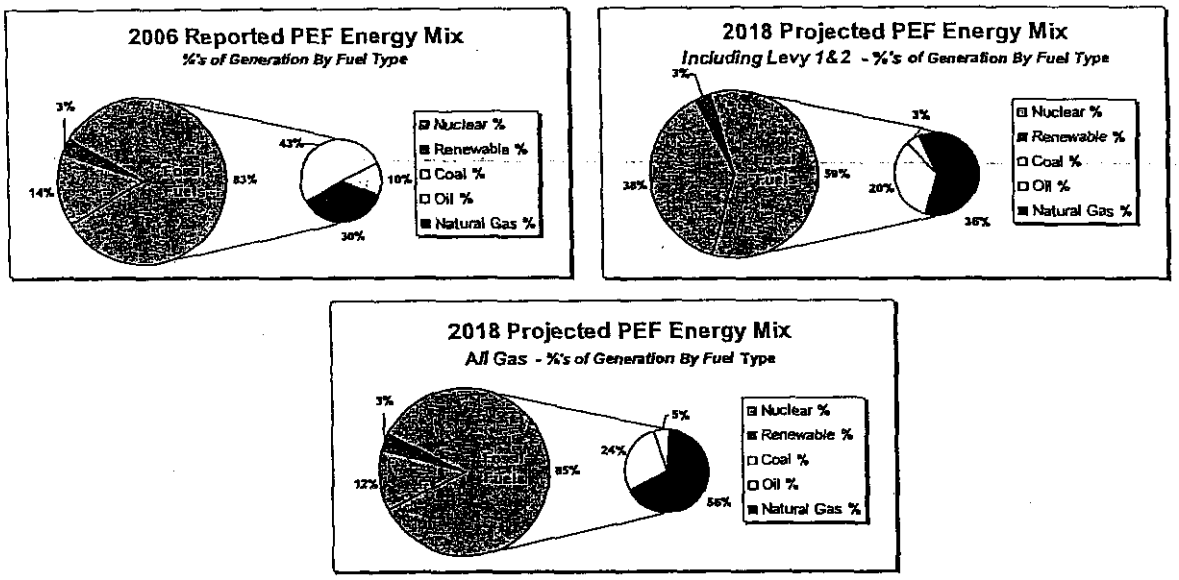
By 2025, current PEF projections show significant growth in participation in conservation, efficiency and demand side management programs. An additional 4,500 MW's of new generation capacity, however, is still needed to meet forecasted growth. This is based on the 2008 Ten Year Site Plan load forecast and Demand Side Management projections included in that study. The planned nuclear capacity additions of 1117 MW (nominal) in 2016 for Unit 1 and 1117 MW (nominal) in 2017 for Unit 2 will meet the needs identified in the 2016 timeframe and beyond. New nuclear generation is an integral element of PEF's plan to meet the objectives of its integrated resource planning approach. New advanced nuclear generation appears to be the most cost-effective, reasonable alternative taking into account:

- The need for continued fuel diversity and security
- The need for improved stability of energy prices
- The need for baseload generating capacity
- The need to reduce PEF's dependence on volatile fuel supplies (particularly oil and natural gas)
- The need to reduce GHG and other air emissions
- The need to contribute to the long term stability and reliability of our electric grid.

PEF's Energy Mix:

The PEF Energy Mix Charts below portray the actual reported sources of energy in PEF's resource portfolio in 2006 versus the projected mix in 2018, with and without new nuclear generation. In the case with new nuclear generation in 2016 and 2017, natural gas utilization for energy production is projected to increase from 30% in 2006 to roughly 36% of PEF's energy mix in 2018. **In a scenario without new nuclear generation in 2016 and 2017, the natural gas component in PEF's energy mix increases from roughly 30% in 2006 to over 55% by 2018, exposing PEF and its customers to considerably more energy price volatility and potentially higher costs related to regulated CO_2 emissions.**

Chart 2-1 Analysis of PEF's Energy Mix



2.1 Potential for Joint Ownership:

At present, PEF has a retail need for the entire output of both units. The reliability need for the entire output may be particularly acute if PEF were to retire the Crystal River Unit 1 and 2 coal-fired plants within the planning horizon, which is currently being reviewed by the Company, or if renewable energy resources (~270 MW) currently under contract or development do not materialize. Co-ownership has, however, several potential benefits to PEF and its customers, including spreading the cost risk to non-PEF customers, reducing PEF's and /or Progress Energy's legal risk and if CR 1 & 2 continue operation, and avoiding too much large baseload addition to the system centralized in one area. Given these potential benefits, PEF continues to negotiate with potential joint owners, including municipal electric utilities, electric co-operatives, and other IOU's.

Monitoring Project Cost-Effectiveness:

PEF will continue to review the Project's feasibility on an ongoing basis to determine whether it remains reasonable and prudent for the Company to continue with the project. Should any of the key risks materialize to a degree considered to be significant by the Company, and/or new risks or information come to light that, when evaluated against the benefits that the nuclear project offers, suggests a different course of action in the Company's deliberate, business judgment, a decision can be made to discontinue the project. Contracts and purchase orders will be developed to the extent reasonably possible with appropriate cancellation clauses and/or other exit strategies to support a decision, if made at some point in the future, to discontinue the project.

Section 3 - Key Risk Analysis

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3.1 Market Risk

Price Risk:

A key risk factor in the ultimate decision to construct a new nuclear plant is the final cost to build the plant and the relative economics and viability of other generating and non-generating resource alternatives. The economics of generation resource selection are driven by the costs of key commodity prices (gas, coal and uranium), known and emerging costs for environmental compliance, emergence of new conservation and renewable technologies and resources and the feasibility and viability of those technologies and resources, and the availability of production tax credits for nuclear generation. A key driver which is common to all generating resource technologies (on a relative basis) is the cost of fabrication and construction materials and labor in the future. The sensitivity analysis in the Economic Analysis section provides more information on how these key price risks affect the economics of nuclear versus other generation supply alternatives. Hardware, engineering and construction duration will impart higher levels of price risk until Design Finalization is completed which is projected to be phased in over the next two years (2009). The NGG Project Team will finalize an exit strategy for long lead equipment if a decision is made, at some point in the future, to discontinue construction of the nuclear plant. The team will also develop a strategy to monitor key indices to track prices for critical resources such as concrete, steel, land, and labor cost and availability.

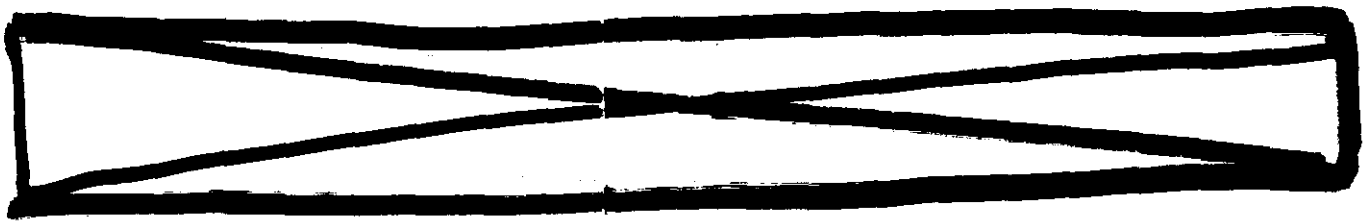
Interest Rate Risk:

Because the project will span nearly a decade, the Company is susceptible to an increase in interest rates, which could increase the project's overall cost. PEF and our Treasury Department will take reasonable steps to mitigate these risks to the extent possible. In addition, under the FPSC's recently approved rule on nuclear cost recovery, PEF will seek to collect AFUDC for the project on an annual basis. Interest rate risk will be analyzed again as a part of the business case requesting construction funding.

Hedges:

Before embarking on the construction program, PEF will determine if hedging of any key commodities that drive the cost of the project, including uranium, would be prudent and reasonably available. The first phase of project work includes the development of an overall strategy for hedging key commodities, which will be reviewed by the Treasury, Risk & Transaction MBR Subcommittee, and the PEF LINC. One strategy to hedge pricing has been approved. A Letter of Intent dated March 28, 2008 authorized supply chain, Quality Assurance, project management, and engineering services as necessary to negotiate and establish manufacturing agreements for a limited amount of equipment associated with the AP1000 reactor power islands. [redacted]

REDACTED



3.2 Credit Risk (Summarization of Credit Review)

Non-Performance:

The majority of the requested funds are for WEC and Shaw to provide services to PEF to design and construct a two unit WEC AP 1000 nuclear power generating station at a site selected in Levy County. The scope includes items identified in Section 1.1 of the BAP. All contracts will have provisions for, among other things, termination and suspension for non-performance.

Default:

In the case of non-performance termination or default, PEF would re-evaluate the cost-effectiveness of continuing with the project with, for example, another engineering and construction firm, undertaking the work.

3.3 Business Risk

Economy:

A significant economic downturn or regulatory changes in Florida could result in a deferral of the need to build new generation. System Planning will continue to monitor and analyze PEF's resource portfolio needs based on ongoing estimates of load growth and usage patterns as well as the state of development and availability of alternative generating and non-generating technologies. However, proceeding at this time with site engineering, supply chain and procurement activities is essential to provide PEF with the flexibility to continue to develop the option to build a nuclear plant when it is needed.

Weather:

Inclement weather could impact construction. PEF is experienced with large construction projects in Florida and will effectively manage project construction activities as it has in the past.

Environment:

Additional environmental regulations are most likely to impact current and future fossil based generation in an unfavorable way, and therefore improve the relative economics of nuclear versus gas or coal. See the discussion of the carbon emissions cost sensitivity in the Economic Analysis Details.

Other:

In addition to the business risks listed above, the following risks also apply, and must be monitored and managed to the extent possible as part of this project, and which could warrant terminating the project:

- Disallowance of costs by the Florida Public Service Commission (PSC)
- Federal actions regarding the ultimate disposal of used nuclear fuel
- Ability to timely obtain all necessary permits, including land use comprehensive plan amendments and local zoning variances
- Ability to obtain financing on favorable terms
- Ability to site and construct necessary associated transmission facilities in a timely and cost-effective manner
- Delays associated with any project litigation, license or other conditions imposed by the NRC or other regulatory agencies that adversely impact the project
- Supply chain congestion for large forgings with a single major supplier
- Equipment and wall type module fabrication off-site in advance of the start of safety-related construction
- Shortfall in NuStart / DOE funding for Design Finalization activities
- ITAAC Process --- "Operating plant" turnover with ITAAC completion results requires an early need for operators and maintenance craft
- Shortage of trained and skilled craftsmen in the construction workforce.
- Significant commodity price increases.
- Significant operational problems at existing nuclear facilities, which have the potential to impact public support for new nuclear power projects.
- Changes in state and federal executive administrations

3.4 Operational Risk

Reliability - The modeled results assume that the units perform at expected availability factors.

3.5 Regulatory Risks

Regulatory risks exist in any project of this magnitude. Some of the significant risks include:

- Increase in NRC Fees. Part 170 fees are those for licensee-specific services such as license renewal, license amendments, new plants, and force-on-force exercises. Based on analysis of actual 2006 rates and 2007 rates, the hourly rate for part 170 services for 2007 has increased approximately 18%.

- Potential delays resulting from litigation in the NRC COL process, the FPSC Need Determination proceeding, the DEP Site Certification process and Local Comprehensive Plan Amendment proceedings.

- Delays in obtaining necessary permits and right-of-way acquisition for the associated transmission facilities.

- Potential challenges or delays in development and implementation of the new cost recovery process for nuclear generation projects with the FPSC.

Section 4 - Key Assumptions

Item	Assumption	Owner
WACC	PEF – 8.1%	Treasury
Tax Rates	PEF – 38.58%	Treasury
Capital and Operating Costs Estimates for the Levy County Plant	See Economic Analysis Section, and Appendix A	New Nuclear Plant Development Section
Costs Estimates for New Gas Fired Generation Technology Options	See Economic Analysis Section, and Appendix A	Plant Construction Department
Operating Costs Assumed	See Economic Analysis Section, and Appendix A	Plant Construction Department
Nuclear Fuel Projections	See Economic Analysis Section, and Appendix A	Nuclear Fuel Management
Fossil Fuel and Additive Cost Projections	See Economic Analysis Section, and Appendix A	Regulated Fuels
Environmental Compliance Cost Projections	See Economic Analysis Section, and Appendix A	Regulated Fuels for SO2, NOx, and Hg Strategic Planning and External Relations for CO2
Economic Analysis Horizon	60 Years.	System Planning

Section 5 - Project Alternatives Analysis

5.1 Alternatives Considered and Basis of Selection

The economic assessment of generation alternatives being considered was performed using an economic scenario analysis model named "Strategist®".

To establish a detailed baseline in Strategist®, PEF incorporates its specific fuel forecasts, demand and energy forecasts (including effects of conservation and load management), emissions allowance cost forecasts, and corporate capital cost assumptions into the model. PEF also provides the model with estimates of capital costs, spending curves, fixed and variable O&M, and generation capacity and performance characteristics for each of the resource additions being considered. Within the model, PEF's existing generation resources are incorporated to ensure an accurate economic portrayal of portfolio performance over time. From the operations simulation and optimizations performed, revenue requirements forecast is developed for each portfolio under consideration. These results are then compared to establish relative economic performance and general cost-effectiveness for each scenario.

The approach to the analysis and a summary of the results of the analysis are presented in the Need Determination Study which is attached as Appendix B to this document. In addition, the following key summary points illustrate how System Planning used Strategist® to create the specific optimal alternative portfolios in this study:

- In this analysis, the generation resource mix was established to be the same in all cases up through the 2012 timeframe based on the resource mix in the Company's optimum planning base case. These assumptions include the completion of the Bartow Repowering Project and the CR 3 Uprate Projects, in addition to other plant and system enhancements.

- With the PEF planning baseline through 2012, Strategist® was employed to develop, assess and compare viable resource portfolio options to meet planning reserves from 2008 through 2066, the end of the Study Period. PEF's planning reserve obligation is to meet a 20% reserve margin for the firm seasonal peak loads projected across the forecast horizon.

- The Strategist® analysis portfolio was performed over a 60 year horizon to capture the long term effects of the large nuclear generating plants operating over the majority of their projected operating life.

- In order to construct the resource portfolios for evaluation, Strategist® was used to develop optimized resource plans supporting Full Ownership of Levy 1&2, 80% Ownership of Levy 1&2 and an All Gas Reference Case. These resource plans are summarized in Appendix C.

The All Gas (Reference) Plan:

The All Gas Reference Plan was developed and has been used as a reference point for analysis in all of the evaluations to represent a scenario where solid fueled baseload plants (e.g. nuclear and coal) are not viable generation alternatives. Gas fired generation presents several underlying issues which detract from its desirability for satisfying future baseload generation needs, including, but not limited to:

- Gas fired combined cycle plants typically run most economically in an intermediate range due to the relative price of natural gas versus other fuels such as coal and nuclear. If, over the course of time, baseload energy is not introduced into the generating fleet, the natural gas fired plants are pressed more and more into baseload service, putting more demand on the natural gas supply infrastructure in Florida and creating even greater potential reliability issues if supplies are curtailed or interrupted.

- It is clear, based on most projections of generating resource additions in Florida, that natural gas fueled intermediate and peaking units are still going to be built to meet ever-increasing needs. This is demonstrated in PEF's resource plans for additions before baseload additions being proposed and in the plans of other Florida utilities.

- Prudent planning dictates an optimum blend of baseload, intermediate, peaking and DSM resources to most effectively meet the Company's and the State's needs. Further, as has been echoed in state and federal proceedings, it is essential that steps be taken to address energy supply and economic security through fuel diversity to present the widest range of secure supply alternatives and to help mitigate volatility in energy prices. It is also essential that the diverse new supplies of energy be developed to encompass the environmental needs and concerns of society that are rapidly evolving.

- Over time, the natural gas supplies in Florida are going to continue to tighten, causing more pressure on both the commodity and transportation costs and logistics. While potential relief is projected through the addition of multiple proposed LNG terminal and distribution locations, over time this will present another significant and growing opportunity for dependency on foreign suppliers and fuel market dynamics.

- These issues, and others, are discussed in more detail in the Need Determination Study, attached as Appendix B to this document.

Note on Coal Plants:

It should be noted that during the course of System Planning's development of updated alternatives and economic analysis, the FPSC denied FP&L's Need Petition for the Glades Coal Plant, which was a proposed 1,960 MW pulverized coal plant with ultra-super critical boilers and state of the art emission controls for NO_X, SO_2, mercury and particulates.

The consortium pursuing the 800 MW pulverized coal plant in Taylor County withdrew their need petition in light of these developments in the Florida approval process. Tampa Electrtc submitted a Need Petition for their proposed Polk 6 IGCC unit on 7/20/07, subsequently withdrew their petition on 10/4/07, and have since embarked on an RFP for natural gas fired generation. Thus, although "Coal" has been addressed in previous PEF comparative studies, it has not been addressed in this study because it is unlikely that PEF could license a new coal plant in Florida until further certainty develops with regard to options to mitigate climate change concerns with coal.

Transmission Cost Attributes:

Each of the generation alternatives studied would have a significant impact on the electrical transmission grid. Fully developed, cost effective baseload generation sites for large baseload plants or power parks for several smaller intermediate plants like the Hines Energy Complex site, require significant parcels of land, substantial buffers, often rail, truck and potentially barge access, and significant water requirements. As a result of these substantial requirements, there are very limited site locations in Florida that would properly support operating plant sites of this magnitude and these sites tend to be in remote, rural areas, like PEF's proposed Levy County site. The cost of transmission supporting the two units at Levy County was attributed to those plants in the study.

The cost of electrical transmission facilities for the natural gas generation alternatives was modeled with a projected range of cost of $100 to 200 Million for combined cycle plants and $25 to $40 Million for simple cycle peaking units, depending on the unit position in the construction cycle. These costs are represented as current year (2007) and would escalate appropriately over time. Over a long modeling time horizon like that used in this analysis, it is not possible to individually assess the transmission cost impacts for each of the potential unit additions. In the future, as each generation unit addition is assessed prior to construction commitment, these estimates will be refined. Since substantial new natural gas transmission facilities will also be required to support the projected needs in Florida, additional fixed gas transportation cost is included in the projected fixed O&M estimates for each of the combined cycle units.

Key Modeling Assumptions:

Appendix A to this report includes tables and charts listing the key assumptions used in the economic analysis. These include the capital, operating cost and performance projections for all generation options; transmission costs estimates, forecasted fuel prices and forecasts for potential costs of greenhouse gas emissions (primarily CO2). The detailed cost, schedule and performance estimates for new nuclear generation were provided to System Planning by the Nuclear Plant Section for the purpose of the economic evaluations performed. The cost, schedule and performance estimates for the natural gas based technology alternatives were developed by the Project Development Group in Power Operations, with assistance from System Planning and consulting support from Burns and McDonnell Engineering. The forecasts for fuel were provided by the Regulated Fuels and the forecasts for potential costs of CO2 were developed with the assistance of External Relations and Strategic Planning.

Other Key Assumptions:

- Assumptions related to Strategist® modeling – Emissions costs (SO_2, NO_X, ammonia, and limestone, and CO2) were included in dispatch decisions.

- Assumptions related to Air Emissions Compliance – Analysis was based on the environmental compliance strategy current at the time of the study.

- The cost of the second nuclear unit is projected to be substantially lower on a $/kW basis than the first unit if the second unit enters commercial service within 12 to 18 months of the first unit. This is based on projected cost efficiencies for concurrent manufacturing of large key components and a continuous mobilization for on-site construction of both units. If the gap between units increased beyond 12 months to 18 months, it is believed that construction demobilization would be required which, given the projected demand for nuclear construction specialties, could cause significant inefficiencies and cost increases.

- Joint ownership scenarios were evaluated based on PEF ownership of 874 MW (roughly 80%) of the full 1,092 MW output of each unit. This initial value was selected for inquiry and guidance in the analysis and does not represent a specific goal or planned objective. Further assessments will be performed to support discussions with potential joint owners in the future.

- Transmission costs for potential joint owners were assumed to be to be covered under current and future FERC OAT tariff rates. As such, the cost of transmission was fully attributed to the PEF ownership percentage of the plant in each scenario studied. As need dictates, this may be studied further under different assumptions in the future.
- In this long range Strategist® modeling study, load growth was projected through the first 30 years of the study period. Over the course of the full 60 year study period, operating expenses continue to follow their respective forecast assumptions and capacity is added to meet the specified reserve margin requirements
- Gas prices for generic CT/CC including zone basis differentials. Fixed gas transportation for generic CC's and CT's is included in Strategist® separately (Strategist uses an input for $1.25/mmBtu for FGT fixed transportation escalating with inflation.

5.2 Consequences of Non- Authorization and Deferral

If this project is not authorized, the nuclear generation option will not be available to PEF in the 2016 timeframe. In addition, given the number of companies that have announced plans to construct nuclear plants in the 2016 to 2020 horizon and the limited production capabilities of large component manufacturers, it is likely that the nuclear option would be unavailable until early in the 2020 decade, at the earliest. Instead, the company would be limited to pursue coal (pulverized or IGCC) and/or natural gas as the only options for large scale baseload generation. Based on the Clean Air Interstate Rule (CAIR) and Clean Air Mercury Rule (CAMR) changes in SO_x and NO_x limits in the 2015 timeframe, the company's options would be limited. Potential future green house gas (GHG) emissions regulations would likely limit or even eliminate future baseload alternatives if nuclear is not available as an option. Uncertainty surrounding all of these issues led to the Florida Public Service Commission's (FPSC) June 5, 2007 decision to deny Florida Power & Light's request for approval of their 1,960 MW Glades supercritical pulverized coal plant, effectively removing pulverized coal (supercritical and ultra supercritical) as a viable baseload option in Florida in this timeframe. The same concerns and uncertainties prompted Tampa Electric and the utility consortium that was developing the Taylor County coal plant to withdraw their need petition from the FPSC in early 2007.

Additionally, under the Energy Policy Act of 2005 (EPACT), incentives for new nuclear plants – such as DOE Loan Guarantees, DOE Standby Support (a type of risk insurance), and IRS Production Tax Credits – will only be available to PEF if PEF's nuclear generation is in the first wave of new nuclear plants in the industry. Therefore, these benefits will not be available if the Company does not authorize the project. Key milestones to be eligible for EPACT Tax Credits include:

- Submit a letter of intent to the NRC before 1/1/2007 (complete)
- COLA for a facility is filed with the NRC on or before the later of 12/31/2008
- Construction on the facility begins before 1/1/2014
- Plant In-Service by 1/1/2021 to be eligible for tax credits. Allocation is $0.018/kWh for the first eight years of facilities operation. The credit is limited to the first 6000 MW's of nuclear generation.

There are also key incentives related to loan guarantees for innovative energy technologies and the Price Anderson Act is extended 20 years for nuclear liability protection.

Section 6 - Economic Analysis

6.1 Detailed Discussion of Results

The economic analysis that supports this recommendation was completed by the System Planning and Operations Department in February 2008 in support of PEF's Petition for the Determination of Need for Levy Units 1 and 2. The details of the results of this analysis are presented in Appendix A entitled the "Levy Nuclear Need Economic Analysis Update Report (3/8/08) and in the "Need Determination Study" attached as Appendix B.

A few key notes and observations on the analysis performed:

The detailed system simulations were performed with Strategist® over a 60 year study period from present day to a point roughly 50 years beyond the new nuclear generation additions in 2016 and 2017. As a result, the study period extended through 2066.

The Company considers both financial and non-financial factors and incorporates information gathered from the both the base Strategist® runs and the sensitivity analyses performed for guidance.

Fuel prices are escalated through the entire study period.

The CPVRR analysis assumed that the recovery of the investment for each of the various baseload generation resources would begin once the unit is placed in service. With early cost recovery for nuclear generation the pattern of the revenue requirements would be different; however the present value of the revenue requirements being addressed in the alternatives would be roughly the same.

6.2 Scenario Analysis

The scenario analysis results are included in the referenced appendecies, as noted.

Favorable Impacts:

Factors favorable to nuclear economics include:

- Lower (relative) costs for nuclear construction
- Award of production tax credits
- Significant climate change legislation - addition of carbon tax or other requirement that increases the cost of coal, IGCC and gas.
- Increased natural gas prices

- Lower costs for transmission for nuclear generation would improve the economics of all nuclear alternatives versus the All Gas Reference Plan.

Unfavorable Impacts:

Factors unfavorable to nuclear economics include:

- Increased (relative) costs for nuclear construction
- Limited climate change legislation - No carbon tax/ low carbon tax
- Lower natural gas prices
- Higher costs for transmission for baseload units would negatively impact the economics of all nuclear alternatives versus the All Gas Reference Plan.

6.3 Summary of Financial Indicators

The tables below summarizes the relative economics of each of the resource plan scenarios versus the All Gas Reference Plan. The results are presented and discussed in detail in the Updated Results Report (Appendix A) and the Need Determination Study (Appendix B).

Table 6.3.1

Table 6.3-1 Economic Results for 100% Ownership

Levy 1&2 Nuclear Economic Benefits Assessment
Mid Reference Fuel and Fuel Sensitivities - Full Ownership
Comparison of Nuclear Expansion vs All Gas Reference Case
Base Year Cumulative PV Benefits ($2007 in Millions)

Base Capital Reference Case	*Low Fuel Reference*	*Mid Fuel Reference*	*High Fuel Reference*
No CO_2	($6,416)	($2,888)	$2,635
Bingaman Specter CO_2 Case	($3,834)	($343)	$5,212
EPA No CCS CO_2 Case	($2,684)	$793	$6,318
MIT Mid Range CO_2 Case	$85	$3,614	$9,077
Lieberman Warner CO_2 Case	$2,930	$6,380	$11,892

Table 6.3-2 Economic Results for 80% Ownership

Levy 1&2 Nuclear Economic Benefits Assessment
Mid Reference Fuel and Fuel Sensitivities - 80% Ownership
Comparison of Nuclear Expansion vs All Gas Reference Case
Base Year Cumulative PV Benefits ($2007 in Millions)

Base Capital Reference Case	*Low Fuel Reference*	*Mid Fuel Reference*	*High Fuel Reference*
No CO_2	($5,566)	($2,725)	$1,732
Bingaman Specter CO_2 Case	($3,530)	($733)	$3,756
EPA No CCS CO_2 Case	($2,619)	$171	$4,631
MIT Mid Range CO_2 Case	($448)	$2,403	$6,790
Lieberman Warner CO_2 Case	$1,799	$4,594	$9,018

6.4 Modeling Tool Used/ Description of Changes/ Approval

1) Strategist® was used to evaluate the CPVRR for each Scenario.

2) System Planning Excel based models for reporting and additional sensitivities on the CPVRR calculations.

6.5 Sensitivity Analysis

Sensitivity results are Sensitivity results are presented and discussed in detail in the Updated Results Report (Appendix A) and the Need Determination Study (Appendix B). Sensitivities relating to fuel prices, CO2 emissions costs and capital cost were all addressed.

Production Tax Credit Sensitivity

The Energy Policy Act of 2005 included provisions for production tax credits for the first 6000 MW of new nuclear power plants to be built. These credits would be valued at $.018 per Kwh of output for the first eight years of operation and would be capped at $125 million annually for the pool of participants. These values were not included in the initial presentation of economic results, but are discussed in the attached study as additional potential benefits. (Appendix B).

6.6 Operational Analysis

Not Applicable

6.7 Regulatory Impact Analysis

PEF has an obligation to ensure that adequate electrical generation capacity is installed in a timely manner to meet customer demand while maintaining necessary reserve margins. Based upon current information, forecasts, and detailed system planning it appears that baseload capacity is needed in the 2016 – 2019 timeframe in the Florida service territory to meet the reliability and economic needs of the Company and its customers.

The various generation technologies evaluated to meet these needs have different total development timeline requirements with nuclear being the longest at roughly 10 years. Natural gas technologies including combined cycle and simple cycle units have the shortest development timelines. In addition to generating units lead times, the transmission design and construction timelines to support system additions can take as long or longer to complete than the plant site development and construction.

At this time, nuclear appears favorable when compared with other generation technology options, as already discussed. Various analytical models and industry information presented in this document support this conclusion. This is particularly supported by advances in the reactor technology design that simplify the plant (i.e., reduce the number of components) and by use of a modular construction approach to add additional certainty to the construction process.

In order to best serve its customers, PEF needs to invest capital funds to continue the nuclear licensing process, move forward with limited detailed engineering and design and initiate the procurement process for long lead materials, and continue pursuing the state and federal permitting and approvals required. These continued efforts will help ensure that development of new nuclear facilities at the Levy County Site will be viable to meet PEF's needs in the 2016 timeframe and beyond.

Update on FPSC Rule 25-6.0423 for Nuclear Cost Recovery

Historically, the long construction period, high cost, and long gap between nuclear construction expenditures and prudency determinations subjected utilities building nuclear plants to extraordinarily high risks. On April 8, 2007 FPSC Rule 25-6.0423 took effect to establish a new Regulatory framework through which costs associated with new Nuclear Power Plants will be recovered by regulated IOU's in Florida. The rule was amended effective February 3, 2008 to include IGCC plants. Listed below are several key aspects which, among others, allow PEF

to manage the risk associated with new nuclear plant construction to be more in-line with the risk level of current ongoing operations:

- Provision for annual determinations of prudence with regard to expenditures once the Determination of Need is granted. Once a cost has been deemed prudent it is not subject to further scrutiny (except in cases of fraud, perjury or intentional withholding of key information). This aspect is critical in reducing the risk associated with new nuclear plants to a level more comparable to the risk of ongoing operations.
- Provision for recovery of some capital and all carrying costs as construction is performed. This aspect increases cash flow, serves to attract lower financing, and reduces the long-term impact on customer rates.
- Provision allowing recovery of past expenditures and current obligations associated with the nuclear plant if for some reason the Utility elects not to complete the plant. These costs will be recovered over 5 years or the period, over which they were incurred, whichever is longer.
- Establishment of an Annual Regulatory Filing Timeline:
  - March 1 – True-Up Filing for previous years
  - April 30 – Annual Report w/ budgeted and actual costs as compared to the estimated in-service costs
  - May 1 – True-Up and Projection for Current Year
  - May 1 – Projected Costs for Subsequent Years
  - May 1 – Detailed Analysis of the long-term feasibility of completing the nuclear plant
  - October 1 – Hearing and determination of prudency and reasonableness

As the nuclear generation project continues forward, PEF will continue to monitor and will be obligated to demonstrate the prudence of pursuing nuclear generation as opposed to other viable options to meet the reliability and economic needs of the Company's customers. Progress Energy has also established a Regulatory Assurance group to assist with the oversight requirements of this ongoing review process to ensure that proper consideration and documentation is maintained. At each of the Company's future decision points, the Company will carefully consider any of the key risks that materialize to a degree considered significant by the Company, and/or any new risks or information that come to light which, when evaluated against the benefits the nuclear generation project offers, suggests a course of action to proceed or not proceed further with the project in the Company's deliberate, business judgment.

6.8 Market Analysis

Customer Analysis
NA

Competitor Analysis
NA

6.9 Contracting and Procurement Summary

Work is currently underway to negotiate the terms and scope of Engineering, Procurement and Construction (EPC) contract with WEC and Shaw for the project. The EPC contract will incorporate an exit strategy for long lead equipment if a decision is made, at some point in the future, to discontinue construction of the nuclear plant. The team will also develop a strategy to monitor key indices to track prices for critical resources such as concrete, steel, land, and labor cost and availability. As the final EPC contract is developed, risk will be assessed and managed through careful application of either fixed price or time and materials terms to each of the significant areas of contract scope. WEC and Shaw delivered an updated total project cost estimates to PEF in February 2008. A strategy will also be defined during the first phase of site specific project design to establish the most effective way to contract for the site specific work.

6.10 Non-Financial Considerations / Intangibles / Un-quantified Financial Considerations, Others

In addition to the results of the economic analysis, there are other relevant considerations in supporting this BAP Revision 2. As system requirements grow, fuel supply markets evolve and existing facilities age and require maintenance and enhancements, Progress Energy needs to take deliberate steps to maintain a diverse generation portfolio so it doesn't become too dependent on a particular generation fuel type or mode of transportation. If diversity is not maintained, customer rates can be unduly subjected to volatile changes as costs for a particular fuel type or fuel market segment change dramatically with market conditions. The State of Florida has considered the issues of fuel diversity and security at length, both in the Legislature and at the Public Service Commission. The Power Plant Siting Act and many aspects of the Commission rules on Need Petition review and cost recovery have been amended to reflect these changes and encourage development of diversity, and more specifically, nuclear generation.

Promulgation of the Clear Air interstate Rules (CAIR) and the Clean Air Mercury Rule (CAMR) added considerable limitations on both existing and potential new fossil generation resource in Florida. Substantial additional cost and complexity will be associated with potential new carbon emissions restrictions being considered to achieve significant reductions in greenhouse gas emissions. While these factors are very complex and difficult to precisely quantify, it remains clear that a nuclear generation option, which is not affected by CAIR, CAMR and/or GHG limits should remain a viable option.

The Energy Policy Act of 2005 provides specific financial incentives for development of advanced new nuclear plants that include loan guarantees, standby support (a type of risk insurance) and production tax credits. These incentives are expected to be only available for the 1st wave of new nuclear plants constructed in the US. While the financial values of these incentives are not the principle basis for choosing nuclear generation, they are nonetheless relevant in the final decision of new baseload generation deployment, and contribute favorably to a nuclear decision. While an attempt has been made to quantify only the potential production tax credit benefits, there are uncertainties relating to the number of nuclear projects that come to fruition within the proscribed timeframe and become eligible for these tax credits. The number of projects completed will affect the amount of credits each participant will ultimately be eligible for.

6.11 Integration and Project Performance Assessment Plan

6.11.1 Organizational Requirements and Integration Issues

This section details the roles and responsibilities of the New Nuclear Development Organization and the numerous supporting organizations that will provide institutional coordination and support for this project.

Organization	Roles, Responsibilities and Impacts
Nuclear Generation Group:	
New Nuclear Plant Development Organization	Primary responsible organization for siting and COL development / licensing activities, engineering activities, and to support procurement activities related to purchasing long lead equipment.
Nuclear Engineering & Services Department (NESD)	Engineering support for Fire Protection, PRA, Nuclear Fuels, and Procurement
Nuclear Projects & Construction Department	Primary responsible organization for constructing the plant site
Performance Evaluation Section and Regulatory Affairs Section (PERAS)	NRC Regulatory affairs and QA support
Nuclear Security	Nuclear specific security concerns, security plans, and design basis threat (DBT) support
HNP, RNP, BNP , and CR3 Departments	Support specialized areas technical reviews
Progress Energy Florida	
Energy Delivery	Community relations and public education support

Organization	Roles, Responsibilities and Impacts
Transmission Planning and Operations	Transmission system planning, System Integration, Design and Construction of System Additions, Regulatory Support for Siting Generation and Transmission, Continued Economic Analytical Support
Operations Business Services	Budget and Cost management support
Service Company:	
Accounting	Property Unit Accounting support, Regulatory Accounting Support
Tax	EPACT production tax credit regulatory support and financial analysis. Sales and Use Tax Analysis, Property Tax Analysis
Treasury & Risk Management	Financial analysis support
Corporate Services	Contracting, purchasing, including land acquisitions
Environmental Services	Siting and Environmental Report development support
Legal	Management of Regulatory Licensing and Certification Activities, Contract reviews
State Public Affairs & Economic Development	Regulatory support and community support
Human Resources	Recruiting support for new organization
IT&T	IT and telecom services for new organization
Communications	Communication support with employees, community and media.
Project Assurance	Project Assurance Plan (Prudency)
Audit Services	Process compliance
Levy Integrated Nuclear Committee (LINC)	Coordinate the planning and execution of LNP by ensuring effective integration of project management functions and decisions necessary to the success of the project. The committee will serve as the single point for management oversight of all phases of the project.

6.12 Wrap up Conclusions and Recommendations

It is recommended that this BAP Revision 2 be approved for the authorization of updated COLA funding requirements and for the items shown above that bridge additional known scope items identified through the end of 2008. An additional authorization request will be prepared upon completion of EPC negotiations and pursuant to the new IPP Process.

System Planning Results Update

Analysis Results - Basis for the Levy Need

- **Resource Planning Baseline**
  - 2008 Draft Demand and Energy Forecast
  - November '07 GFF Fuel Forecast
  - Current Baseline for Resource Plan to 2012
- **Fuel Diversity Impacts – Energy Mix**
- **Key Assumptions and Updates**
  - Feb '08 CapEx Updates for Nuclear
  - Feb '08 CapEx Update for Baseload Transmission
  - Dec '07 CapEx Updates for Fossil Resources
  - Decisions on Appropriate Financial Parameters
- **Strategist® Results 2/21/08**

Strategist® 31 Year Optimization Results

Optimized Resource Plans Selected for Economic Analysis

	Levy Need Analysis Nuclear Plan Full Ownership Case	Levy Need Analysis Nuclear Plan 80% Joint Ownership Case	Levy Need Analysis All Gas Reference Case
2007 to 2012	PEF Baseline Assumptions	PEF Baseline Assumptions	PEF Baseline Assumptions
2013	CC 4x1 1,159 MW (June '13) 141 MW Suwannee Steam Retirement (June	CC 4x1 1,159 MW (June '13) 141 MW Suwannee Steam Retirement (June	CC 4x1 1,159 MW (June '13) 141 MW Suwannee Steam Retirement (June
2014			
2015			
2016	100% Levy Unit 1 - 1,085 MW (June '16) 196 MW Peaker Retirements (June '16)	80% Levy Unit 1 - 1,085 MW (June '16) 196 MW Peaker Retirements (June '16)	Generic 2x1 CC Generic Simple Cycle CT 196 MW Peaker Retirements (June '16)
2017	100% Levy Unit 2 - 1,085 MW (June '17)	80% Levy Unit 2 - 868 MW (June '17)	Generic 2x1 CC
2018			
2019			
2020			Generic 2x1 CC
2021			
2022		Generic Simple Cycle CT	
2023		Generic Simple Cycle CT (2)	Generic 2x1 CC
2024	Generic Simple Cycle CT (2)	Generic Simple Cycle CT	
2025	Generic Simple Cycle CT	Generic 2x1 CC	Generic 2x1 CC
2026	Generic Simple Cycle CT (2)		
2027	Generic Simple Cycle CT	Generic 2x1 CC	Generic 2x1 CC
2028	Generic 2x1 CC		
2029		Generic Simple Cycle CT	Generic Simple Cycle CT
2030	Generic 2x1 CC	Generic 2x1 CC	Generic Simple Cycle CT
2031			Generic 2x1 CC
2032	Generic Simple Cycle CT (2)	Generic 2x1 CC	Generic Simple Cycle CT
2033	Generic 2x1 CC	Generic Simple Cycle CT	Generic 2x1 CC
2034	Generic 2x1 CC	Generic 2x1 CC	
2035		Generic Simple Cycle CT	Generic 2x1 CC
2036	Generic 2x1 CC	Generic 2x1 CC	Generic 2x1 CC
2037	Generic 2x1 CC	Generic 2x1 CC	Generic 2x1 CC

NOTES:

- **20% Reserve Margin with Draft 2008 TYSP Demand and Energy Forecast**
- **All Non-Renewable Contracts Expire**
- **Plans Selected from 31 Yr Optimization for Expansion Into 60 Year Plans**

Current Resource Plan Parameters

Resource Baseline – Resources and Reserves

GENERATION ADDITIONS	Summer Full Ownership Case 2013	2014	2015	2016	2017	2018	2019	2020	2021
Unit Retirements/Derates	(129)			(196)					
Scenario Combined Cycle	1,159								
Scenario Nuclear									
Reserve Margin	28.8%	25.4%	23.0%	15.4%	13.4%	11.5%	9.1%	7.9%	6.2%
MW Above/Below 20%	912	571	321	(509)	(736)	(958)	(1,192)	(1,423)	(1,641)
Unit Retirements/Derates	(129)			(196)					
Scenario Combined Cycle	1,159								
Scenario Nuclear				1,092					
Reserve Margin	28.8%	25.4%	23.0%	25.3%	23.2%	21.2%	19.1%	17.2%	15.4%
MW Above/Below 20%	912	571	321	583	356	134	(100)	(331)	(549)
Unit Retirements/Derates	(129)			(196)					
Scenario Combined Cycle	1,159								
Scenario Nuclear				1,092	1,092				
Reserve Margin	28.8%	25.4%	23.0%	25.3%	33.0%	30.8%	28.6%	26.5%	24.6%
MW Above/Below 20%	912	571	321	583	1,448	1,226	992	761	543
Unit Retirements/Derates						(146)			
Scenario Combined Cycle						1,279			
Scenario Nuclear									
Reserve Margin	22.5%	29.7%	27.1%	21.0%	26.0%	23.6%	21.4%	19.2%	17.1%
MW Above/Below 20%	286	1,096	819	123	720	444	172	(104)	(375)
Unit Retirements/Derates						(146)			
Scenario Combined Cycle						1,279			
Scenario Nuclear									
Reserve Margin	22.5%	29.7%	27.1%	21.0%	26.0%	32.8%	30.4%	28.0%	25.8%
MW Above/Below 20%	286	1,096	819	123	720	1,564	1,292	1,016	745

	Winter Full Ownership Case 16/17	17/18	18/19	19/20	20/21
Unit Retirements/Derates	(251)				
Scenario Combined Cycle					
Scenario Nuclear					
Reserve Margin	16.7%	14.5%	12.4%	10.4%	8.4%
MW Above/Below 20%	(380)	(676)	(948)	(1,224)	(1,495)
Unit Retirements/Derates	(251)				
Scenario Combined Cycle	1,120				
Scenario Nuclear					
Reserve Margin	26.0%	23.6%	21.4%	19.2%	17.1%
MW Above/Below 20%	720	444	172	(104)	(375)
Unit Retirements/Derates	(251)				
Scenario Combined Cycle	1,120	1,120			
Scenario Nuclear					
Reserve Margin	26.0%	32.8%	30.4%	28.0%	25.8%
MW Above/Below 20%	720	1,564	1,292	1,016	745

- ***20% Reserve Margin***
- ***2008 TYSP Demand and Energy Forecast***
- ***All Non-Renewable Contracts Expire***
- ***2013 4x1 CC***
- ***2016 Summer Need 509 MW***

Strategist® CapEx for Nuclear Resources

Cost Estimate Updates Used in the Modeling

REDACTED

Capital Cost Estimate for Strategist Modeling

Levy County Units 1 and 2 ($000's)	Unit 1	Unit 2	Current Total
Land	[redacted]	[redacted]	[redacted]
COLA Development and Approval			
AP1000 Overnight Costs			
Initial Core Fuel			
Owner's Cost - PGN Construction Mgmt			
Owner's Cost - Site Perm Structures/Facilities			
Owner's Costs - Permanent Staffing & Training			
Owner's Costs - Permits, Fees, Insurance, Taxes, Misc.			
Contingencies (Owner's Costs)			
Unit Overnight Total Cost	5,617,297	3,686,282	9,303,579
Project Escalation @ 3%	883,980	655,388	1,539,367
Escalated Construction Cost (Before AFUDC)	6,501,276	4,341,670	10,842,946
Estimated Project AFUDC	1,814,733	1,432,029	3,246,762
LNP Unit Total	**8,316,010**	**5,773,698**	**14,089,708**
Winter Capacity Rating (MW)	1,120	1,120	2,240
Summer Capacity Rating (MW)	1,092	1,092	2,184
Estimated Overnight Cost - Winter Basis ($/kW)	5,015	3,291	4,153
Estimated Overnight Cost - *Summer Basis* ($/kW)	5,144	3,376	4,260
Estimated In-Service Cost - Winter Basis ($/kW)	7,425	5,155	6,290
Estimated In-Service Cost - Summer Basis ($/kW)	7,615	5,287	6,451

Strategist® CapEx for Baseload Transmission

Cost Estimate Updates Used in the Modeling

2/1/08 Transmission Project Cost Update ...

Baseload Transmission High Level Project Estimate (Escalated $In Service Millions)

	2008	2009	2010	2011	2012	2013	2014	2015	2/1/2008
Site Selection	14	-	-	-	-	-	-	-	14
Pre-construction	33	28	102	28	52	24	4	-	270
Construction	5	86	177	248	360	268	180	25	1,351
Land	31	256	263	126	89	20	13	13	812
Project Total	83	370	542	403	501	313	197	38	2,447

Other Key Transmission Assumptions ...

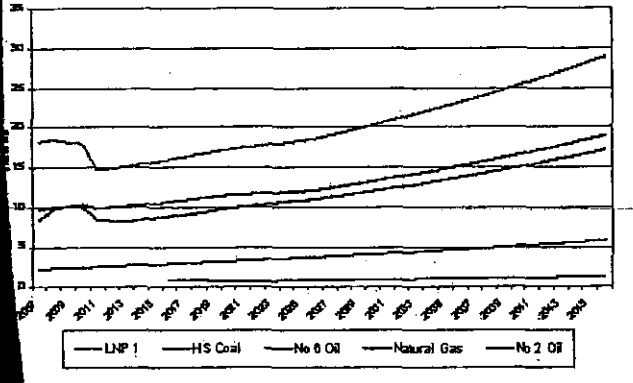
- *Land Cost Not Depreciated (Approx. $800 M In-Service Cost)*
- *Assumed 100% of Transmission Cost for Full and Joint Ownership*
- *Adjusted the Property Tax Insurance Rates for Transmission Assets*

Strategist® Economic Assessment

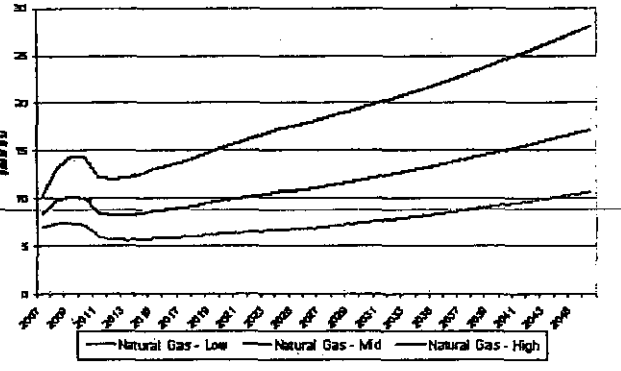
Key assumptions Used in the Modeling

Fuel Forecasts ... Based on the November 2007 GFF ...

Figure xx LNP Need Fuel Forecast
Reference Mid Level Forecast



LNP Need Fuel Forecast
Fuel Forecast Sensitivities for Natural Gas ($/Nominal)



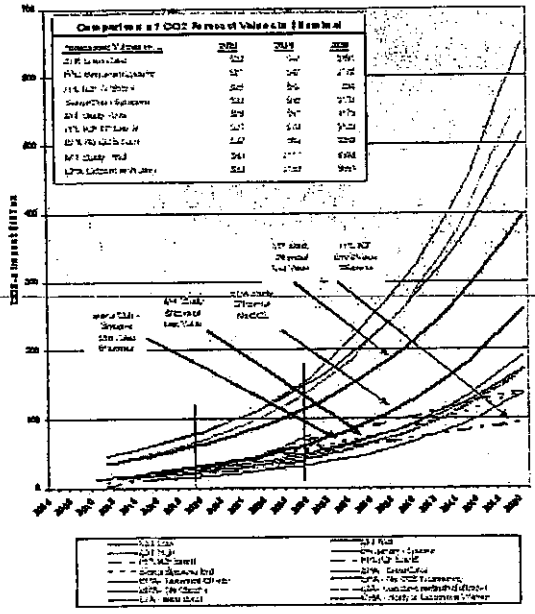
Strategist® Analysis Results

Results Overview and Charts

CO_2 is a Key Driver In the Nuclear Analysis ...

CO2-e Forecasts Provided from Public Sources
Presented in $/Ton Equivalent ($Nominal)

Progress Energy Florida, Inc.
Docket No. _____
Witness: Kennedy
Exhibit No. _____ (JMK-3)
Page 1 of 3



CO2-e Forecasts Provided from Public Sources
Presented in $/Ton Equivalent ($Nominal)

Progress Energy Florida, Inc.
Docket No. _____
Witness: Kennedy
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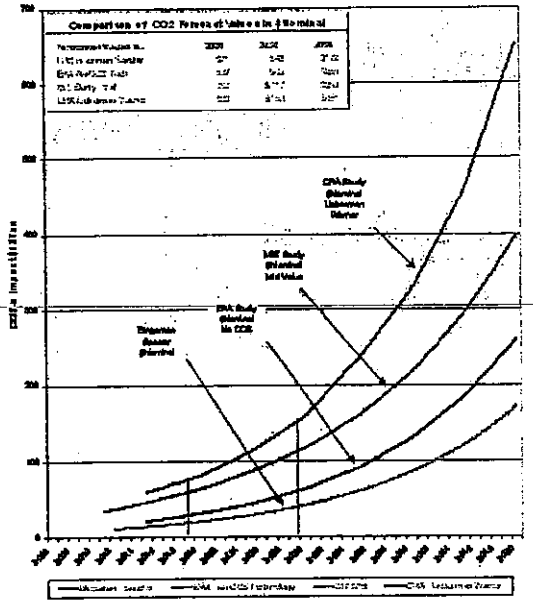
Page 3 of 3

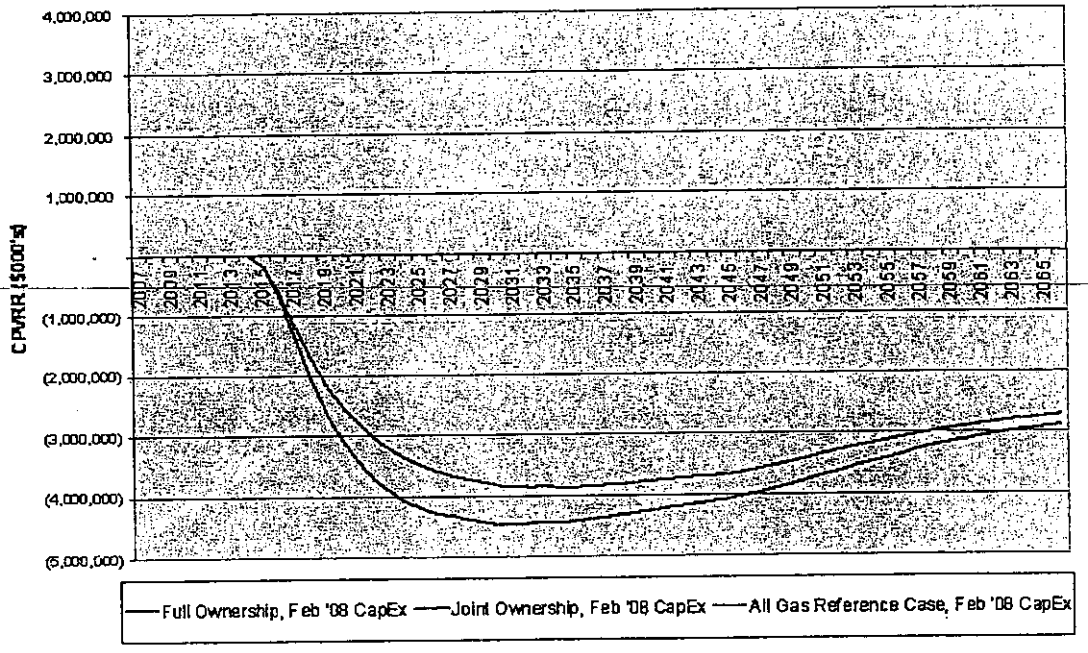


Strategist® Analysis Results

Results Overview and Charts

Levy Economic Analysis Revised with CapEx Updates ...

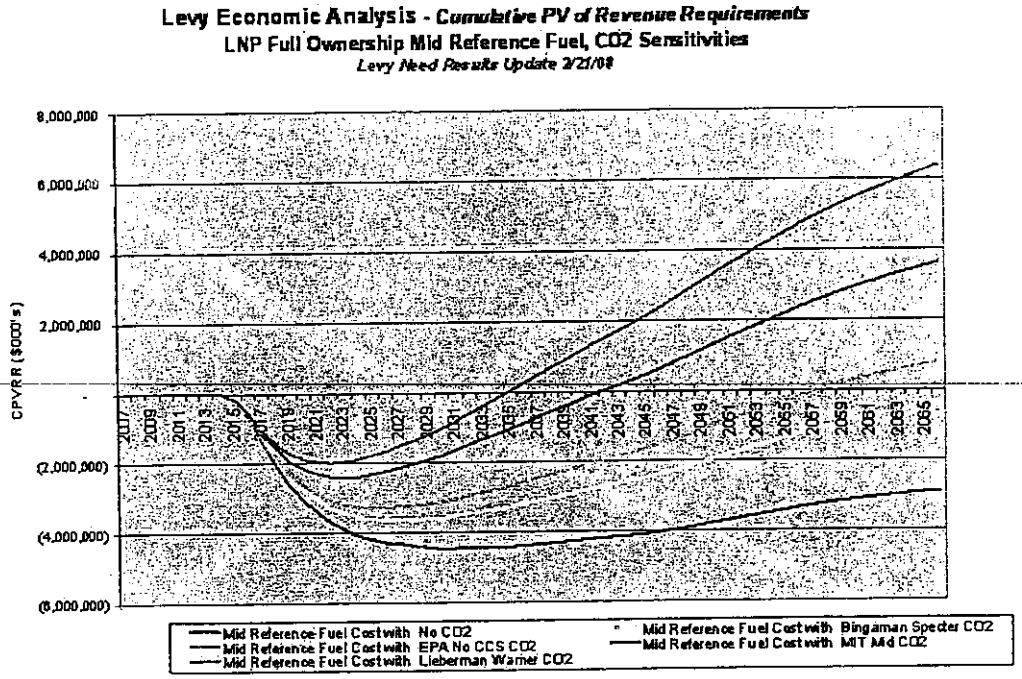
- ***February '08 Westinghouse/Shaw Plant Update***
- ***February '08 Baseload Transmission Cost Update and Joint Ownership Assumption***
- ***Initial Assessment– This Chart based on Mid Reference Fuel, No CO_2 Impact***



Strategist® Analysis Results

Results Overview and Charts

Full Ownership Mid Reference Fuel with CO_2 Sensitivities ...



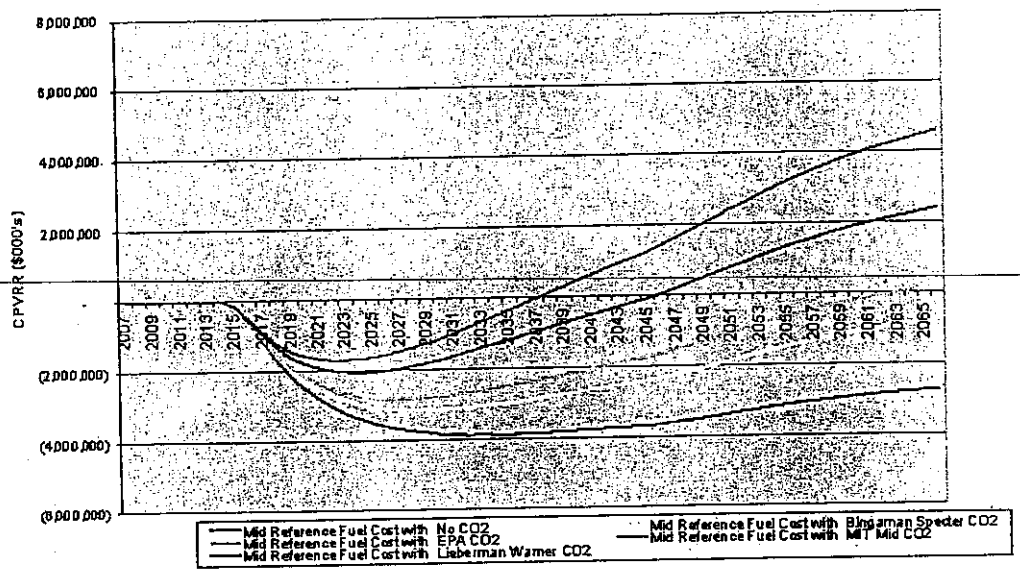
Note: 2066 CPVRR values are used in the following tables ...

Strategist® Analysis Results

Results Overview and Charts

80% Joint Ownership Mid Reference Fuel with CO_2 Sensitivities ...

Levy Economic Analysis - *Cumulative PV of Revenue Requirements*
LNP80% Joint Ownership Mid Reference Fuel, CO2 Sensitivities
Levy Need Results Update 2/21/08



Note: 2066 CPVRR values are used in the following tables ...

Strategist® Analysis Results

Results Overview and Charts

Full Ownership - Full Sensitivities Summary ...

Levy 1&2 Nuclear Economic Benefits Assessment
Mid Reference Fuel and Fuel Sensitivities - Full Ownership
Comparison of Nuclear Expansion vs All Gas Reference Case
Base Year Cumulative PV Benefits ($2007 in Millions)

Base Capital Reference Case	Low Fuel Reference	Mid Fuel Reference	High Fuel Reference
No CO_2	($6,416)	($2,888)	$2,635
Bingaman Specter CO_2 Case	($3,834)	($343)	$5,212
EPA No CCS CO_2 Case	($2,684)	$793	$6,318
MIT Mid Range CO_2 Case	$85	$3,614	$9,077
Lieberman Warner CO_2 Case	$2,930	$6,380	$11,892

Capital Sensitivities Reference Case	LNP CapEx (5%)	Mid Fuel Reference	LNP CapEx 5%	LNP CapEx 15%	LNP CapEx 25%
No CO_2	($2,365)	($2,888)	($3,400)	($4,434)	($5,469)
Bingaman Specter CO_2 Case	$109	($343)	($926)	($1,960)	($2,995)
EPA No CCS CO_2 Case	$1,207	$793	$172	($862)	($1,897)
MIT Mid Range CO_2 Case	$3,975	$3,614	$2,940	$1,906	$871
Lieberman Warner CO_2 Case	$6,674	$6,380	$5,640	$4,605	$3,571

Strategist® Analysis Results

Results Overview and Charts

80% Joint Ownership Full Sensitivities Summary...

Levy 1&2 Nuclear Economic Benefits Assessment
Mid Reference Fuel and Fuel Sensitivities - 80% Ownership
Comparison of Nuclear Expansion vs All Gas Reference Case
Base Year Cumulative PV Benefits ($2007 in Millions)

Base Capital Reference Case	Low Fuel Reference	Mid Fuel Reference	High Fuel Reference
No CO_2	($5,566)	($2,725)	$1,732
Bingaman Specter CO_2 Case	($3,530)	($733)	$3,756
EPA No CCS CO_2 Case	($2,619)	$171	$4,631
MIT Mid Range CO_2 Case	($448)	$2,403	$6,790
Lieberman Warner CO_2 Case	$1,799	$4,594	$9,018

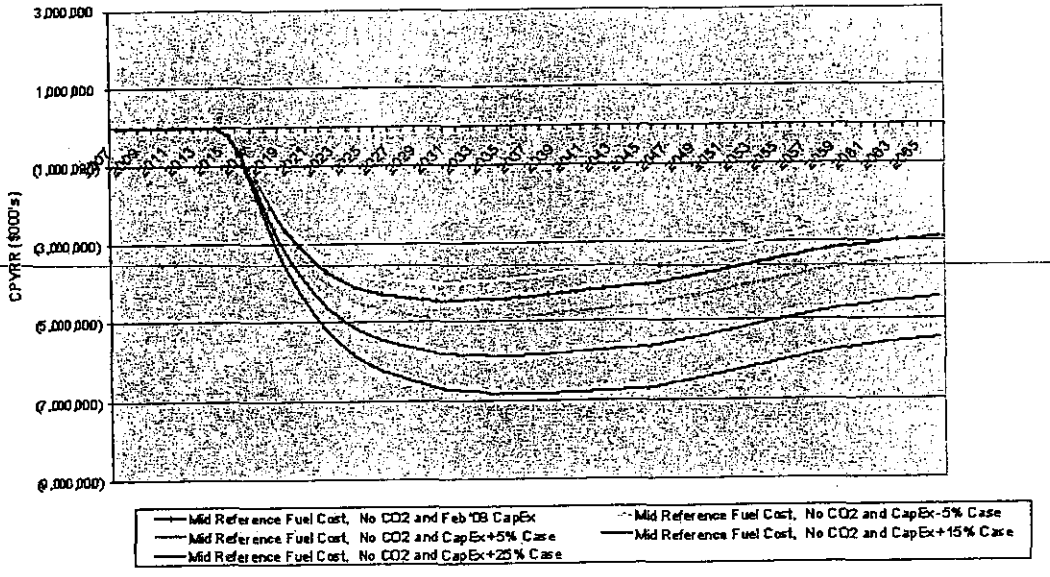
Capital Sensitivities Reference Case	LNP CapEx (5%)	Mid Fuel Reference	LNP CapEx 5%	LNP CapEx 15%	LNP CapEx 25%
No CO_2	($2,284)	($2,725)	($3,154)	($4,023)	($4,892)
Bingaman Specter CO_2 Case	($364)	($733)	($1,234)	($2,103)	($2,972)
EPA No CCS CO_2 Case	$502	$171	($367)	($1,236)	($2,106)
MIT Mid Range CO_2 Case	$2,581	$2,403	$1,812	$942	$73
Lieberman Warner CO_2 Case	$4,805	$4,594	$3,936	$3,067	$2,197

Strategist® Analysis Results

Results Overview and Charts

Full Ownership CapEx Sensitivity Based on No CO_2 Case ...

Levy Economic Analysis - *Cumulative PV of Revenue Requirements*
LNP Full Ownership - *Mid Reference Fuel, NO CO2, CapEx Sensitivities*
Levy Need Results Update 2/21/08

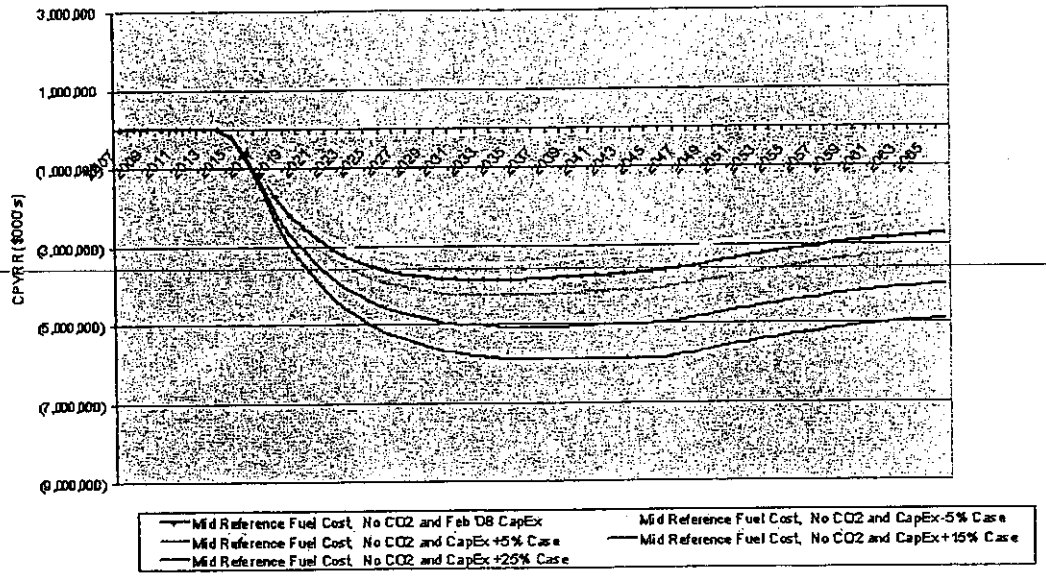


Strategist® Analysis Results

Results Overview and Charts

80% Joint Ownership CapEx Sensitivity Based on No CO_2 Case ...

Levy Economic Analysis - *Cumulative PV of Revenue Requirements*
LNP 80% Ownership - *Mid Reference Fuel, NO CO2, CapEx Sensitivities*
Levy Need Results Update 2/21/08

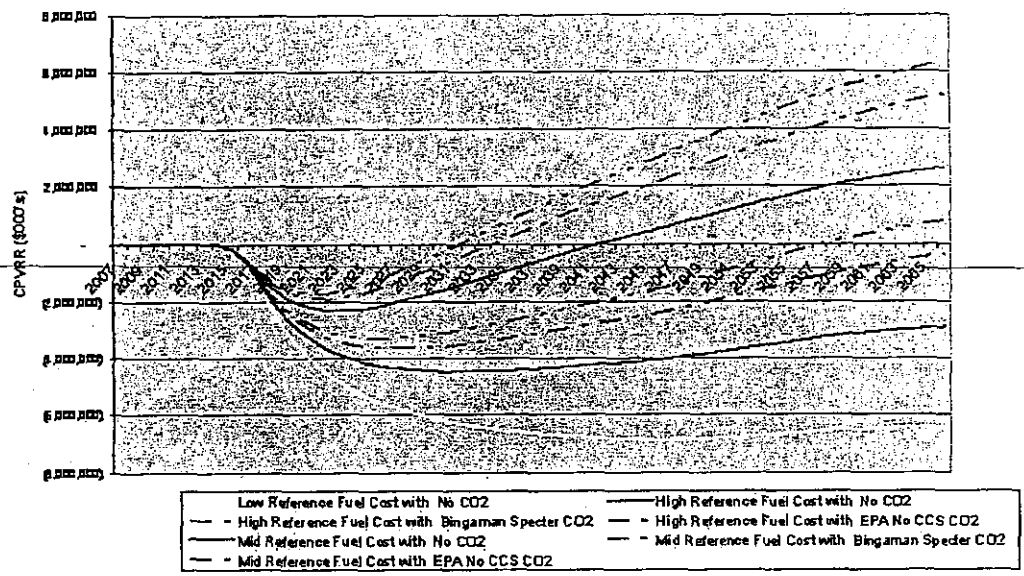


Strategist® Analysis Results

Results Overview and Charts

Full Ownership - Sensitivities with Fuels and CO2 Combined ...

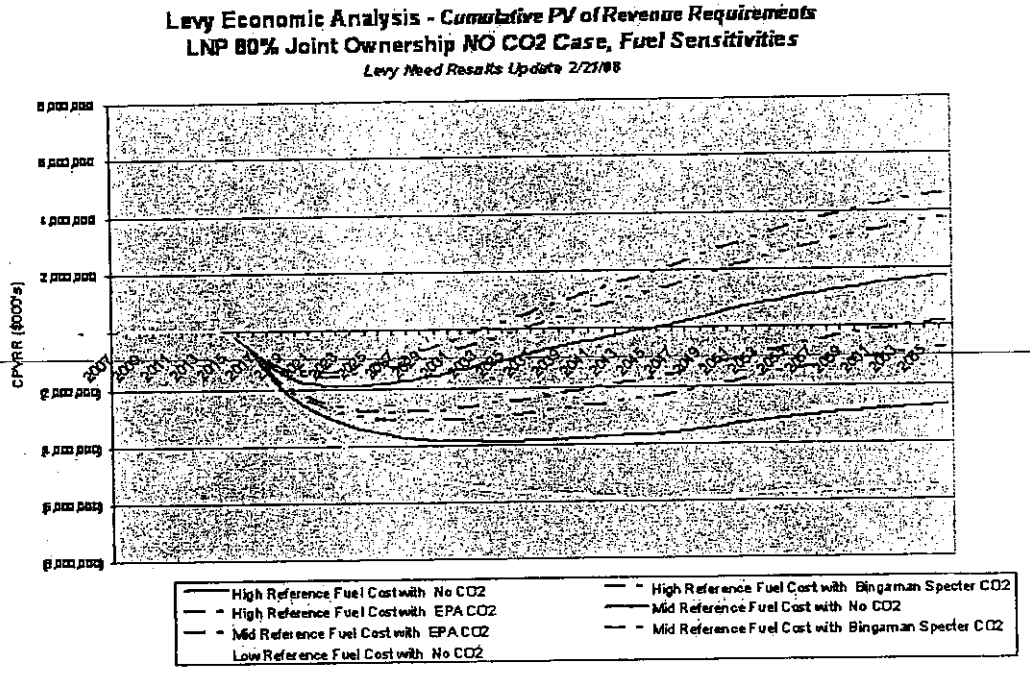
Levy Economic Analysis - *Cumulative PV of Revenue Requirements*
LNP Full Ownership *Fuel Sensitivities with CO2 Ranges*
Levy Need Results Update 2/21/08



Strategist® Analysis Results

Results Overview and Charts

80% Joint Ownership - Sensitivities with Fuels and CO2 Combined ...



Strategist® Economic Assessment

Key assumptions Used in the Modeling

Operating Cost Estimates for Levy Units 1&2 – Full Ownership Basis ...

Operating Cost Estimate for Strategist Modeling
Levy County Units 1 and 2

	Unit 1	Unit 2
Fixed O&M ($000/yr)	58,000	40,600
Fixed O&M ($/kW-yr) Summer Basis	51.79	36.25
Fixed O&M ($/kW-yr) Winter Basis	53.11	37.18
Basis - $2007, Escalating Annually at 2.25%		
Variable O&M ($/MWh)	1.82	1.82
Basis - $2007, Escalating Annually at 2.25%		
Back End Costs (mill/kWh) for Federal Spent Fuel Disposal Fees	1.00	1.00
Basis - $2007, Remains Constant		
Decommissioning and Dismantlement (D&D) Funding ($000/yr)	18,638	18,638
Decommissioning and Dismantlement (D&D) Funding ($/kW-yr) Summer Basis	16.64	16.64
Decommissioning and Dismantlement (D&D) Funding ($/kW-yr) Winter Basis	17.07	17.07
Basis - $2007, Remains Constant		
Annualized Capital Replacement ($000/yr)	10,000	10,000
Annualized Capital Replacement ($/kW-yr) Summer Basis	8.93	8.93
Annualized Capital Replacement ($/kW-yr) Winter Basis	9.16	9.16
Basis - $2007, Escalating Annually at 2.25%, Starting 19 yrs After COD		
Winter Capacity Rating (MW)	1,120	1,120
Summer Capacity Rating (MW)	1,092	1,092

Strategist® Economic Assessment

Key assumptions Used in the Modeling

Planning Baseline Assumptions for PEF's Resources 2008-2017 ...

PLANNED AND PROSPECTIVE GENERATING FACILITY ADDITIONS AND CHANGES

AS OF JANUARY 1, 2008 THROUGH DECEMBER 31, 2017

PLANT NAME	UNIT NO.	LOCATION (COUNTY)	UNIT TYPE	FUEL PRI.	FUEL ALT.	CONST. START MO./YR	COML IN-SERVICE MO./YR	EXPECTED RETIREMENT MO./YR	GEN. MAX. NAMEPLATE KW	NET CAPABILITY SUMMER MW	NET CAPABILITY WINTER MW
TIGER BAY	1	POLK	CC				5/2008			10	10
CRYSTAL RIVER	5	CITRUS	ST				5/2009			(30)	(30)
CRYSTAL RIVER	5	CITRUS	ST				5/2009			14	14
BARTOW	1-3	PINELLAS	ST					6/2009		(444)	(464)
BARTOW	4	PINELLAS	CC	NG	DFO	01/2007	6/2009			1,159	1,279
CRYSTAL RIVER	3	CITRUS	NP				12/2009			40	40
CRYSTAL RIVER	4	CITRUS	ST				4/2010			(30)	(30)
ANCLOTE	2	PASCO	ST				5/2010			10	10
CRYSTAL RIVER	4	CITRUS	ST				5/2010			14	14
ANCLOTE	1	PASCO	ST				5/2011			10	10
CRYSTAL RIVER	3	CITRUS	NP				12/2011			140	140
CRYSTAL RIVER	1	CITRUS	ST				3/2012			7	7
SUWANNEE RIVER	1-3	SUWANNEE	ST					6/2013		(120)	(148)
SUWANNEE RIVER	4	SUWANNEE	CC	NG	DFO	12/2010	6/2013			1,159	1,279
RIO PINAR	P1	ORGANGE	CT					6/2016		(12)	(16)
TURNER	P1-P3	VOLUSIA	CT					6/2016		(22)	(32)
AVON PARK	P1-P2	HIGHLANDS	CT					6/2016		(40)	(70)
HIGGINS	P1-P4	PINELLAS	CT					6/2016		(113)	(133)
LEVY	1	LEVY	NP	NUC	--	01/2010	6/2016			1,092	1,120
LEVY	2	LEVY	NP	NUC	--	01/2011	6/2017			1,092	1,120

Strategist® Economic Assessment

Key assumptions Used in the Modeling

Cost Estimates for Generic Natural Gas Fired 2x1 Combined Cycle Units ...

Generic 2x1 Combined Cycle Plants	1st Unit	2nd Unit
Reference COD: 2011		
Unit Overnight Total Estimate ($2007)	560,251	458,470
Estimated Project Escalation	56,896	46,560
Escalated Construction Cost (Before AFUDC)	617,147	505,030
Adjusted Model Plant Cost Input ($2007)	575,659	471,078
Estimated Transmission Cost ($2007)	100,000	200,000
Winter Capacity Rating (MW)	620	620
Summer Capacity Rating (MW)	570	570
Estimated Overnight Cost - Winter Basis ($/kW)	904	739
Estimated Overnight Cost - Summer Basis ($/kW)	993	804
Strategist Base Year CapEx Input ($/kW Winter)	1,090	1,082
Fixed O&M ($000/yr)	3,993	527
Fixed O&M ($/kW-yr) Winter Basis	6.44	0.85
Basis - $2007, Escalating Annually at 2.25%		
Variable O&M ($/MWh)	3.81	3.81
Basis - $2007, Escalating Annually at 2.25%		
Gas Pipeline Reservation Charges ($000/yr)	31,676	31,676
Basis - $2007, Remains Constant		
Mature Forced Outage Rate	6.36%	6.36%
Planned Outage Rate	12.77%	12.77%
Minimum Capacity (MW)	179	179
Average Heat Rate at Maximum (Btu/kWh)	6,918	6,918
Average Heat Rate at Minimum (Btu/kWh)	7,660	7,660

Strategist® Economic Assessment

Key assumptions Used in the Modeling

Cost Estimates for Generic Natural Gas Fired 4x1 Combined Cycle Units ...

Generic 4x1 Combined Cycle Plants	1st Unit
Reference COD: 2011	
Unit Overnight Total Estimate ($2007)	809,106
Estimated Project Escalation	82,205
Escalated Construction Cost (Before AFUDC)	891,311
Adjusted Model Plant Cost Input ($2007)	783,664
Estimated Transmission Cost ($2007)	200,000
Winter Capacity Rating (MW)	1,279
Summer Capacity Rating (MW)	1,159
Estimated Overnight Cost - Winter Basis ($/kW)	633
Estimated Overnight Cost - Summer Basis ($/kW)	698
Strategist Base Year CapEx Input ($/kW Winter)	769
Fixed O&M ($000/yr)	4,796
Fixed O&M ($/kW-yr) Winter Basis	3.75
Basis - $2007, Escalating Annually at 2.25%	
Variable O&M ($/MWh)	2.68
Basis - $2007, Escalating Annually at 2.25%	
Gas Pipeline Reservation Charges ($000/yr)	73,085
Basis - $2007, Remains Constant	
Mature Forced Outage Rate	4.60%
Planned Outage Rate	7.00%
Minimum Capacity (MW)	145
Average Heat Rate at Maximum (Btu/kWh)	7,200
Average Heat Rate at Minimum (Btu/kWh)	8,300

Strategist® Economic Assessment

Key assumptions Used in the Modeling

Cost Estimates for Generic Natural Gas Fired Simple Cycle CT's ...

Generic Simple Cycle Peaking Plants	1st Unit	2nd Unit
Reference COD: 2008		
Unit Overnight Total Estimate ($2007)	93,460	84,508
Estimated Project Escalation	-	-
Escalated Construction Cost (Before AFUDC)	93,460	84,508
Adjusted Model Plant Cost Input ($2007)	93,460	84,508
Estimated Transmission Cost ($2007)	40,000	25,000
Winter Capacity Rating (MW)	201	201
Summer Capacity Rating (MW)	175	175
Estimated Overnight Cost - Winter Basis ($/kW)	465	420
Estimated Overnight Cost - Summer Basis ($/kW)	534	483
Strategist Base Year CapEx Input ($/kW Winter)	664	545
Fixed O&M ($000/yr)	1,463	251
Fixed O&M ($/kW-yr) Winter Basis	7.28	1.25
Basis - $2007, Escalating Annually at 2.25%		
Variable O&M ($/MWh)	10.24	10.24
Basis - $2007, Escalating Annually at 2.25%		
Gas Pipeline Reservation Charges ($000/yr)	10,700	10,700
Basis - $2007, Remains Constant		
Mature Forced Outage Rate	2.95%	2.95%
Planned Outage Rate	3.97%	3.97%
Minimum Capacity (MW)	115	115
Average Heat Rate at Maximum (Btu/kWh)	10,350	10,350
Average Heat Rate at Minimum (Btu/kWh)	12,160	12,160

Strategist® Economic Assessment

Key assumptions Used in the Modeling

Key PEF Financial Assumptions Used in the Analysis ...

Levy Nuclear Need Filing
Financial and Economic Assumptions

1. PEF Capitalization Ratios and Projected Cost of Capital

Component	*Ratio*	*Cost*
Debt	45%	5.9%
Preferred	0%	na
Equity	55%	11.75%

2. Projected Discount Rate: 8.093%

3. Projected AFUDC Rate 8.848%

4. Tax Assumptions

a) Composite Effective Income Tax Rate 38.575%

b) Combined Cycle Book Life 25 Years
Combined Cycle Tax Depreciation Life 20 Years

c) Simple Cycle CT Book Life 20 Years
Simple Cycle CT Tax Depreciation Life 15 Years

d) Nuclear Generation Book Life 40 Years
Nuclear Generation Tax Depreciation Life 15 Years

e) Transmission Book Life 40 Years
Transmission Tax Depreciation Life 15 Years

5. General Inflation Rate 2.25%

6. General Escalation Rate 3.0%

Appendix B - Levy Nuclear Need Economic Analysis Update

Progress Energy Florida
Petition for Need – Levy 1 & 2
Docket No. _____
Exhibit No. _____ (JBC-1)

Need Determination Study

IN SUPPORT OF PROGRESS ENERGY FLORIDA, INC.'S PETITION FOR DETERMINATION OF NEED FOR LEVY UNITS 1 AND 2 NUCLEAR POWER PLANTS

Progress Energy

Additionally, PEF and its customers will face greater exposure to (1) existing CAIR and future mercury and other fossil emission regulatory costs applicable to alternative, fossil fuel generation resources and (2) potential GHG regulation at a potentially greater cost to PEF and its customers from those same alternative fossil fuel generation resources.

Finally, a denial of or delay in the need determination for Levy Units 1 and 2 may have an impact on the Company's evaluation of nuclear generation as a potential future generation resource. A delay in approval of these units inevitably means higher costs if the Company proceeds with them but even more than that, the Company may lose its current place in the queue for the material and equipment necessary to place nuclear generation units in commercial operation in the time frame contemplated for Levy Units 1 and 2. The result may be a delay up to a decade or more beyond 2016 and 2017 before new nuclear generation can be added to the Company's generation system.

There is considerable interest and thus demand in future nuclear generation in the United States and around the world but there are limited resources available to supply the material and equipment necessary to develop all planned future nuclear generation units. A utility with nuclear generation plans must therefore reserve and preserve its place in line for the necessary material and equipment. A denial of PEF's need determination for Levy Units 1 and 2, or a delay in that need determination, may therefore displace PEF from being in position to place these units in operation in the time frame currently contemplated. This may delay new nuclear generation units for PEF up to or for more than a decade beyond 2016 and 2017.

THE NEED STUDY

IN SUPPORT OF
PROGRESS ENERGY FLORIDA, INC.'S
PETITION FOR DETERMINATION OF NEED
FOR LEVY UNITS 1 AND 2 NUCLEAR POWER PLANTS

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THE NEED STUDY

IN SUPPORT OF PROGRESS ENERGY FLORIDA, INC.'S PETITION FOR DETERMINATION OF NEED FOR LEVY UNITS 1 AND 2 NUCLEAR POWER PLANTS

I. EXECUTIVE SUMMARY

Progress Energy Florida, Inc. ("PEF" or the "Company") plans to add 1,092 megawatts ("MW") of electrical generating resources to its system in the summer of 2016, and 1,092 MW of electrical generating resources to its system in the summer of 2017, in order to continue to provide reliable, adequate, cost-effective, environmentally beneficial, and diverse fuel service to its customers. The most cost-effective way for PEF to meet this need, taking into account the need to improve fuel diversity, reduce Florida's dependence on fuel oil and natural gas, reduce current and potentially future air emission compliance costs, and contribute to the long-term stability and reliability of the electric grid, is to construct two state-of-the-art, advanced passive light water nuclear power plants in Levy County, Florida. These units are called Levy Unit 1 and Levy Unit 2.

The Company selected Levy Units 1 and 2 to meet its generation capacity needs in the period 2016 to 2019 and beyond after carefully evaluating planning options through the Company's on-going Integrated Resource Planning ("IRP") process. PEF examined key planning forecasts and assumptions, including forecasts of customer growth, energy consumption, and peak demand, to determine the Company's future capacity needs. Through this process the Company identified a need for additional capacity beginning in the summer of 2016 to (1) maintain system reliability and integrity and continue to satisfy the Company's 20

percent Reserve Margin commitment, (2) continue to provide adequate electricity at a reasonable cost, and (3) ensure appropriate fuel diversity and reduce PEF's and the State of Florida's dependence on fuel oil and natural gas.

After identifying a need for capacity beginning in the summer of 2016, the Company analyzed a wide range of demand-side and supply-side alternatives to address this need. Last year, the Company expanded significantly its already robust demand-side management ("DSM") plan to obtain additional peak load demand and energy efficiency reductions in load and estimated that these new, aggressive load reduction targets would be met in the timeframe that additional capacity is needed. Even with the revised DSM Plan, however, PEF still needs additional supply-side reserves in the 2016 to 2019 timeframe and beyond. To address this need for supply-side generation, the Company evaluated conventional, advanced, and renewable generation resources. The Company increased its renewable generation resources beyond its already utility leading commitments in Florida with additional energy crop and waste-wood purchase power contracts. Such additional renewable generation resources, however, are insufficient to meet customer capacity and energy needs without the addition of other generation resources to PEF's system. After carefully evaluating conventional, advanced fossil fuel generation resources, and in particular, natural-gas fired generation, against the addition of nuclear generation resources, PEF selected Levy Units 1 and 2 to meet its generation capacity and energy needs.

Levy Units 1 and 2 are expected to be state-of-the-art, advanced passive light water nuclear power plants. They will be highly efficient, base load generation units fueled by the most stable and lowest cost fuel available to the Company for energy generation. Levy Units 1 and 2 offer a number of benefits that PEF cannot obtain with other generation alternatives.

They will provide the Company with needed, new advanced technology, base load generation. They will provide the Company the opportunity to take advantage of economies of scale and other cost efficiencies by bringing successive nuclear units on line, resulting in lower cost nuclear generation than could otherwise be obtained if the units were not consecutively placed in operation. Energy generation from Levy Units 1 and 2 also will produce no sulfur dioxide ("SO_2"), nitrogen oxide ("NOx"), mercury, or greenhouse gas emissions ("GHG") such as carbon dioxide ("CO_2"), thus, they offer a clean source of electric power. Finally, Levy Units 1 and 2 will increase fuel diversity on PEF's system and in the State of Florida and reduce reliance on fossil fuels, including fuels from foreign sources. For all of these reasons, the Company ultimately determined that Levy Units 1 and 2 were superior to all other supply-side generation alternatives to meet the Company's need in 2016 to 2019 and beyond.

The Company is concurrently filing its petition for determination of need with the Florida Public Service Commission ("PSC" or the "Commission") for approval to proceed with Levy Units 1 and 2 pursuant to Sections 403.519(4), Fla. Stats. and Rules 25-22.080-081, F.A.C. This Need Study is being submitted in support of PEF's petition for a determination of need.

II. INTRODUCTION

A. PURPOSE AND OVERVIEW OF THE NEED STUDY.

This introduction provides background information on PEF and its generation, transmission and distribution facilities, as well as the purchased power contracts, including the contracts for renewable generation, and demand-side management programs. This introduction will further provide an overview of past growth in Florida and the reasons both

customer and load growth can be expected during the period of time addressed in the Company's need petition and Need Study.

The next section of the Need Study provides a description of the proposed Levy Units, Levy Unit 1 and Levy Unit 2. The non-binding cost estimates for Levy Units 1 and 2 are discussed, and the transmission requirements, fuel supply, fuel diversity and reliability, and environmental considerations are also explained.

The following section describes PEF's need for resources and the identification of the type of resources needed. The section starts with a discussion of the Company's reliability criteria and the criteria for nuclear generation under recent federal and state legislation and state regulation. This provides the framework for the Company's evaluation of nuclear generation as a potential supply-side generation alternative to meet its future needs. Using this framework, the Company explains why Levy Units 1 and 2 meet the Company's need for additional generation and led to the Company's decision to seek a need determination from the Commission for Levy Units 1 and 2.

Next, the Company explains why Levy Units 1 and 2 are the most cost-effective source of power taking into account the need to improve the balance of fuel diversity, reduce Florida's dependence on fuel oil and natural gas, reduce current and future (and future potential) air emission compliance costs, and contribute to the long-term stability and reliability of the electric grid, as required by Section 403.519(4)(b), Fla. Stats. The Company further explains, consistent with the legislative requirements, how Levy Units 1 and 2 provide needed base load capacity and how they improve fuel diversity and reduce Florida's dependence on fuel oil and natural gas.

The Company will further explain in the next section of the Need Study the adverse consequences if Levy Units 1 and 2 are not added in the time period that is planned.

Next, the Company will provide a summary of discussions with other electric utilities regarding ownership of a portion of Levy Unit 1, Levy Unit 2, or both units by such electric utilities, as required by Rule 25-22.081(2), F.A.C.

The final section of the Need Study, the Conclusion, summarizes the entire document and provides a summary of the grounds for the need for Levy Units 1 and 2.

B. DESCRIPTION OF THE COMPANY.

PEF is an investor-owned public utility, regulated by the PSC, and it is a wholly owned subsidiary of Progress Energy, Inc. PEF has an obligation to provide electric service to approximately 1.7 million customers in its service area. PEF's service area covers approximately 20,000 square miles, encompassing the cities of St. Petersburg and Clearwater, the densely populated areas surrounding Orlando, Ocala, and Tallahassee, and approximately 350 communities. More than five (5) million people live in PEF's service area. This service area is visually depicted on the map in Appendix A to the Need Study. PEF further serves about 21 Florida municipalities, utilities, and power agencies in the State of Florida with wholesale power.

C. EXISTING FACILITIES.

PEF currently owns and operates a diverse mix of supply-side resources, consisting of generation from nuclear, coal, oil, and gas, along with purchases from other utilities and purchases from cogenerators and renewable fuel generators. The existing generation capacity,

shown in Table 1 to the Need Study (based on summer ratings), includes one 769 MW nuclear steam unit, Crystal River Unit 3 ("CR3"), using PEF's 91.5% ownership percentage of CR3. By the end of 2011, through planned power uprates at CR3, this unit will increase to 934 MW, again using PEF's ownership percentage of the unit. The other current, existing generating units on PEF's system include five combined cycle units with a total summer capacity of 2,134 MW, twelve (12) fossil steam units totaling 3,889 MW in summer capacity, and 2,501 MW of summer capacity in 47 combustion turbine units. PEF's existing summer net generating capability is 9,293 MW and its existing winter net generating capability is 10,285 MW.

Table 1: PEF Existing Generating Facilities

PROGRESS ENERGY FLORIDA , INC.

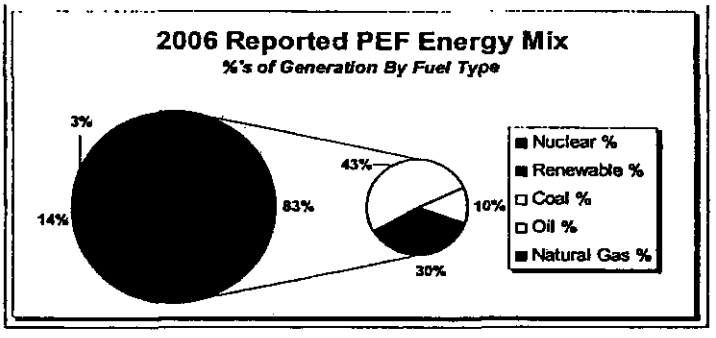
TOTAL CAPACITY RESOURCES OF
POWER PLANTS AND PURCHASED POWER CONTRACTS

AS OF DECEMBER 31, 2007

PLANTS	NUMBER OF UNITS	SUMMER NET DEPENDABLE CAPABILITY (MW)
Nuclear Steam		
Crystal River	1	769 (1)
Total Nuclear Steam	1	769
Fossil Steam		
Crystal River	4	2,310
Anclote	2	1,008
Bartow	3	444
Suwannee River	3	129
Total Fossil Steam	12	3,889
Combined Cycle		
Hines Energy Complex	4	1,930
Tiger Bay	1	204
Total Combined cycle	5	2,134
Combustion Turbine		
Dalkary	10	647
Intercession City	14	984 (2)
Bayboro	4	178
Bartow	4	176
Suwannee	3	153
Turner	4	148
Higgins	4	113
Avon Park	2	69
University of Florida	1	46
Rio Pinar	1	12
Total Combustion Turbine	47	2,501
Total Units	65	
Total Net Generating Capability		9,293
(1) Adjusted for sale of approximately 8.2% of total capacity		
(2) Includes 143 MW owned by Georgia Power Company (Jun-Sep)		
Purchased Power		
Qualifying Facility Contracts	16	802
Investor Owned Utilities	2	484
Independent Power Producers	2	636
TOTAL CAPACITY RESOURCES		11,215

Together with PEF's purchased power discussed below, PEF's generation capacity is fueled by nuclear fuel, natural gas, coal, oil, and renewable fuels. Currently, these fuel sources account for the following percentages of PEF's energy generation: Nuclear -- fourteen (14) percent; Natural Gas -- thirty (30) percent; Coal -- forty three (43) percent, Oil -- eleven (11) percent; and Renewable Fuels -- three (3) percent. This fuel resource mix of PEF's energy generation is graphically depicted in Figure 1 in this Need Study. PEF currently operates the most diverse mix of power plants in Florida to meet the electrical power needs of its customers.

Figure 1: PEF's Current Energy Generation Mix (2006 Reported Basis)



D. PURCHASED POWER.

PEF currently purchases 1,922 MW of summer capacity from cogeneration and renewable fuel generation facilities, two investor-owned utilities, and two independent power producers. Fuel sources for the cogeneration and renewable fuel generation facilities include

natural gas (with waste heat used to generate steam for other productive uses), wood waste, and municipal solid waste. A listing of the Company's qualifying facility purchased power contracts is provided in Table 2 to the Need Study. Altogether, the cogeneration and renewable fuel generation account for about three (3) percent of PEF's current generation resources, providing additional diversity in fuel supply.

Table 2: PEF Existing Qualifying Facility Purchase Power Contracts

PROGRESS ENERGY FLORIDA PURCHASED POWER CONTRACTS AS OF DECEMBER 31, 2007	
Qualifying Facility Contracts Facility Name	***Firm Capacity (MW)***
Cargill	15.0
Dade County Resource Recovery	43.0
El Dorado	114.2
Lake Cogen	110.0
Lake County Resource Recovery	12.8
LFC Jefferson	8.5
LFC Madison	8.5
Mulberry	79.2
Orange Cogen (CFR-Biogen)	74.0
Orlando Cogen	79.2
Pasco Cogen	109.0
Pasco County Resource Recovery	23.0
Pinellas County Resource Recovery 1	40.0
Pinellas County Resource Recovery 2	14.8
Ridge Generating Station	39.6
Royster	30.8
Total QF Purchases	***801.6 MW***

E. DEMAND-SIDE MANAGEMENT.

The Florida Energy Efficiency and Conservation Act ("FEECA") was enacted in 1980 to reduce the growth rate of weather-sensitive peak demand, reduce the growth rate of electrical power consumption, and reduce the consumption of expensive resources such as petroleum fuels. FEECA directed the Commission to adopt rules requiring utilities to implement cost-effective conservation and DSM programs. In 1980, the Commission adopted Rules 25-17.001 through 25-17.015, F.A.C, implementing FEECA, which the Commission revised in 1993 to establish numeric DSM goals for summer and winter demand and annual energy sales. The Commission now reviews DSM goals for each utility at least once every five years and sets numeric goals which extend ten years into the future.

PEF's current DSM goals were approved on August 9, 2004 in FPSC Order No. PSC-04-0769-PAA-EG, issued in Docket No. 040031-EG, with the Consummating Order No. 04-0852-CO-EG issued on September 1, 2004. Copies of both orders are included in Appendix B to the Need Study. The goals set for PEF were slightly below its previous DSM goals because more stringent energy codes, particularly on residential air conditioning systems, and decreased participation in certain, existing DSM programs due to saturation reflected reduced DSM goals. PEF met or exceeded these DSM goals through the end of 2006.

In 2006, after continuous research and development of additional or revised DSM programs, PEF petitioned the Commission to expand its DSM Plan consistent with the Commission's regulatory guidelines for DSM programs. PEF analyzed over 200 possible measures before filing a revised DSM Plan that included thirty-nine (39) additional DSM measures and two additional residential programs. On January 5, 2007, the Commission issued PAA Order No. PSC-06-1018-TRF-EG, approving PEF's expanded DSM Plan in

Docket No. 060647, which will serve to increase the demand and energy savings available through PEF's DSM Plan. Consummating Order No. PSC-07-0017-CO-EG was later issued making PAA Order No. PSC-06-1018-TRF-EG effective. Both orders are included in Appendix C to the Need Study.

As a result, PEF's current DSM Plan includes sixteen (16) individual programs, including seven (7) residential programs, seven (7) commercial or industrial programs, a qualifying facilities (cogeneration and small power producer) program, and a research and development program. These changes result in over 100 measures available to PEF customers under PEF's expanded DSM Plan. PEF expects to reduce the need for an additional 527 winter MW ("WMW") of peak demand load from direct load control and 418 WMW from energy efficiency, for a total of 945 WMW load reduction. When this expected MW reduction from PEF's expanded DSM programs is added to the existing programs, the total MW load reduction is over 2,400 MW. A copy of PEF's current, Commission-approved DSM Plan is included in Appendix D to the Need Study.

PEF has been a leader in DSM and implementing energy efficiency programs in the State of Florida since 1981 when FEECA became effective. PEF has consistently met or exceeded the DSM goals set for it by the Commission. For example, for the most recent completed reporting period (2006), PEF exceeded its cumulative residential DSM reduction goals as well as all commercial and industrial Commission-established goals by more than fifteen (15) percent. Likewise, at the end of 2006, approximately 389,000 customers participated in PEF's DSM programs and contributed about 750,000 kW of winter peak-shaving capacity for use during peak periods. Over the more than two decades that PEF has implemented its energy efficiency and peak load reduction programs, PEF's DSM programs

have saved PEF's customers ten (10) billion kilowatt hours, and they have resulted in a total demand reduction of over 1,500 MW. The success of PEF's DSM programs has avoided the need for three new 500 MW electrical power plants. Further, PEF's DSM programs have avoided substantial emissions into the air that would have otherwise occurred had the equivalent power been generated by fossil fuel generation. PEF's DSM programs avoided, for example, over 7,500,000 tons of carbon dioxide ("CO_2"). By using the Commission-approved cost-effective methodology, these beneficial impacts for customers have been achieved without penalizing customers not participating in DSM programs.

PEF is ranked third in the nation for load management peak demand reduction with a reduction of 17 percent of peak load, and PEF is ranked fourth in the nation for energy efficiency mega-watt hour ("MWh") saved, for utilities with 1.5M customers or higher, based on the Department of Energy's 2006 data. PEF ranks third in the nation for energy efficiency MWh saved at $18.63 per MWh, roughly 100 percent more efficient than California utilities' costs. PEF's consistent efforts to identify and implement cost-effective peak load reduction and energy efficiency measures have placed PEF well ahead of other utilities in the country relative to the number of customers PEF serves.

F. COMMITTED RESOURCES.

The Company has one committed capacity addition prior to the planned in-service dates for Levy Units 1 and 2. This is the re-powering of the Bartow steam generation units with natural gas-fired combined cycle units, which is under construction and planned for commercial operation in 2009. In addition, because of the significant length of time necessary to site, permit, design, construct, and put into operation a nuclear generation unit,

estimated at ten (10) years, there are additional, planned generation units ahead of Levy Units 1 and 2 in the current generation resource plan. This plan is a slight variation from the 2007 Ten Year Site Plan, taking into account additional information and additional analysis since that plan was filed with the Commission. These are (1) planned uprates totaling 180 MW (about 162 MW for the Company's customers under the joint ownership agreement), at the Company's existing nuclear unit, CR3; and (2) a natural-gas fired, combined cycle unit in 2013. The plan including the current planned additions, however, may be subject to further change over time with the on-going analysis of additional information or changes in regulatory, environmental, or economic conditions.

G. RETIREMENTS.

PEF uses maintenance programs to keep its generating units in the best operating condition that is economically reasonable and practicable. These maintenance programs have allowed the Company to operate some of its units longer than their thirty- (30) to forty- (40) year expected lives. The Suwannee facility, however, is over fifty (50) years old and is nearing the end of its operational life. The current Company generation resource plan, therefore, reflects the retirement of the three Suwannee River oil-fired steam generation units by 2013, the year the Company currently plans to add a natural gas-fired, combined cycle unit to meet the Company's resource commitment for its customers. The planned Suwannee River facility retirement, however, may be reviewed again through the Company's planning process and is subject to change based on future load requirements, the timing of replacement generation, and available supply alternatives.

In addition to the Suwannee facility planned retirement, the Company is also retiring Bartow Units 1, 2 and 3, which, together, total 464 MW of oil-fired steam generation, as part of the Company's planned re-powering project at the Bartow facility. This re-powering conversion project will result in a net increase of 815 MW at the Bartow facility once the re-powering project is complete.

Other generation unit retirements are contemplated at the time of the planned commercial operation of Levy Unit 1 in 2016. These are some of the Company's oldest peaking generation units. They are Avon Park peaking units 1 and 2, Rio Pinar peaking unit 1, Turner peaking units 1 and 2, and Higgins peaking units 1, 2, 3, and 4. These peaking unit retirements total 196 MW (summer). As with the planned retirement of the Suwannee River facility, these peaking retirements may be reviewed again and the current planned retirement of the peaking units is subject to change based on changes in future load requirements, economic conditions, and operational considerations.

The current generation resource plan also recognizes anticipated de-rates at the Company's coal-fired, steam generation units, Crystal River Unit 4 and Crystal River Unit 5, as a result of the installation of flue-gas desulphurization ("FGD"), or scrubbers, on the units. When the units are scrubbed they will require additional electrical power to run the scrubbers which will mean less power for customers or, in effect, a de-rate of the units. For both units these de-rates will total about 60 MW (or about 30 MW each).

H. TRANSMISSION AND DISTRIBUTION FACILITIES.

The Company is part of a nationwide interconnected power network that enables interconnected utilities to exchange power. PEF's transmission system includes

approximately 5,000 circuit miles of transmission lines. The Company's distribution system includes approximately 18,000 circuit miles of overhead distribution conductors and approximately 13,000 miles of underground cable.

III. DESCRIPTION OF LEVY UNITS 1 AND 2

Levy Units 1 and 2 are expected to be state-of-the-art, advanced passive light water nuclear power plants. They will have a beneficial heat rate, high availability operating nearly year-round, and they will be an emission-free source of electrical power. Upon construction and operation, they will add new, advanced generation technology to PEF's fleet of generation facilities, providing the Company and its customers with base load generation from the lowest cost, most stable fuel source available. This section outlines the technical characteristics and benefits of these proposed new nuclear facilities.

A. THE LEVY COUNTY SITE

The preferred site selected for Levy Units 1 and 2 is in Levy County, Florida and consists of approximately 3,100 acres. It is about ten miles north of the Company's Crystal River Energy Complex, and eight miles inland from the Gulf of Mexico on the west coast of Florida. Levy Units 1 and 2 will draw their cooling water makeup from and discharge the blowdown to the Gulf. Levy Units 1 and 2, together with the necessary associated site facilities, will occupy approximately ten (10) percent of the 3,100 acre site and the remaining acreage will be preserved as an exclusionary boundary around the developed plant site and a buffer preserve. In addition, PEF purchased an additional 2,100 acre tract contiguous with the southern boundary of the Levy site that secures access to a water supply for the site as well as

transmission exits from the Levy site itself. The property for many years has been used for silviculture so it is not pristine land.

The Levy County location was chosen based on an assessment following the Electric Power Research Institute ("EPRI") Siting Guide. The EPRI Siting Guide is widely accepted in the electric utility industry for evaluating new nuclear power plant sites. The Company also followed applicable NRC regulations and guidance in reviewing and evaluating potential sites. To this end, the Company retained two nationally recognized environmental consulting firms to assist in the site evaluation process.

The EPRI Siting Guide, as adopted and applied by PEF, provided four steps in the site selection process. First, PEF identified "regions of interest," which were initially subjected to exclusionary considerations, resulting in the identification of "potential sites." Second, PEF further analyzed the "potential sites" against avoidance considerations, reducing that list to a smaller number of "candidate sites." Third, PEF performed a suitability evaluation of specific criteria on the "candidate sites" and then determined the highest ranked "alternative sites" best suited for a nuclear plant. Finally, PEF evaluated the "alternative sites" against various strategic considerations to determine the "preferred site."

PEF analyzed potential sites within PEF's 35 county service territory, plus counties bordering PEF's service territory. Within that area, PEF identified 20 potential sites. PEF reviewed each site through successive layers of analysis including, among other screening measures, health and safety criteria, population density restrictions, geotechnical and seismological suitability, water supply and rail/barge access, wetlands impact, important species and habitats, and high-level transmission system impacts. The screening resulted in a short list of eight candidate sites.

Continued screening evaluation of the candidate sites included an increased level of detail associated with water management, population profiles, reconnaissance level information, which resulted in the identification of five alternative sites in Levy, Dixie, Putnam, Highlands, and Citrus Counties. PEF then completed on-site analyses (environmental and geotechnical drilling) at the Levy, Dixie, Putnam, and Highlands sites. Based on the on-site analyses, the prior screening analyses, and based on weighing strategic and transmission considerations, PEF ultimately concluded that the Levy County site presented the best overall site, and therefore was the preferred site for potential new nuclear generating facilities.

The current Levy County site rated the highest for several reasons. First, the Levy County site had access to an adequate water supply. Second, the site is at a relatively high elevation, which provides additional protection from wind damage and flooding. Third, unlike a number of other sites considered, the Levy site has more favorable geotechnical qualities, which are critical to siting a nuclear power plant. This determination was made after months of on-site geotechnical analysis that included multiple soil borings, geophysical logging, and detailed examination of soil and rock core samples. Fourth, although the Crystal River Energy Complex site has many favorable qualities, adding new nuclear generating capacity to the Crystal River Energy Complex at this time would result in a significant concentration of PEF's generating assets in one geographical location. This increases the likelihood of a significant generation loss from a single event and a potential large scale impact on the PEF system.

Finally, the Levy site ranked the highest from a transmission deliverability perspective. PEF retained Navigant Consulting, a well-respected international engineering

firm, to analyze the potential transmission upgrades necessary for each alternative site and the estimated costs associated with each alternative site. Both the Levy and Crystal River sites scored the best due to lower estimated direct connect and upgrade costs. Levy, however, offered a significant advantage by not co-locating transmission lines in the same corridor with the Crystal River Energy Complex, thereby avoiding loss from a single event and a resulting large scale impact on the PEF system. Considering the collective results of all these reviews and analyses, PEF selected the Levy site as the preferred location for new reactor technology deployment in Florida.

PEF's assessment of the Levy County site addressed whether any threatened and endangered species or archeological and cultural resources would be adversely impacted by the development of the site for nuclear generation units and related facilities. No significant issues were identified in PEF's evaluations of the property.

The proximity of the Levy County site to the Company's existing nuclear plant provides opportunities for efficiencies in shared support functions. The two Levy units will be located on a Greenfield site so site and transmission infrastructure must be constructed along with the buildings necessary for the power units. The site will include cooling towers, intake and discharge structures, containment buildings, auxiliary buildings, turbine buildings, diesel generators, warehouses, related site work and infrastructure, including roads, transmission lines, and a transmission switchyard. The Company will submit a Site Certification Application ("SCA") to the Florida Department of Environmental Protection ("DEP") for the entire site, including plants and associated facilities for the units.

B. THE NUCLEAR DESIGN FOR LEVY UNITS 1 AND 2

The Westinghouse Advanced Passive ("AP") 1000 light water nuclear reactor design was initially selected and is being considered for Levy Units 1 and 2. Westinghouse is the nuclear industry leader with nearly fifty (50) percent of the world's current nuclear plants based on Westinghouse technology. The expected summer and winter capacity ratings of the Westinghouse AP1000 Levy Units 1 and 2 are 1,092 MW and 1,120 MW, respectively. The nominal 1,100 MW capacity class unit represents the most cost-effective, efficient capacity design selected by Westinghouse for this generation of nuclear power. The Westinghouse AP1000 reactor design is among the safest nuclear power plant designs available in the worldwide commercial market place. It has also received Design Certification from the Nuclear Regulatory Commission ("NRC"). A representative picture of two Westinghouse AP100 nuclear reactors is included on the cover page of the Need Study. A representative cutaway scheme of a Westinghouse AP1000 nuclear reactor is included in Appendix E.

C. PROJECTED, NON-BINDING COST ESTIMATE FOR LEVY UNITS 1 AND 2

1. CAPITAL COSTS.

The Company is necessarily working with preliminary, non-binding cost estimates from its vendors that do not fully reflect all site-specific cost adjustments. PEF has been in negotiations with Westinghouse and its construction partner, Shaw Stone & Webster (collectively referred to as the "Consortium"), for more than a year on pricing and the terms and conditions of an Engineering, Procurement, and Construction ("EPC") contract. Although the Consortium has provided PEF with site specific pricing for the project, Engineering, Procurement, and Construction ("EPC") contract negotiations continue. PEF

expects that a portion of the power plant costs will be based on firm prices. Even with these firm prices, however, the total cost will still represent a non-binding cost estimate that is subject to change over the course of time leading up to commercial operation of Levy Units 1 and 2.

The current, non-binding, project cost for Levy Units 1 and 2 is estimated to be $9,303 M (in 2007 dollars), excluding transmission facilities. With escalation and an estimated $3,245M for Allowance for Funds Used During Construction ("AFUDC"), the total, non-binding cost estimate of the facility is $14,090M (in service costs). The current, non-binding cost estimate for Levy Units 1 and 2, excluding transmission facility costs, is set forth in Table 3 below. This cost estimate includes all land acquisition, site development, major equipment, construction including labor and materials, training and staffing, start-up and testing, and initial fuel core load costs.

Table 3: Capital Cost Estimate

Capital Cost Estimate for Strategist Modeling

Levy County Units 1 and 2 ($000's)	Unit 1	Unit 2	Current Total
Unit Overnight Total Cost	5,617,297	3,686,282	9,303,579
Project Escalation @ 3%	883,980	655,388	1,539,367
Escalated Construction Cost (Before AFUDC)	6,501,276	4,341,670	10,842,946
Estimated Project AFUDC	1,814,733	1,432,029	3,246,762
LNP Unit Total	8,316,010	5,773,698	14,089,708
Winter Capacity Rating (MW)	1,120	1,120	2,240
Summer Capacity Rating (MW)	1,092	1,092	2,184
Estimated Overnight Cost - Winter Basis ($/kW)	5,015	3,291	4,153
Estimated Overnight Cost - Summer Basis ($/kW)	5,144	3,376	4,260
Estimated In-Service Cost - Winter Basis ($/kW)	7,425	5,155	6,290
Estimated In-Service Cost - Summer Basis ($/kW)	7,615	5,287	6,451

2. OPERATION AND MAINTENANCE ("O&M") COSTS.

The estimated operating and maintenance costs for the new nuclear units are summarized below in Table 4. The estimated incremental annual fixed operation and maintenance ("O&M") expense for Levy Unit 1 is $51.79/kW-yr (Summer Basis, $2007) and the estimated non-maintenance variable O&M is $1.82/MWh (Summer Basis $2007). The largest fixed costs are wages and wage-related overheads for the permanent plant staff, as well as expenses for unplanned equipment maintenance. Approximately 800 full-time employees are expected to be employed to staff the operations at Levy Unit 1 and Levy Unit 2. Another 1,000 to 2,000 indirect jobs will be generated by operation of the nuclear generation units. Variable O&M costs, which vary as a function of plant generation, include consumables, chemicals, lubricants, water, and major maintenance costs such as planned equipment inspections and overhauls.

Table 4: Operating Cost Estimates

Operating Cost Estimate for Strategist Modeling
Levy County Units 1 and 2

	Unit 1	Unit 2
Fixed O&M ($/kW-yr) Summer Basis *Basis - $2007, Escalating Annually at 2.25%*	51.79	36.25
Variable O&M ($/MWh) *Basis - $2007, Escalating Annually at 2.25%*	1.82	1.82
Back End Costs (mill/kWh) for Federal Spent Fuel Disposal Fees *Basis - $2007, Remains Constant*	1.00	1.00
Decommissioning and Dismantlement (D&D) Funding ($/kW-yr) Summer Basis *Basis - $2007, Remains Constant*	16.64	16.64
Annualized Capital Replacement ($/kW-yr) Summer Basis *Basis - $2007, Escalating Annually at 2.25%, Starting 10 yrs After COD*	8.93	8.93
Winter Capacity Rating (MW)	1,120	1,120
Summer Capacity Rating (MW)	1,092	1,092

3. PROJECTED COST SAVINGS.

Substantial cost savings in the form of a reduced price are expected for the second nuclear unit if the second unit is constructed within twelve (12) to eighteen (18) months of the first nuclear unit. The projected price reduction yielding cost savings to PEF and its customers results from expected efficiencies for concurrent manufacturing of key components and continuous mobilization for on-site construction of both units. Additional efficiencies in engineering and construction are expected from experience gained from the construction of one unit to the next. These economies of scale and engineering and construction efficiencies significantly lower the overall cost for Levy Units 1 and 2 with the resulting cost savings benefiting PEF and its customers. The expected cost of the second nuclear unit, Levy Unit 2, is $3,376/ kW (summer basis, $2007), which is significantly less than the cost of Levy Unit 1 on a per-kW (summer) cost basis at $5,144/kW. Similarly, the estimated fixed O&M cost for Levy Unit 2, $36.25/kW-yr ($2007), is lower than the estimated fixed O&M cost for Levy Unit 1 by $15.54/kW-yr ($2007). These cost savings from the concurrent design and construction of Levy Units 1 and 2 and the operation and maintenance synergies of a dual unit site are substantial and present a significant economic benefit to PEF's customers.

D. PROJECTED PERFORMANCE FOR LEVY UNITS 1 AND 2.

Levy Units 1 and 2 will be highly efficient, base load nuclear power plants with expected low forced outage and planned outage rates. The projected annual capacity factor would average roughly 90 percent over time, dependant on the outage cycles as they are ultimately integrated into fleet maintenance cycles. Essentially, these units are designed and expected to operate year-round. The average net operating heat rate for the units is expected

to be 9,715 BTU/kWh. Processed uranium will be the fuel for the two units. Nuclear fuel is currently the most stable and lowest cost fuel available to the Company for energy generation. Levy Units 1 and 2 will therefore provide needed capacity and energy in a reliable, low-fuel cost manner.

E. FUEL SUPPLY

Nuclear power generation uses the lowest cost fuel source (uranium used in processed nuclear fuel) currently available to the Company. Processed uranium fuel is an abundant and stable fuel source relative to other fuels. As a result, adding additional nuclear generation to PEF's future generation system results in more stable energy prices relative to other (fossil fuel) generation resources. Further, additional nuclear power generation reduces PEF's dependence on volatile fossil fuel supplies, particularly oil and natural gas, from typically foreign fuel supply sources. Without Levy Units 1 and 2, natural gas and oil will comprise 61 percent, and all fossil fuel sources will comprise 85 percent of PEF's energy mix on its system by 2018. Nuclear fuel will account for only 12 percent of the energy generated. With Levy Units 1 and 2, however, nuclear generation contributes 38 percent of the total system energy by 2018, reducing PEF's dependence on fossil fuel generation sources, including natural gas and oil. This additional nuclear generation, therefore, will improve PEF's fuel diversity and fuel supply security.

F. ENVIRONMENTAL CONSIDERATIONS

Nuclear power is a clean source of electric power generation. Electric power generation from nuclear fuel produces no SO_2, NOx, GHG, or other emissions. In light of the

current environmental requirements, including the Environmental Protection Agency ("EPA") and DEP Clean Air Interstate Rule ("CAIR") and current and expected mercury regulation affecting fossil fuel generation, and potential new legislative and regulatory limitations on GHG emissions, nuclear energy appears to be a more economically viable future generation alternative to fossil fuel (oil, gas, or coal) electric power generation.

G. TRANSMISSION REQUIREMENTS

Additional transmission system upgrades will be necessary to accommodate the large new base load units on PEF's system and to reliably deliver power from the site through PEF's transmission and distribution systems. At this time, the Company estimates that these transmission upgrades will include the construction of new 500kV and/or 230kV lines and new substations. An initial non-binding in-service cost estimate for transmission facilities to support both Levy Units 1 and 2 is in the range of $2,450M excluding AFUDC. More detailed cost estimates will be available as the transmission design and licensing efforts progress. Current schedule estimates call for the transmission work to be completed approximately one year prior to commercial operation of the units.

IV. RESOURCE NEED AND IDENTIFICATION

A. RELIABILITY CRITERIA

Utilities require a margin of generating capacity above the firm demands of their customers in order to provide reliable service. At any given time during the year, some generation plants will be out of service and unavailable due to forced outages or to repair failed equipment. Generating systems also requires periodic scheduled outages to perform

planned maintenance and, in the case of nuclear plants, replenish fuel. Adequate reserves must be available to provide for this unavailable capacity and for higher than projected peak demand due to forecast uncertainty and abnormal weather. In addition, some capacity must be available for operating reserves to maintain the balance between supply and demand on a moment-to-moment basis.

PEF plans its resources in a manner consistent with utility industry planning practices, utilizing dual reliability criteria: a minimum Reserve Margin planning criterion and a maximum Loss of Load Probability (LOLP) criterion. The Reserve Margin planning criterion is deterministic and measures PEF's ability to meet its forecasted seasonal peak load with firm capacity. PEF's current minimum Reserve Margin commitment is twenty (20) percent, based upon the Commission-approved joint proposal from the investor-owned utilities in Florida to increase their minimum Reserve Margin levels to at least twenty (20) percent by the summer of 2004 and maintain a twenty (20) percent Reserve Margin thereafter. See Order No. PSC-99-2507-S-EU, in Docket No. 981890-EU, included in Appendix E to this Need Study. LOLP is a probabilistic criterion that measures the probability that a utility will be unable to meet its load throughout the year. LOLP studies take into account potential unit failures, unit maintenance, and assistance from other utilities. A standard probabilistic reliability threshold commonly used in the electric utility industry, and the criterion employed by PEF, is a maximum of one day in ten years loss of load probability.

PEF has based its resource planning on the use of dual reliability criteria since the early 1990's, a practice that has been accepted by the PSC. By using both a Reserve Margin and LOLP planning criteria, PEF's overall system is designed to have sufficient capacity for peak load conditions, and the generating units are selected to provide reliable service under all

expected load conditions. PEF has found that resource additions are typically triggered to meet Reserve Margin thresholds before LOLP becomes a factor, and that is the case with respect to Levy Units 1 and 2 in the summer period of 2016 to 2017 too. Therefore, PEF did not consider LOLP a meaningful reliability analysis in this case because the Reserve Margin analysis had already identified a need in the 2016 time frame.

B. LEGISLATION, EXECUTIVE ORDERS, AND REGULATION SUPPORTING AND ESTABLISHING CRITERIA FOR ADVANCED NUCLEAR GENERATION FACILITIES

Federal Legislation.

The Energy Policy Act of 2005 (EPACT) established the first comprehensive federal energy legislation in over a decade. Among EPACT's goals was the diversification of America's energy supply to reduce reliance on foreign sources of energy, in particular fossil fuels. EPACT considered the diversification of America's energy supply a matter of national security in the event of growing world-wide competition for fossil fuel resources to support the global increase in energy consumption. Among the key strategies for the diversification of America's energy supply under EPACT was encouraging the expansion of nuclear energy in a safe and secure manner.

The United States has not licensed a new nuclear plant in over thirty (30) years. Nuclear power, however, is the only mature technology with significant potential to supply large amounts of power without emissions of pollutants or carbon dioxide and other greenhouse gases (GHG). Nuclear power further does not rely on foreign fossil fuels and therefore provides the opportunity to reduce the country's dependence on foreign fossil fuel resources for energy. EPACT, accordingly, contained important provisions to encourage the development of new nuclear power generation in the United States.

EPACT provided several incentives for new nuclear power generation plants. EPACT authorized the Department of Energy ("DOE") to provide up to two billion dollars in standby support agreements, which is a type of federal risk insurance for utility companies building the next six nuclear power plants. The standby support agreements provided coverage for losses occasioned by delays associated with regulatory reviews by the Nuclear Regulatory Commission ("NRC"), among other covered events. This incentive reduced the level of uncertainty associated with licensing new nuclear power plants in the United States.

Similarly, EPACT authorized the DOE to provide loan guarantees for the development of new nuclear generation. The intent was that the DOE loan guarantees might help to mitigate some degree of the risk involved in developing and operating new nuclear power generators. Additionally, EPACT provided a financial incentive to develop nuclear generation in the form of production tax credits. The production tax credit is $0.018/kWh for the first eight years of the nuclear facility's commercial operation, if the nuclear generation facility meets certain eligibility requirements and deadlines and is in service by January 1, 2021.

With EPACT, and subsequent executive orders and DOE actions, the Congress and Executive Branch of the United States Government have expressed their view that the development of new nuclear generation plants in the United States is central to meeting the future energy needs of the country and therefore the economic well-being and security interests of its citizens. This national policy, and the underlying incentives behind it, was included in the Company's Resource Planning process to address the future capacity and energy needs of the Company's customers.

Florida Executive Order No. 05-241 and the Florida Energy Plan.

EPACT was followed in Florida first by Executive Order Number 05-241 issued on November 10, 2005. The Order was subsequent to the catastrophic hurricane seasons in 2004 and 2005, which underscored Florida's vulnerability to fuel supply disruptions and reminded all Floridians of their reliance on fossil fuels, including a dependence on natural gas, to generate electricity. The Governor's Executive Order, among other things, required the Secretary of DEP to develop a comprehensive energy plan. Among the topics to be addressed in the State's energy plan were Florida's current and projected generating capacity and infrastructure needs for nuclear power and the diversification of Florida's electric power supply.

DEP issued Florida's Energy Plan on January 17, 2006. The Florida Energy Plan recognized that Florida is the fourth most populous state in the country, ranks third nationally in total energy consumption, and continues to grow, adding nearly 1,000 new residents a day. The Plan further acknowledges that Florida relies on fossil fuels for 86 percent of Florida's total generating capacity, that less than 10 percent of its generating capacity is derived from cleaner nuclear fuel and renewable fuels, and that no new nuclear plants have entered commercial service in Florida since 1983. The Plan also recognized Florida's vulnerability to energy supply disruptions and increases in natural gas and oil prices during the hurricane seasons of 2004 and 2005. The Plan explained that 95 percent of daily oil production and 88 percent of daily gas production was shut down when Hurricane Katrina hit in 2005. Five months later, a quarter of the oil production and nearly twenty percent of the gas production remained shut down, and full recovery was not expected for nearly a year. The resulting

impact was continued upward pressure on natural gas and oil prices to the detriment of Florida consumers.

Among the recommendations in the Florida Energy Plan was the diversification of Florida's fuel sources and the increase in fuel supply reliability. To this end, DEP recommended as part of the Florida Energy Plan, legislation in the 2006 regular Legislative session to, among other things, amend the Power Plant Siting Act to reduce regulatory barriers and streamline permitting and amend the need determination provision of the Florida Energy Efficiency and Conservation Act ("FEECA") to require the Commission to consider fuel diversity and fuel reliability as factors when determining the need for new electric generation plants.

DEP also recommended as part of the Florida Energy Plan that the Florida legislature establish an energy council to provide energy policy advice to the Governor, Speaker of the House, and the President of the Senate. The goal was to provide state government with ideals and solutions from knowledgeable individuals to address energy needs and concerns.

The Florida Renewable Energy Technologies and Energy Efficiency Act of 2006.

The Florida Legislature did take up energy legislation in 2006 and passed the Florida Renewable Energy Technologies and Energy Efficiency Act of 2006 ("2006 Florida Energy Act"). This Act became effective on June 19, 2006. Among the provisions of this legislation was the creation of the Florida Energy Commission with the directive to develop recommendations for legislation to establish a state energy policy that was based on the guiding principles of reliability, efficiency, affordability, and diversity.

In other relevant parts, the 2006 Florida Energy Act amended the statutory provision requiring utility Ten Year Site Plans to include a requirement that fuel diversity be

considered. Additionally, the need determination provision was amended, requiring the consideration of fuel diversity and reliability in need determinations for all future generation plants, including nuclear generation plants.

With respect to nuclear generation plants in particular, the Florida legislature included specific need determination provisions that, among other things, (1) required the Commission to determine need based not only on electric system reliability and integrity but also fuel diversity, the need for base load generation, and the need for adequate electricity at a reasonable cost; and (2) required the Commission to consider the cost-effectiveness of nuclear power generation taking into account the need to improve the balance of fuel diversity, reduce Florida's dependence on fuel oil and natural gas, reduce air emission compliance costs, and contribute to the long-term stability and reliability of the electric grid.

Finally, the 2006 Florida legislation further established provisions for cost recovery for the siting, design, licensing, and construction of nuclear power plants. This legislation directed the Commission to implement rules related to nuclear power plant cost recovery, for example, the recovery of preconstruction costs and carrying costs through the capacity cost recovery clause and the allowance in base rates of the annual revenue requirements associated with the nuclear power plant when that plant is placed in commercial service. Consistent with this legislative directive, the Commission subsequently enacted the nuclear power plant cost recovery rule to implement the 2006 Florida legislation.

The apparent goal of the Florida Energy Plan and subsequent 2006 Florida legislation and Commission regulation implementing that legislation was to encourage the development of nuclear generation in Florida. The Commission Staff agreed in its recommendation regarding the Commission implementation of the nuclear cost recovery rule as directed by the

Florida legislature, explaining that the "clear intent of the 2006 Florida Legislation is to promote new nuclear generation in Florida by providing Florida utilities the incentives to overcome these obstacles [including federal regulatory review, the "extremely long" permitting and construction period, and public perception]; the Legislature was clearly concerned that without these incentives, Florida utilities will continue to build natural gas and coal fired generation to meet Florida's growing energy needs." Staff Recommendation dated February 1, 2007, Docket No. 060508-EI.

Even more than EPACT, the Florida executive and legislative action has influenced the Company's Resource Planning process. In particular, as directed by the Florida legislation, fuel diversity is given more prominence in the Company's assessment of the need for electric system reliability and integrity. Further, as directed by the Florida legislature, the Company increased its focus on renewable energy sources and technologies in addition to conservation measures as a means of offsetting the need for additional, conventional generation resources to meet customer demand for energy. Finally, in determining the cost-effectiveness of future nuclear power generation, the Company has specifically taken into account (1) the need to improve the balance of fuel diversity, (2) the need to reduce Florida's dependence on fuel oil and natural gas, (3) the need to reduce current and potentially future air emission compliance costs, and (4) the contribution of nuclear generation to the long-term stability and reliability of the electric grid, as directed by the Florida Legislature in the 2006 Florida Energy Act. The 2006 Florida Energy Act, therefore, established a new utility paradigm for its integrated resource planning and resulting need determinations involving potential nuclear power generation, one that required electric utilities like the Company to move beyond the traditional reliability and economic analyses by placing emphasis on the fuel

diversity, environmental, and fuel supply reliability benefits nuclear power generation provides.

2007 Executive Orders.

In 2007, the Governor of Florida issued a series of executive orders that impacted the Company's Resource Planning process. These executive orders, Nos. 07-126, 07-127, and 07-128, addressed growing concerns over global warming and the potential impact on Florida's environment and economy. Executive Order No. 07-126 addressed immediate actions the Florida State Government could take to reduce GHG emissions. In Executive Order No. 07-128, the Governor noted that "more than 70 percent of Florida's electricity is generated by fossil fuels which contribute to the state's carbon emissions." The Governor then established the Governor's "Action Team on Energy and Climate Change" to, among other things, develop strategies "to diversify Florida's electric generation fuels to reduce greenhouse gas emissions and protect Florida's consumers from fuel price volatility."

Executive Order No. 07-127, "establishing immediate actions to reduce GHG emissions within Florida," among other aspects, set GHG emission reduction targets for the utility sector and directed DEP to develop rules to achieve those targets. These GHG emission reduction targets are extremely aggressive, representing some of the deepest GHG emission reductions proposed for electric utilities in the country. They include, by 2017, emissions not greater than year 2000 utility sector emissions; by 2025, emissions not greater than year 1990 utility sector emissions; and by 2050, emissions not greater than 20 percent of year 1990 utility sector emissions (i.e., 80 percent reduction of 1990 emissions by 2050).

The Executive Orders focused on the development of additional renewable energy sources as a means of reducing GHG emissions. Nuclear generation, however, emits no GHG

and can be developed in large blocks of capacity and energy, far exceeding the capacity capabilities of current renewable energy resources. Realistically, then, any attempt to meet the aggressive GHG emission reduction targets set by the Governor for the utility sector in Florida must include the development of additional nuclear capacity and energy generation.

Florida Energy Commission.

The Florida Energy Commission ("FEC") was charged by the Florida Legislature with developing recommendations for legislation to establish a state energy policy. The FEC issued its report and recommendations to the Florida Legislature on December 31, 2007.

In its report, the FEC noted that Florida is the third largest state in the country, it leads all other states in growth, and it ranks third in total energy consumption. Florida differed from other states in that residential customers accounted for a majority of the electric energy purchased, followed by commercial customers, with industrial customers accounting only for ten (10) percent of the electric energy purchased. High residential demand, the FEC noted, was further driven by Florida's hot and humid weather, which was another factor that distinguishes Florida from other states.

The FEC also noted that Florida was unique in that the state was a peninsula with no fossil-based natural resources and vastly different renewable energy resource potential from other states. The FEC explained that Florida's unique geography and lack of native resources renders the state vulnerable to energy-supply disruptions such as hurricanes. The FEC also expressed its concern about Florida's increasing dependence on natural gas for electricity, explaining that excessive reliance on a single fuel leaves Floridians subject to price-volatility and supply-interruption risks.

With this (and other) background, the FEC developed and provided to the Florida Legislature eighty-five (85) recommendations. Among those that were relevant to PEF's current Resource Planning process were recommendations addressing the challenges of global climate change and recommendations for strengthening Florida's energy supply and delivery infrastructure. In making these recommendations, the FEC recognized that the "availability and cost of fuel will never be the same" and that Florida needs fuel diversity, renewable energy, and greenhouse gas reduction targets. To achieve these goals the FEC in particular noted "the need to maintain a diverse portfolio of generation technologies with special attention to nuclear power."

The FEC's recommendation with respect to GHG emission-reduction targets calls for the Florida Legislature to adopt the targets set by Executive Order No. 07-127, with only minor modifications. The FEC GHG emission-reduction targets require reductions in GHG emissions to year 2000 emission levels by the year 2020, to 1990 levels by 2030, and to 80 percent below 1990 levels by 2050. These GHG emission-reduction targets are slightly more lenient than the targets set by Executive Order No. 07-127 but still, in the words of the FEC, they are "ambitious."

In addition, the FEC recommended that the Florida Legislature direct DEP to create a GHG registry and inventory that would identify the sources and amounts of GHG emissions and track future emissions and reductions in GHG emissions. Under this recommendation, electric utilities would be required to report their GHG sources and GHG emission levels to DEP. Further, the FEC recommended that the Florida Legislature direct DEP and the PSC to establish a "ranking" for all potential electrical generation methods using quantifiable results that determined how state greenhouse gas emission goals could be achieved.

PEF cannot know at this point whether any, some, or all of the FEC's recommendations to the Florida Legislature will be adopted as submitted by the Florida Legislature and approved by the Governor. That GHG emissions will be addressed and regulated in some form in the future, however, seems clear. As a result, the potential for GHG emission regulation and the resulting economic impact are factors in the Company's Resource Planning process even though the ultimate, actual regulation and economic impacts remain uncertain.

The FEC also considered nuclear power a key aspect of its recommendations regarding the state's energy supply and delivery infrastructure. The FEC recognized that "even with significant energy efficiency growth, renewable energy resources, and distributed generation, major investments in conventional generating plants will be required." This additional investment in generation must include, according to the FEC, nuclear power. The FEC specifically "endorse[d] the expanded use of nuclear power as a base load generation source." The FEC recommended to the Florida Legislature that it endorse and encourage nuclear fuel as a base load generation source. The FEC explained that "[n]uclear power's lower generating cost, significant contribution to the reduction of greenhouse gases, and obvious positive impact on reducing imported fossil fuels, makes it a very desirable option for future generation." Indeed, the FEC believed that its target deadlines for reduction in GHG emissions were acceptable in part because they would "allow enough time to add more nuclear generation to Florida's mix."

C. INTEGRATED RESOURCE PLANNING ("IRP") PROCESS

1. IRP OVERVIEW

The Resource Planning Process used by PEF incorporates sophisticated resource optimization computer models to evaluate future generation alternatives and cost-effective demand-side resources on a consistent and integrated basis. An integrated planning process is designed to identify optimal supply-side plans that fully reflect the impact of all cost-effective demand-side management on system peak load and total energy consumption. The Resource Planning process combines existing and new generation resources, cost-effective DSM programs, purchased power contracts, including contracts for renewable fuel generation, and interruptible load in a portfolio that will provide reliable electric service at a reasonable overall cost to PEF's customers. The planning process takes into account the need to improve the balance of fuel diversity, reduce Florida's dependence on fuel oil and natural gas, comply with operating limits under current regulations, reduce air emission compliance costs, and contribute to the long-term stability and reliability of the electric grid.

The Resource Planning process begins with the development of a forecast of system load growth. This forecast draws on the collection of certain input data, such as population growth, fuel prices, interest and inflation rates. Economic and demographic assumptions that impact future energy sales and customer demand are developed from this data. Base forecasts reflecting PEF's view of the most likely future scenarios for such key factors as fuel prices and interest rates are developed, along with sensitivity forecasts that reflect alternative future scenarios. The computer models used in the Resource Planning process are then brought up to date with that data, along with updated information on the operating parameters and

maintenance schedules for PEF's existing generating units, to provide the basis for further analysis in the Resource Planning process.

PEF takes into account its future supply of capacity from purchased power contracts and existing and committed generation units that will be available during the period at issue. PEF evaluates the relationship of demand and supply against the Company's reliability criteria to determine if additional capacity is needed during the period at issue in the analysis.

If a need for additional capacity is identified, PEF examines alternative generation expansion scenarios. Supply-side resources are screened to determine those that are the most cost-effective, given the statutory and planning criteria. The Company identifies a wide range of options from various industry sources and PEF's experience, and pre-screens those that do not warrant more detailed economic analysis. Screening criteria include costs, fuel sources and availability, technological maturity, fuel diversity and reliability, environmental impacts, current and future emission costs and impacts, and overall resource feasibility within the Company's system.

The next step of the planning process involves an economic evaluation of generation alternatives in a computer model called Strategist, a resource optimization program from New Energy Associates. The primary output of Strategist is a Cumulative Present Value Revenue Requirements ("CPVRR") comparison of potential resource plan combinations that will satisfy PEF's reliability requirements. The supply-side resource plans are typically evaluated based on cost performance over both the initial planning period (10 years) and a traditional thirty (30)-year study period. The cost performance of these resource plans are studied utilizing the Company's reference assumptions and across a range of sensitivities deemed appropriate for evaluating the decisions being considered. Resource plan alternatives with

the lowest CPVRR's over the study period (based on the reference assumptions), will be further assessed with regard to cost performance in sensitivity scenarios and other considerations as the Company develops a recommendation for a preferred generation plan.

For purposes of evaluating the possible addition of nuclear generation to PEF's system, however, the traditional 30-year study period was insufficient to fully and meaningfully evaluate the costs and benefits of additional nuclear generation power plants. Given the long lead time necessary to site, permit, license, design and construct nuclear power plants, which can be ten (10) years, a 30-year study period will capture only twenty (20) years of commercial operation of the nuclear units in the evaluation. The expected commercial operation period for new nuclear power units like Levy Units 1 and 2, however, is sixty (60) years, which represents the initial forty (40)-year license and an expected twenty (20)-year license extension. To more fully evaluate the costs and benefits of additional nuclear units on PEF's system, and to capture the interplay with both existing and potential new resources over an extended period, the Company extended the study period in the Strategist scenario analysis model to 60 years. The results of these modeling studies were developed as comparisons of CPVRR between the various resource plan options to encompass the cumulative long term effects of generating unit technologies and efficiencies, fuel utilization, initial and ongoing operating costs, environmental performance and other factors.

An equally important part of the Resource Planning process is the planning and development of a group of cost-effective DSM programs. PEF performs its DSM cost-effectiveness evaluations using the Differential Cost-Effectiveness ("DCE") module (formerly known as DSVIEW) of Strategist, which is an accepted and widely used module in the electric utility industry. The DCE module is specifically designed to evaluate DSM

alternatives against a generation resource plan and compute benefit-cost ratios for each of the three Commission-approved cost-effectiveness tests: the Rate Impact Measure ("RIM"), the Total Resource Cost ("TRC"), and the Participant Tests.

The DCE module calculates the capacity and production cost impacts of a DSM program for the DSM Program period by performing a production cost simulation with and without the DSM program. The modeling includes all DSM costs and benefits, including program administrative expenses, incentive payments, participant costs, lost revenue, and more, as required to develop and report results for the three cost-effectiveness tests. Deferred capacity benefits are determined by multiplying the $/kW cost of each deferred generation unit by the amount of capacity that can be reduced by the DSM programs over the DSM Program period in order to ensure that reliability of the system matches the generation scenarios being evaluated. Each generation scenario in the DCE module does not include the DSM programs. Production cost savings are calculated as the difference in production cost results between the "with-DSM" and "without-DSM" program cases. Those DSM programs that prove to be cost-effective are selected for further development. The result is that the DSM programs offered to PEF customers reduce the rates for all PEF's customers, both DSM program participants and non-participants.

Using the same model (Strategist) to evaluate both supply-side and demand-side alternatives ensures consistent data and methods are being applied across the board. Strategist's resource plan allows DSM programs to compete against one or more deferrable generation units that can vary by type and timing. Also, individual DSM programs can be combined together within Strategist to create a DSM bundle large enough to be evaluated against multiple generation units. Finally, the ability of Strategist to perform a production

cost simulation of the system with and without the DSM program provides the best available methodology for estimating fuel and operation and maintenance ("O&M") cost savings.

In arriving at its current DSM Plan, PEF analyzed over 200 possible DSM measures, and selected from those measures two new programs and thirty-nine (39) new measures. In Docket No. 060647-EG, PEF requested approval of an expanded DSM Plan that comprised seven (7) residential programs, seven (7) commercial and industrial programs, a qualifying facilities program, and a research and development program, all of which included the two new proposed programs and thirty-nine (39) new measures. The projected cost, performance, viability, and cost-effectiveness of the DSM programs to meet PEF's specific DSM goals were evaluated by the Commission in this docket. The PSC approved PEF's DSM plan in Consummating Order No. PSC-07-0017-CO-EG making Order No. PSC-06-1018-TRF-EG effective and final.

With the recent changes to PEF's DSM Plan, PEF's total DSM Plan offerings include sixteen (16) programs and over one hundred (100) measures, providing comprehensive DSM services for PEF's customers. These DSM services are intended to encourage further customer participation and they are expected to cost-effectively reduce the growth rate of weather-sensitive peak demand, reduce and control the growth rate of energy consumption, increase resource conservation, and increase the efficiency of the electric system. Because the DSM programs reduce the peak demand and/or energy consumption, the expected reductions from the DSM programs are factored in as adjustments to the peak demand and energy sales forecasts.

As a result of the Company's revised DSM Plan, the Company expects to achieve even greater total load reduction through the current DSM goal period than previously

expected. For the period beyond 2014, which is the end of the current DSM goal period, PEF has projected that the load reduction in PEF's Commission-approved, amended DSM Plan will continue to increase at a similar continuing growth rate, adjusted over time for higher program saturation rates. However, since many of the measures in the revised DSM Plan were just implemented, so it is too early to tell how effective they will actually be, especially over such a long period of time. PEF's current expectation that these load reduction results will be achieved over this extended period of time is therefore an aggressive application of its DSM Plan consistent with the Company's commitment to energy efficiency and load management as part of the Company's balanced approach to meeting customer needs for reliable, cost-effective electrical power.

In the resource integration step of the Resource Planning process, the Company optimizes its supply-side options, taking into account the impacts of its DSM programs, into a final, integrated optimal plan. In selecting Levy Units 1 and 2 as the supply-side alternatives to meet the Company's capacity need beginning in the 2016 to 2019 timeframe, PEF examined, evaluated, and ultimately rejected other conventional, advanced, and renewable generation resources as potential capacity addition alternatives in this time period. For its initial resource optimization scenarios, the Company narrowed these potential capacity additions to four specific generation technology alternatives: natural gas-fired simple cycle and combined cycle; sub-critical and super-critical pulverized coal; coal gasification combined cycle and advanced light water nuclear (ALWR).

An optimized reference resource plan scenario based exclusively on natural gas-fired simple cycle and combined cycle units was developed (the All Gas Reference Case). While not necessarily the preferred resource planning scenario, the relative capital cost differential

between gas-fired generation and all other evaluated generation options and the substantial, recent Company and industry experience with the technology warranted exploration of a resource plan based on these technologies. In preliminary evaluations, nuclear generation technology proved more cost-effective than pulverized coal and integrated coal gasification when compared with the all natural gas-fired generation case. Due to recent regulatory and utility industry experience with pulverized coal and integrated coal gasification generation options in Florida, there appeared to be significant economic, environmental, regulatory, and political hurdles to the development of future coal-based generation in Florida. As a result, nuclear generation appeared to be a more viable future generation resource alternative to compare with natural gas-fired generation in Florida and was, therefore, selected for further economic evaluation.

The nuclear generation resource option was evaluated against the all natural gas-fired generation resource plan over a 60-year analysis period using the Strategist scenario analysis model. This period was selected, as noted above, because of the long-term operational benefits from nuclear generation given the expected 60-year operational life of nuclear generating units. A number of analyses were run in the model comparing an optimized scenario with nuclear generation (Levy Units 1 and 2) to an optimized all natural gas-fired generation scenario. These analyses included a mid-level fuel forecast scenario with high and low fuel sensitivities. Given the regulatory and political environment in Florida and around the country, these analyses were coupled with forecasts based on existing and potential environmental regulations, including future greenhouse gas (GHG) emission regulations. These analyses ensure that the optimized generation resource plan with Levy Units 1 and 2 does not unduly burden the Company or its customers if the future unfolds in a different way.

If the preferred generation resource plan is judged robust under these analyses, the plan becomes the generation resource expansion plan for the Company.

PEF's present Determination of Need Petition, its April 2007 TYSP and TYSP updates, and its Commission-approved DSM Plan are all consistent with the Company's Resource Planning process, as described in this Need Study and the Company's April 2007 TYSP.

2. LOAD AND ENERGY FORECAST.

a. *Economic and Demographic Assumptions and Forecast Methodologies.*

The Resource Planning process uses many inputs and assumptions that are ultimately taken into account to develop PEF's optimal plan. The inputs and assumptions result from a number of parallel activities which feed into the Resource Planning process. One such activity is energy and demand forecasting. PEF's long-term forecasts of customers, energy sales, and seasonal peak demands are key inputs in the Resource Planning process.

The Company's load and energy forecasts used in the Resource Planning process attempt to capture the long-term trends in customer, energy sales, and peak demand growth typically over the next ten years, and in the case of the need assessment for Levy Units 1 and 2, over an even longer period of time to account for the long lead time for nuclear generation units and their multi-year useful lives. Forecasts are first reported annually for the next ten-year horizon, in this case, 2007 through 2016. Because the forecasts are "long-term," they do not project economic business cycles beyond the first few years of the forecast. Rather, they identify a trend that cuts through the middle of any future business cycle fluctuations, thus reducing the risk that the forecasts will vary widely from actual economic conditions in the

future. The Company updated these forecasts beyond 2016 and 2017, when Levy Units 1 and 2 are planned, to support analysis of economic performance over an extended period of commercial operation. The Company's scenario analysis modeling (utilizing New Energy Associate's Strategist model) encompasses the extended demand and energy forecasts in a manner consistent with standard economic forecasting principles and utility industry practice.

There are a number of assumptions that serve as inputs to the forecasts, such as weather conditions, population growth trends, economic growth trends, and the regulatory environment. The assumptions underlying the energy, peak demand, and sales forecasts used in the Resource Planning process are discussed in detail in the Company's April 2007 Ten Year Site Plan ("TYSP") (see Appendix G, Chapter 2). The assumptions are based not only on the work of experts within PEF but also the research efforts of a number of respected independent sources such as the Bureau of Economic and Business Research ("BEBR") at the University of Florida, and Economy.com, a major national economic forecasting firm. These sources provide relevant information concerning the outlook for the national and Florida economies in general and certain sectors comprising large energy users, such as the phosphate mining industry, in particular. A summary of the assumptions used in PEF's forecasts, as well as additional detail concerning PEF's forecast system inputs and results, is included in the April 2007 TYSP. For purposes of the assessment of the need for 2016 and 2017 and beyond, these forecast inputs and results were updated, using the same sources and techniques used to develop the April 2007 TYSP, but applying them over a longer period of time.

The following table summarizes key economic and demographic assumptions associated with PEF's customer, energy sales, and peak demand forecasts. Table 5 contains a summary of key economic and demographic assumptions like changes in gross Domestic

Product (GDP), Florida employment, Florida Personal Income, service area population, and inflation.

TABLE 5. LONG TERM ECONOMIC & DEMOGRAPHIC SUMMARY

	Average Annual Growth Rate
Real GDP	2.3 %
Florida Employment	2.7 %
Florida Personal Income	3.6 %
PEF Service Area Population	1.6 %
Inflation – CPI	2.3 %

PEF uses several models and methodologies in developing its customer energy and demand forecasts. The models incorporate forecasting techniques, such as time-series analysis, econometric regression analysis, and direct contact with customers. All are well accepted and widely used in the electric utility industry. PEF's models incorporate a number of variables listed in Appendix G that are identified based on exhaustive research into determining statistical relationships between every aspect of consumer behavior and its impact on energy consumption. The Company's use of these models and methodologies in the Resource Planning process is described below and in greater detail in the Company's April 2007 TYSP. For purposes of assessment of the need in 2016 and 2017 and beyond, the Company updated the results from the models and methodologies used for the TYSP as discussed and illustrated in the Figures below.

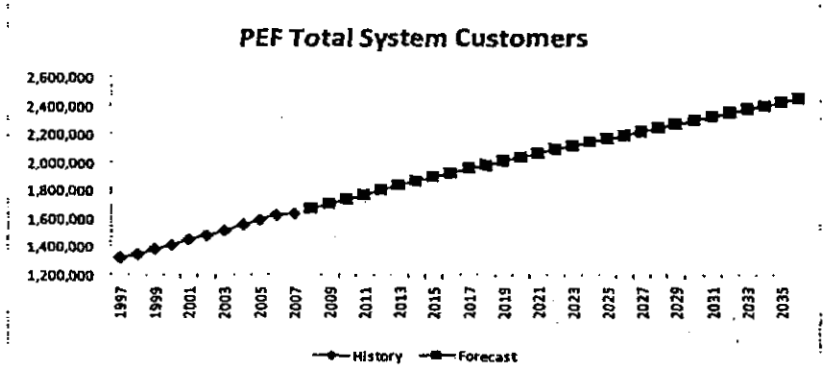
b. *Customer Forecasts.*

Population projections for each of the twenty-nine (29) Florida counties served by PEF drive the forecasts of residential and commercial customers, who together comprise more than 98 percent of the Company's total customers. Population growth in the service areas translates directly into a greater number of residential electric customers and, as a further

consequence, a greater number of commercial establishments to serve them. PEF relies on the BEBR at the University of Florida for population estimates and projections in its service area. The BEBR relies primarily on a cohort component computer model that uses demographic data to develop high, low, and medium cases for its population projections. The BEBR medium case is used as the basis for PEF's residential and commercial class customer forecasts. Time-series models are then used to project industrial customers, street and highway lighting, and public authority customers, because they follow relatively stable historical growth trends and make up only two percent of PEF's total customers on its system.

PEF updated the models following the April 2007 TYSP, using the same economic modeling techniques and practices, for purposes of assessing the need in 2016 and 2017 and beyond. The extended forecast of the number of PEF's customers is shown in Figure 2. A more complete discussion of the customer forecasts and the methodologies behind them can be found in the April 2007 TYSP. PEF's history and forecast of customer levels for rural and residential, commercial, industrial, street and highway lighting, and other public customers can be found in the April 2007 TYSP (See Appendix E, Chapter 2, Schedules 2.1 and 2.2).

FIGURE 2. Average Number of Customers



c. *Sales Forecasts.*

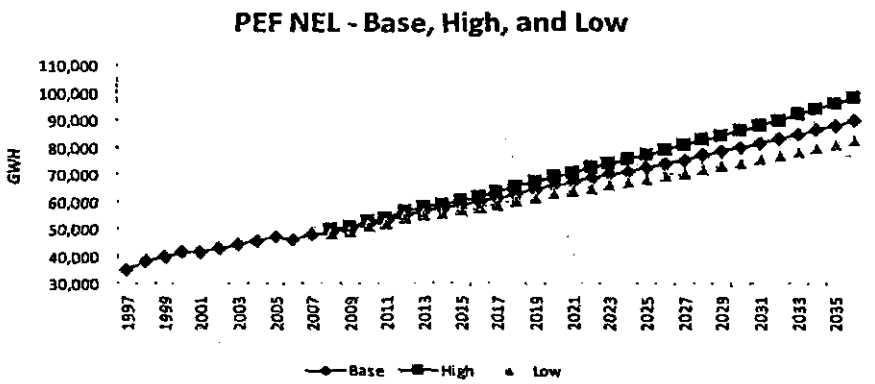
PEF forecasts energy (i.e. megawatt-hour) sales using a class-based econometric modeling approach that incorporates specific research for each customer class. The retail class-based econometric models (e.g. residential, commercial, etc.) are premised on a significant statistical relationship between an explanatory "driver," or variable, such as weather or income, and electric consumption by customer class. In selecting significant drivers for the models, PEF chooses variables that are statistically proven to affect energy use in a particular customer class over an extended historic period.

Wholesale jurisdictional energy sales are projected on a contract-defined basis rather than a "class" basis. Each contract has specific terms for energy requirements that can vary by type and duration of energy under consideration. For example, PEF contracts to sell wholesale energy on a "stratified" basis. Each strata type --- base, intermediate, or peaking --- has a different assumption as to the number of hours a purchasing entity will be taking energy under its contract with PEF. By working with contract administrators in PEF's Regulated Commercial Operations Department, forecasters gain an understanding of the customers' energy needs through estimates of monthly load factors for each contract.

In support of the Company's Strategist scenario analysis modeling, the energy sales forecasts were updated and extended following the same methodology that was used in the April 2007 TYSP. The forecast of net energy for load is shown for the base, high, and low cases in Figure 3, below. A more complete discussion of PEF's energy sales forecasts and the methodology behind them through the initial ten-year planning period, 2007 to 2016, can be found in PEF's April 2007 TYSP. Specifically, TYSP Schedules 2.1 and 2.2 contain PEF's history and forecast of energy sales for each customer class, and Schedule 2.3 contains PEF's

history and forecast of its total number of customers and net energy for load. The extended energy sales forecasts were used in the Strategist model in a manner consistent with engineering and modeling practice in the industry.

Figure 3. Net Energy for Load



d. *Peak Demand Forecasts.*

Seasonal peak hour demand (or load) is the final component in PEF's forecast. PEF separates its peak demand forecast into winter and summer peaks. In each season, PEF disaggregates and projects the following components of total system peak demand: potential firm retail load (excluding the non-firm interruptible demands), interruptible demand, company-use demand, wholesale demand, and dispatchable and non-dispatchable demand-side management (DSM) program capability.

Potential firm retail load refers to the projected retail hourly seasonal peak demand excluding interruptible demands such as interruptible, curtailable, and standby generation service, and before the effect of conservation or load management programs are taken into account. Determining the Company's retail load without the impact of utility-induced

conservation or load control enables PEF to observe and correlate the underlying trend in retail peak demand in the service area to customer levels and coincident weather conditions. The year-to-year variation caused by conservation or the need to activate load control is removed leaving a "clean" historical trend from which to study growth. Potential retail peaks are projected using historical seasonal peak data, regardless of which month the seasonal peak occurred. Coincident weather conditions and retail customer levels drive these forecasts.

The interruptible demand component is developed from historic trends on the Company's interruptible, curtailable, and standby generation tariffs, as well as direct information obtained from PEF's largest customers using the interruptible tariff.

Wholesale demand comprises supplemental, partial, and full requirement service. Supplemental load is based on sales to Seminole Electric Cooperative, Inc. (SECI), PEF's supplemental requirements customer. Demand for partial requirement services is based on contractual terms such as the capacity requirements (MW), type of stratified service requested, and length of term. Peak demand projections for each full requirements municipal customer is performed by trending monthly peaks and energy.

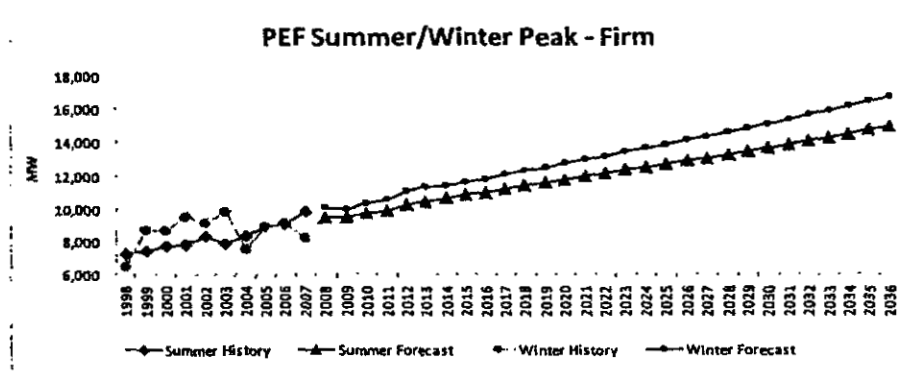
Company-use demand at the time of system peak is estimated using load research metering studies and is assumed to remain stable over the forecast horizon.

Each seasonal peak projection becomes the January (winter) and August (summer) forecast values. The non-seasonal peak months are calculated the same way using data from each specific month. Each of the megawatt demand components described above is a positive value, except for the DSM program capability which is a negative value. DSM program impacts represent a reduction in peak demand; therefore, they are assigned a negative value. DSM program projections are applied to the forecast at levels that at least

achieve the cost-effective goals set by the Commission. Projections of non-dispatchable DSM (e.g. insulation, duct repair, etc.) megawatt impacts are cumulative and are subtracted from the projection of potential firm retail demand. Dispatchable DSM programs (e.g. load management) megawatt reductions reflect direct load control capability at normal peaking temperatures and likewise produce a reduction in total potential retail demand. Total system peak demand, therefore, is calculated as follows: Total System Peak Demand = Retail Demand (including Interruptible Demand) + Wholesale Demand + Company-Used Demand.

The firm summer and winter peak demand forecasts, shown in Figure 4, represent the Total System Peak Demand minus Interruptible Demand and DSM. Figure 4 below illustrates the extended firm summer and winter peak demand forecasts for the planning period in 2016 to 2019 and beyond. To arrive at the firm summer and winter peak demand forecasts over the scenario analysis modeling period, PEF extended the forecasts using standard modeling techniques consistent with engineering practice in the electric utility industry.

Figure 4. Summer and Winter Peak Demand



A more complete discussion of the peak demand forecasts and the methodologies behind them can be found in PEF's April 2007 TYSP (see Appendix G, Chapter 2). The summer peak demand forecasts and winter peak demand forecasts can be found in the April 2007 TYSP (see Appendix G, Schedules 3.1 and 3.2 respectively).

3. OTHER PLANNING ASSUMPTIONS.

The Company's resource planning is a forward looking process that encompasses a complex set of overlapping timelines that require forecasts of key decision factors and implementation lead times. When the Company is evaluating a specific preferred resource option or set of options and has entered into the respective critical decision timeframe for the option(s), it gathers the best information available to support the decisions being contemplated. PEF always seeks to make significant resource selection decisions based on the best information available to the Company at the time. Accordingly, the Company updates key factors and assumptions in the course of evaluating its overall resource plan, in this case, given the potential resource option of additional nuclear generation to meet the Company's need in 2016 to 2019 and beyond. These factors are addressed in the ensuing sections covering fuel prices and economic and financial assumptions.

a. *Fuel Price Forecasts.*

Fuel forecasts are an integral part of PEF's planning and operations. Relevant fuel prices and their differentials are important economic factors in determining the types of new generation to be added to PEF's system. Additionally, fuel prices are relevant to the determination of the most efficient method of operating existing and proposed generating units on PEF's system in compliance with environmental and system requirements. PEF's

forecasts for natural gas, oil, and coal are addressed here and PEF's nuclear fuel forecast is addressed separately below.

For purposes of the April 2007 TYSP and the TYSP updates, the forecast period is over a ten year period of time. Within this resource planning framework, a short term fuel forecast is typically developed for a three-year period and a long-term forecast is incorporated beyond three years. The Company's fuel price forecast used in this resource planning process is developed using short-term and long-term spot market price projections from industry-recognized sources.

PEF depends on observable market data for near-term fuel price forecasts. In the short term, the coal forecast is based on existing contracts and spot market coal prices and transportation arrangements between PEF and its various suppliers. For the longer term, the prices are based on spot market forecasts reflective of expected market conditions. Fuel oil and natural gas short-term price forecasts are estimated based on current and expected contracts and spot purchase arrangements, as well as near-term commodity future spot prices. Natural gas firm transportation costs used in the forecast were determined primarily by pipeline tariff rates, negotiated term contracts, and estimated rates for future pipeline capacity that will be needed to meet generation growth.

For long-term fuel prices the Company uses two independent, industry experts, PIRA Energy Group ("PIRA") and Global Insight, Inc., as well as its own expertise and experience. In this resource planning process, the long-term extended beyond the typical long-term forecast in the TYSP process because the addition of Levy Units 1 and 2 occurs at the end of the TYSP period and their commercial operation extends more than fifty years beyond the

current TYSP. This required the development of long-term fuel price forecasts over this extended period of time.

To develop this extended fuel forecast PEF first relied on PIRA and Global Insight to provide the Company with an extended forecast of prices for the various fuels that potentially could be used at PEF's existing and future generating plants. Those fuels are natural gas, No. 6 fuel oil, and No. 2 fuel oil. The long-term natural gas transportation costs were estimated based on expected rates for future pipeline capacity that will be needed to meet generation growth. The Company developed its own long-term coal forecast, using existing contracts, market information, and third-party forecasts for comparison purposes.

Long-term forecasts use the PIRA and Global Insight forecasts as a starting point. These forecasting experts rely on fundamental supply and demand analysis to develop their long-term spot oil and gas forecasts. Supply-side factors that are considered include new sources of natural gas and oil, rates of production in existing gas and oil sources, developing technologies for locating and producing gas and oil, and the costs associated with finding, producing and distributing gas and oil from new sources, including liquidified natural gas ("LNG"). Demand-side factors include demand growth in developed and developing economies, demand across various industries and fuel consumer groups in the United States and across the world, and Gross Domestic Product ("GDP") growth rates. These experts also consider geopolitical trends, environmental policies, and generation resources that are expected to be added in the future in developing their long-term fuel forecasts.

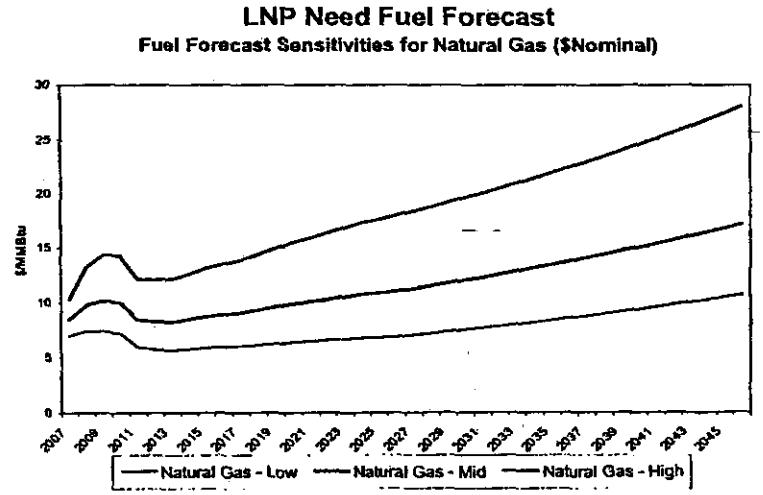
Upon receipt of this long-term pricing information, PEF first develops a forecast that takes the average of the fuel forecasts provided by PIRA and Global Insight. This information is reviewed by PEF employees who are experienced in the natural gas and oil

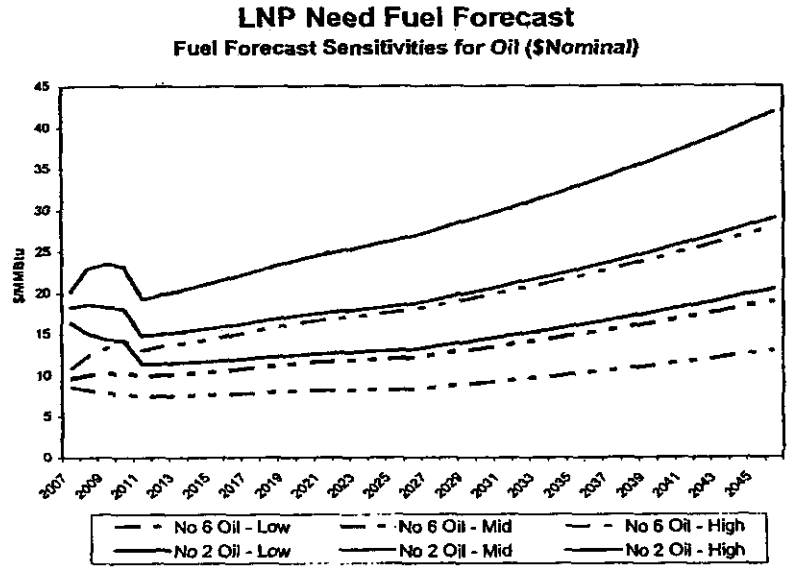
markets and compared with other electric utility industry and fuel market information that might include NYMEX futures market prices, current contracts, and other, current market data to arrive at a final fuel forecast. The final fuel forecast for oil and gas reflects PEF's best professional judgment of future costs, at the time the forecast is prepared based on all the factors considered.

The Company's mid-level case fuel forecast is considered the most likely scenario, based on the Company's view of the expected, reasonable future fuel costs. The Company, however, also develops a high and low fuel forecast. These high and low fuel forecasts are developed based on a statistical analysis of the mid-level fuel forecast. In this statistical analysis the high fuel forecast represents the 90th percentile and the low fuel forecast represents the 10th percentile on a price distribution curve. This means there is a 90 percent statistical certainty that future fuel prices will be lower than the high forecast and higher than the low fuel forecast. All three fuel forecasts, in the Company's view, represent the reasonable range of future spot fuel costs.

Once a fuel forecast is prepared, it is periodically re-evaluated against the third-party fuel price forecasts, developments, and trends with respect to each fuel type to verify that PEF was and is reasonable in developing its fuel forecasts. This re-evaluation occurred during the evaluation of the generation alternatives to meet the Company's need in 2016 to 2019, in particular the comparison of nuclear generation to natural gas-fired generation over the sixty-year scenario analysis period leading up to the Company's present Need Determination Petition. PEF's current mid-level, high, and low natural gas and fuel oil forecasts are included in Figure 5 below.

Figure 5. Mid-Level, High, and Low Gas and Oil Fuel Price Forecasts





b. *Nuclear Fuel and Nuclear Fuel Forecast.*

There are several component costs to the nuclear fuel utilized in PEF's existing nuclear generation unit, Crystal River Unit 3, and that will be utilized in PEF's proposed new nuclear generation units, Levy Units 1 and 2. Nuclear fuel begins with uranium, which is a common natural mineral found in several places around the world. Raw uranium is mined using various mining techniques and milled near the mine to produce an oxide called U308 or "yellowcake." PEF currently has contracts for uranium mined in the United States, Canada, Australia, Kazakhstan, Uzbekistan, and Namibia.

The U308 is then chemically converted to UF6, which is a gas when heated. Impurities are removed in this process and conversion to a gaseous state is necessary to proceed to the next step which is the enrichment process. The UF6 gas must be enriched because natural uranium contains only 0.711 percent U-235, which is the uranium isotope actually used in nuclear reactors to produce energy. The enrichment process raises the U-235 isotope percentage from 0.711 to a range of approximately 3 to 5 percent U-235.

The next step in the process of taking uranium and turning it into useable nuclear fuel requires changing the enriched UF6 gas to a powder, pressing that powder into pellets, feeding the pellets into tubes with inert elements, sealing them, and then assembling the tubes or "rods" together into fuel assemblies. These fuel assemblies are then shipped to the plant site and inserted in the nuclear reactor. Each step of this process involves a cost and, together with certain fees, all of these costs represent the nuclear fuel cost, converted to a $/mmBtu cost, to the customer.

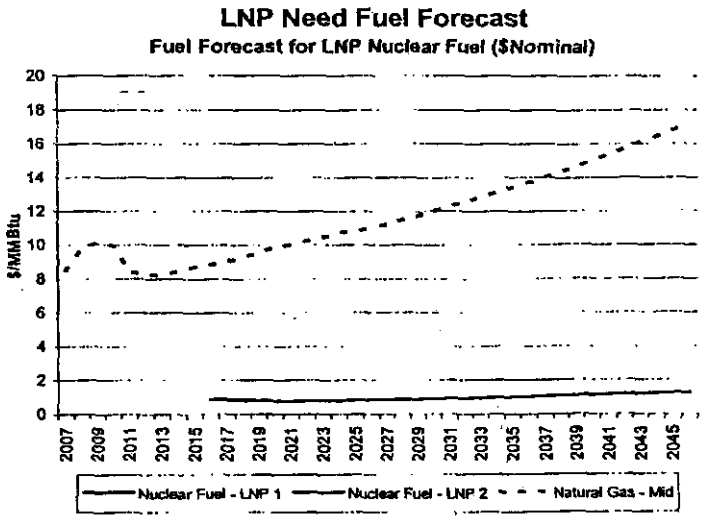
The Company's nuclear fuel forecast is developed by first procuring price forecasts from market consultants who study the supply and demand of the nuclear market worldwide.

The Company then reviews these projections and may make revisions to them based on the Company's knowledge from and experience with recent procurements and existing suppliers. Subsequently, this market cost forecast is input to models of current and expected contract terms to arrive at the Company's expected costs each year for the various components of nuclear fuel used in the reactor, uranium processing and conversion, enrichment, and fabrication services.

The Company's engineers next make projections of the amount of nuclear fuel needed for each operating cycle to obtain a total cost for the nuclear fuel loaded into the core. For the Westinghouse AP-1000 plants planned for Levy Units 1 and 2, detailed projections of the amount of nuclear fuel needed have already been developed by Westinghouse. With the projections of price and total nuclear fuel completed, the nuclear fuel cost to be amortized and charged to the customer is calculated by determining the amount of energy produced by each fuel assembly on an annual basis. An estimated 1 mill per kWh spent fuel disposal fee is added to this calculation to form the basis of the Company's estimated fuel cost for Levy Units 1 and 2.

The Company's nuclear fuel forecast is included in Figure 6 below. The Company's nuclear fuel forecast represents the best estimate of the reasonable, future nuclear fuel costs for Levy Units 1 and 2.

Figure 6. Nuclear Fuel Forecast



c. *Economic and Financial Assumptions.*

PEF's evaluation of its supply-side generation alternatives takes into account those economic and financial factors that affect the determination of the most economic generation expansion plan. PEF prepares and incorporates forecasts for key economic and financial factors such as the general inflation rate, construction cost escalation rate, and interest rates into its Strategist model for the analysis of generation alternatives. These forecasts are based on PEF's annual assessment of regional and national economic factors and represent what PEF anticipates in support of its financial management process.

4. FUTURE DEMAND-SIDE MANAGEMENT

Extensive analysis was conducted during the DSM Goals and DSM Plan proceedings (Docket No. 040031-EG and Docket No. 060647-EG, respectively), to assess the projected cost, performance, viability, and cost-effectiveness of a wide range of dispatchable and non-

dispatchable DSM program options. The DCE module of Strategist was used to identify DSM programs subsequently approved by the Commission as cost-effective under the Commission's rules. Based on this analysis, the Company identified a set of DSM programs that were cost-effective and met Commission established goals. These programs were filed with the Commission as part of PEF's DSM Plan in Docket No. 060647-EG (see Appendix C) and were subsequently approved by the Commission in Order No. 06-1018-TRF-EG (see Appendix C).

With the approval of its DSM Plan by the PSC, PEF increased its DSM offerings by two new programs and 39 new measures and now offers customers sixteen individual programs, including seven residential programs, seven commercial/industrial programs, a qualifying facilities (cogeneration and small power production) program, and a research and development program, and over 100 DSM measures. They are described in detail in PEF's DSM Plan previously filed with the PSC.

PEF's DSM programs have successfully met or exceeded the Commission-established DSM goals in the past, and the current Plan anticipates achieving all new future year goals. PEF continues to believe that demand-side resources are an important and cost-effective resource to meet its electricity needs. PEF has aggressively pursued and plans to continue to aggressively pursue the research and development of additional or modified DSM programs to reduce and control the growth rate of energy consumption, increase resource conservation, and increase the efficiency of the Company's electric system consistent with Commission guidelines and cost-effectiveness rules under Rule 25-17.008, F.A.C.

The Commission itself has recognized in its February 2007 annual report on the activities pursuant to FEECA that, in order to obtain cost recovery, PEF must show that each

proposed program is cost-effective not only to the participating customer, but to the general body of ratepayers as well. As the Commission explained, all utilities subject to FEECA, including PEF, must provide a cost-effectiveness analysis of each program using the RIM, TRC, and Participant tests, but that the RIM test, in particular, ensures that all ratepayers benefit from a proposed DSM program, not just the program's participants. This is important because all customers, not just those that participate in the particular DSM program, pay the costs of the DSM programs. As a result, then, it is the RIM test that ensures that rates to all customers are lower than they would have been without the DSM program.

The Company's current proposed conservation goals were developed in accordance with the Commission's rules, and, in particular, the RIM test. As such, they represent the most current projections of PEF's total, most cost-effective, winter and summer peak demand (kW) and annual energy (kWh) savings reasonably achievable through demand-side management. With the additional changes to PEF's DSM programs approved by the Commission in 2006, an additional 527 WMW of peak demand load from direct load control will be reduced along with a 418 WMW reduction due to energy efficiency (a total reduction of 945 WMW), through 2014. When added to the existing programs, this represents a reduction of over 2,400 MW. The potential load reductions from the expanded, Commission-approved DSM plan represent the most that can reasonably be achieved from a maximization of the cost-effective DSM programs available to the Company at this time.

Total DSM resources are shown in Schedules 3.1.1 and 3.2.1 of the April 2007 TYSP (see Appendix G, Chapter 2). The schedules show the historic achievements in reduced demand, as well as the projected future demand savings expected to occur from PEF's Commission-approved DSM programs. This mix of cost-effective DSM resources is reflected

in PEF's Resource Planning process as a reduction in future potential load. While PEF anticipates that the implementation of the Company's DSM programs will significantly increase the penetration of demand-side management in the future, as reflected in the April 2007 TYSP, these DSM measures were just recently implemented and maximize the Company's available cost-effective DSM programs. It is, therefore, still too early to tell how much the expanded DSM program will impact the overall peak load and energy demand in the future.

PEF has, nevertheless, included all of the existing and expanded DSM programs, at their full potential load reduction, in its Resource Planning process. PEF has further assumed that the full potential load reduction of these existing and expanded DSM programs will be maintained beyond 2014 and throughout the analysis period. The Company's resource plan, therefore, is a fully integrated plan that includes both demand-side and supply-side resources.

As the Commission recognized in its February 2007 annual report on FEECA, however, both Florida's population and Florida's energy consumption are expected to continue to grow over the next decade. And, while the Commission acknowledged that Florida's utilities have been successful in meeting the overall objectives of FEECA and DSM programs will continue to play a key role in reducing energy demand and electricity consumption, utilities must still build new generation to satisfy Florida's electrical energy needs.

5. FUTURE RENEWABLE FUEL GENERATION

In January 2003, the Commission issued an assessment of renewable electric generating technologies for Florida, as directed by the Florida Legislature. This assessment

addressed all known and potential renewable energy technologies as defined by the Florida Legislature. The Commission determined that, generally speaking, electricity produced from renewable technologies is usually more expensive than traditional technologies on a production cost basis. The Commission further found that the potential for commercially feasible, new renewable capacity development in Florida was limited, at least relative to Florida's energy capacity needs, in that only an additional 651 MW of renewable fuel generating capacity was expected near term. Most of this estimated, additional renewable fuel generation capacity was expected from municipal solid waste or refuse, wood refuse, or biomass crops. The Commission's assessment has been consistent with PEF's experience developing renewable fuel generation resources in Florida.

The Company has a long-standing practice of adding renewable energy resources to its generation portfolio. In the 1980's, PEF began entering into long-term contracts with cogenerators and municipal solid waste facilities. As early as 1980, for example, PEF entered into an agreement with Pinellas County to purchase energy from its municipal solid waste facility. By the 1990's, PEF had over 800 MW of contracts with qualifying facilities and cogenerators.

PEF has always been and continues to be one of the most successful Florida utilities in securing cogeneration and renewable energy contracts. Today, PEF purchases capacity and energy from municipal solid waste facilities in Lake County (12.75 MW), Metro-Dade County (43 MW), Pasco County (23 MW), and Pinellas County (54.75 MW). PEF also purchases capacity and energy produced by waste heat from Mosaic (15 MW) and capacity and energy produced by waste wood, tires, and landfill gas from Ridge Generating Station (39.6 MW).

PEF is also actively engaged in contracting with electric energy providers that use renewable resources to produce electric energy on a large scale. This includes projects of one MW of generation or more. Examples include the contracts with the Florida Biomass Energy Group (117 MW) and Biomass Gas & Electric (75 MW each under two long-term contracts for a total of 150 MW). Florida Biomass Energy Group plans to build and operate the largest renewable energy plant of its kind in the world. It will be a carbon neutral facility that burns a bio-oil made from a crop they call E-Grass. The Biomass Gas & Electric group will use waste wood products, such as yard trimmings, tree bark, and wood knots from paper mills, that will be gasified to provide renewable fuel for a combined cycle gas plant. At 75 MW for each Biomass Gas & Electric facility, this would make them the largest waste wood biomass projects in the nation.

PEF currently has contracts with five providers for more than 173 MW of renewable energy. In addition, PEF has recently signed three contracts for an additional 267 MW of renewable energy. Table 6 below shows PEF's current existing and pending contracts, their total MW capacity and/or energy production, and the type of renewable fuel that is or will be used by the renewable generation facility.

Table 6. PEF's Renewable Fuel Generation Contracts

Progress Energy Florida
Contracted Renewable Capacity
Exhibit RDN-1

Plant Name	Contract Capacity (MW)	Location	Contract Name	Contract In-Service Date	Contract Termination Date
Municipal Solid Waste:					
Dade County Resource Recovery	43	Miami, FL	Dade County	Nov-91	Nov-13
Lake County Resource Recovery	12.75	Okahumpka, FL	Lake County	Jan-95	Jun-14
Pasco County Resource Recovery	23	Hudson, FL	Pasco County	Jan-95	Dec-24
Pinellas County Resource Recovery	54.75	St. Petersburg, FL	Pinellas County	Jan-95	Dec-24
Biomass:					
Ridge Generating Station	39.6	Lakeland, FL	Ridge	Aug-94	Dec-23
Biomass Gas & Electric #1	75	Pending	Biomass Gas & Electric (BG&E)	Jan-11	Dec-30
Biomass Gas & Electric #2	75	Pending	Biomass Gas & Electric (BG&E)	Jun-11	Dec-30
Florida Biomass Energy Group	116.6	Pending	Innovative Energy Group (IEG)	Dec-11	Nov-36
Total Capacity:	439.7				
Capacity as of Jan. 1, 2008:	173.1				
As-Available Energy:					
PCS Phosphate	<1	Perry, FL	As-Available		
SI Group	5	Drifton, FL	As-Available		

In addition to its existing and pending renewable generation contracts, PEF issued a Request for Renewables on July 19, 2007. This Request was designed to invite potential renewable energy developers to open discussions with PEF regarding potential new renewable fuel projects in Florida. The Request is less restrictive than a Request for Renewable Proposals (RFP) in that it is basically a request for information and an indication of PEF's interest in engaging in discussions regarding the potential development of additional renewable generation projects in Florida. PEF received over 55 inquiries about selling renewable energy to PEF. These proposals included wave energy, solar energy, biomass, and biodiesel projects, among others. Many of the responses were merely inquiries, however,

looking for information regarding rate structure, service area, and other information concerning PEF. Some are from developers that do not yet have a commercial technology or the technology is still not cost effective. As a result, these inquiries represent potential renewable generation projects that are clearly not viable, cost-effective generation alternatives by 2016 and 2017. Some potential renewable projects, however, may have promise further in the future and PEF has entered into more substantive discussions with their potential developers.

All renewable generation projects, current, pending and those in the future, are evaluated in accordance with the Commission's rules for Standard Offer Contracts and Negotiated Contracts. Under the Commission rules, the total net present value of the payments to the renewable generation facility developers must be less than the total expected expense of the utility's own generation resources. In the words of the Commission rules implementing both federal and Florida legislation, the renewable resource provider must produce electric energy at a price that is below the utility's avoided cost of new electric utility generation. In this way, the renewable generation resource must be cost-effective when compared to conventional generation resources, such as new coal, natural gas, or oil fired generation.

PEF's pending contracts for renewable generation from biomass fuels were approved because they were equal to or less expensive than alternative, conventional utility generation under this legislative and regulatory standard. All potential renewable generation resources meeting this legislative and regulatory standard have been included in PEF's generation resource plan. This includes over 250 MW from future biomass fueled, renewable generation facilities.

These biomass fueled, renewable generation facilities, however, have not yet been designed, constructed, and achieved commercial operation. There are a number of obstacles to them achieving commercial operation on time and at the contracted for capacity and energy. These obstacles include the ability to secure adequate land for their fuel sources, weather and other environmental impacts that might effect crop or raw material production, financial or logistical constraints or higher than anticipated costs, among others. PEF, of course, stands behind its contractual commitment to these renewable generation facilities, and PEF has accounted for them at their fully committed contractual capacity and energy in its generation resource plan, but there is a risk that they might not come to fruition or might achieve commercial operation only at a much later time and/or much lower capacity and energy production than what was contractually committed to and expected. Under those circumstances, PEF's need in the 2016 to 2019 timeframe will be even greater than currently anticipated.

6. SUPPLY-SIDE GENERATION ALTERNATIVES

a. *Overview of Supply-Side Generation Alternatives.*

PEF includes conventional, advanced, and renewable energy resources as potential capacity addition alternatives in its overall Resource Planning process. These generation resource alternatives are periodically reassessed and the performance characteristics updated to ensure that projections for new resource additions capture new and emerging technologies over the planning horizon. This analysis involves a preliminary screening of the generation resource alternatives based on commercial availability, technical feasibility, cost, fuel

diversity and supply reliability issues, and the avoidance or reduction of air emission compliance costs.

Preliminary screening of potential generation technologies for commercial availability, technical feasibility, and cost has been a part of PEF's Resource Planning process for all potential generation technologies since that process began in the early 1990's. With the advent of Florida legislation promoting nuclear and coal gasification generation in 2006 and 2007, respectively, any generation resource screening including nuclear and coal gasification technologies must also consider fuel diversity and supply reliability and the avoidance or reduction of current and potential air emission compliance costs. These factors, fuel diversity and reliability and current and future air emission compliance costs, are central to determining the cost-effectiveness of nuclear and coal gasification under the amended statutory guidelines for the determination of need for new nuclear and coal-gasification electrical power plants in Florida.

First, PEF examined the commercial availability of each technology for use in utility-scale applications. For a particular generation technology to be considered commercially available, the technology must be able to be built and operated on an appropriate commercial scale in continuous service by or for an electric utility. Reasonable levels of detail for emerging generation technologies were developed to allow PEF to screen the technology options and to stay abreast of potential economic benefits as they mature.

Second, technical feasibility for commercially available generation technologies was considered to determine if the technology met PEF's particular generation requirements and that it would integrate well into PEF's system. Evaluation of technical feasibility included the size, fuel type, and construction requirements of the particular technology and the ability to

match the technology to the service it would be required to perform on PEF's system (e.g. base load, intermediate, cycling, or peaking).

Next, for each generation alternative, an estimate of the levelized cost of energy production, or "busbar" cost, accounting for capital, fuel, and O&M costs over the typical life expectancy of the unit was developed. Busbar costs allow for comparison of fixed and operating costs of all technologies over different operating levels. The comparison considers the long-term economics of future power plants at varying levels of capacity factor. Data used to assess each generation technology includes fixed and variable O&M, fuel, construction costs, and the levelized fixed charge rate.

Because the potential commercial generation alternatives include nuclear and coal gasification, the Company further considered the contribution of each potential generation technology to fuel diversity and fuel supply reliability. Fuel diversity included the contribution of the generation technology to fuel diversity on PEF's system and to fuel diversity for the State of Florida. Fuel supply reliability involved the consideration of the susceptibility of the fuel source for the generation technology to supply disruptions and whether the fuel source increased or reduced the Company's and the State's dependence on foreign fuel suppliers.

Finally, the inclusion of nuclear and coal gasification among the potential generation technologies further required screening the generation technologies with respect to their ability to avoid or reduce current and potential future air emission compliance costs. With the Clean Air Act rule amendments and global warming concerns, the emissions of generation technologies that affect the environment have become a central legislative, regulatory, and political concern. Accordingly, PEF further considered existing and potential environmental

regulation costs related to the emission of SO_2, NOx, mercury, GHG, and other emissions when screening potential generation technologies for resource planning.

For the screening of generation alternatives, the data are generic in nature and thus not site specific. The costs and operating parameters are adjusted to reflect installation in the southeastern United States. The operating characteristics are based on state-of-the-art designs, and for most generation technologies, the performance projections were made with the assistance of EPRI's Technical Assessment Guide (TAG) software and internal PEF resources.

b. *Cost and Performance.*

Categories of generation capacity addition alternatives that were reviewed as potential resource options for in-service dates in 2016 and 2017 included conventional generation technologies that utilize non-renewable resources, advanced technologies that are still being or have recently been developed, and alternative technologies that utilize renewable sources of energy. The following generation technologies were screened in the assessment that preceded the 2007 Ten Year Site Plan:

Conventional Technologies:

Pulverized Coal (PC)	
Subcritical Steam Conditions	(Mature)
Supercritical Steam Conditions	(Mature)
Combustion Turbine (CT)	
Aeroderivitive, Non-augmented	(Mature)
Aeroderivitive, Augmented	(Mature)
Nominal 80 MW Frame	(Mature)
Nominal 170 MW Frame, Non-augmented	(Mature)
Nominal 170 MW Frame, Augmented	(Mature)
Combined Cycle (CC)	

Advanced Technologies:

Atmospheric Fluidized Bed Combustion (AFBC)	(Commercial)
Coal Gasification/Combined Cycle (CGCC or IGCC)	(In Development)
Advanced Light Water Nuclear (ALWN)	(Pending Commercial)
Fuel Cell (FC)	(Demonstration)

Alternative Technologies:

Municipal Solid Waste	(Commercial)
Solar Photovoltaic (PV)	(Demonstration)
Refuse Tires (TIRE)	(Commercial)
Wind	(Commercial)
Wood	(Commercial)
Bio-Fuel	(In Development)
Wave technology	(Demonstration)

Of these potential generation technologies, not all are mature, proven technologies. This is important to keep in mind, especially with respect to the alternative generation technologies, as some generation options that may appear cost effective are not commercially available or technically feasible generation capacity additions at this time. In addition, the less mature a generation technology is the more uncertain and less accurate its cost estimate may be, as with the fuel cell and solar generation options, which are still in the demonstration stage and are not commercially available at this time.

Alternative generation technologies were evaluated but not considered potential generation capacity additions in 2016 and 2017. As mentioned above, PEF has already entered into purchased power contracts for the development of all currently, commercially available bio-fuel generation. Additional bio-fuel generation does not feasibly exist to meet the Company's capacity need in 2016 to 2019.

Wind projects have advanced enough that they are commercially available with high fixed costs but virtually no operating costs. However, the geographic and atmospheric

characteristics of Florida limit the ability of viable wind projects. Wind projects must be constructed in areas with high average wind speed. In general, such wind resources in Florida, and throughout the southeastern United States, are limited. The average wind speed in Florida is below 14 miles per hour, well below the average speed necessary to sustain a viable wind turbine project. In any event, wind is intermittent, and therefore wind turbine projects cannot be expected to operate above 20 to 25 percent capacity factors. Wind turbine projects, therefore, cannot achieve the high capacity factors necessary to meet the Company's existing capacity need. They simply are not viable generation alternatives for base load duty. As a result, wind was eliminated from consideration as a potential resource to meet the Company's generation capacity need in 2016 to 2019.

Solar photovoltaic (PV) projects are also technically constrained from achieving high capacity factors. In Florida, they would be expected to operate at approximately 20 percent capacity factors making them unsuitable for base load duty. Aside from their technical limitations, PV projects are not economically competitive generation alternatives at this time. For example, recent costs show that PV projects cost about five times the cost of biomass or bio-fuel generation. The future for PV or other solar projects is promising but right now the existing technology cannot produce cost-effective energy. As a result of the capacity factor constraints and high cost, solar was eliminated as a potential generation option to meet the Company's need in 2016 to 2019.

Fuel cells likewise offer some promise in the future but they are currently in the demonstration stage and have not achieved sufficient technical advancement to be considered a viable commercial alternative. Fuel cells can be assembled building block style to produce varying quantities of electric generation. However, as currently designed, a sufficient number

of fuel cells cannot be practically assembled to create a source of generation comparable to other existing bulk generation technologies. Further development of this technology is needed before it becomes viable as a generation resource option.

Municipal solid waste has a proven track record in Florida. PEF, for example, has contracts with four municipal solid waste fueled facilities for 133.5 total MW. Currently, additional municipal solid waste facilities in Florida and additional, improved solid waste fuel technologies have been discussed but not much more has been done to suggest that such projects can achieve commercial operation by 2016 and 2017. Additionally, current estimates place the additional capacity from future solid waste fueled facilities in Florida at only 400 MW for the entire state. The high cost and environmental impact of emissions from such facilities are also a concern. For these reasons, municipal solid waste fueled facilities (and refuse tire and wood facilities which have similar concerns), were not considered viable generation resources to meet the Company's need for capacity and energy in 2016 to 2019.

Wave generation from ocean currents is a promising future generation technology but the development of this technology is in its infancy. It simply is not commercially or technically feasible at this time. Other alternative, renewable generation resources, such as hydroelectric or geothermal power generation, are simply unavailable at all or on any viable commercial scale in Florida.

All but four potential generation resources were eliminated as potential capacity additions in the 2016 and 2017 timeframe. These were natural gas-fired combined cycle (CC) generation, pulverized coal or AFBC generation technologies, coal gasification generation (CGCC or IGCC), and advanced light water nuclear (ALWN) generation.

Natural gas-fired CC generation generally has lower capital costs than all of the other generation resource options selected for the initial economic evaluation. The CC technology is well developed and the Company has extensive experience putting this generation technology into commercial operation. Relative to coal-fired generation, natural gas-fired generation also offers lower GHG and other emissions such as SO_2, NOx, and mercury. For these reasons, natural gas-fired CC generation was considered the default future generation resource option available to the Company to meet its capacity and energy needs in 2016 to 2019. All of the supply-side generation resource alternatives chosen for further study were initially evaluated against a resource plan based on natural gas-fired combined cycle and simple cycle generating units.

In this initial economic comparison, the advanced light water nuclear generation proved more cost-effective than the coal-fired and coal gasification generation options when compared with the all gas reference case. There are a number of factors that led to this result. For example, PEF was influenced by the federal and Florida legislation encouraging nuclear power generation development. The Florida legislation provided for alternative means to recover costs incurred in the development of nuclear generation to assist in the financing and construction of such capital intensive projects. The Florida legislation further required the Company and Commission to consider fuel diversity and supply reliability and air emission cost benefits when evaluating nuclear generation. These considerations among others, but in particular the environmental considerations, favored nuclear generation over coal-fired and coal gasification generation as a potential future generation alternative.

To illustrate, coal-fired and coal gasification generation options have significant air emission cost issues under recent Clean Air Act amendments that nuclear generation does not

have. Both generation options further have significant GHG emission issues, raising the potential for future carbon abatement costs, carbon taxes, or carbon capture requirements when, to date, no commercially operational carbon capture technology has been designed and successfully implemented. Again, nuclear generation presents no GHG emission issues.

Additionally, the federal legislation encouraging the development of nuclear generation provided economic incentives in the form of production tax credits and DOE loan guarantees and stand-by support (a form of risk insurance), for the first wave of new nuclear power plants to achieve commercial operation. PEF conservatively estimated the value of the production tax credits to be between $88 million to $167 million per year (for the first eight years of plant operation) if PEF brings its new nuclear generation plants on line by 2016 and 2017. These economic benefits were considered in the Company's initial economic evaluation of nuclear generation compared with coal-fired and coal gasification generation to an all gas reference case.

Finally, there has been significant, recent public opposition to the development of more coal-fired generation in Florida. Before the Commission, one application for coal-fired generation was rejected because it was not demonstrated to be a cost-effective generation option in the future and another was abandoned in the face of opposition from the public and environmental groups. For all of these reasons, the Company determined that the advanced light water nuclear generation option was the more viable future generation alternative to evaluate in more detail against natural gas-fired CC generation to meet the Company's need in 2016 to 2019.

7. RESOURCE INTEGRATION

Once the range of supply-side and demand-side alternatives have been screened, an integration assessment is conducted to determine an optimum supply-side expansion plan, given the portfolio of cost-effective DSM programs identified, as previously described. In this phase, PEF selected the advanced light water nuclear generation option for further economic evaluation against an all gas reference case using the Strategist model. The results of this evaluation, and the Company's evaluation of all economic and socio-economic factors required by the amended Florida legislation, which is discussed further below, led to the selection of an optimal generation plan that included two advanced light water nuclear generation units to meet the Company's need in the period 2016 to 2019 and beyond.

The top-ranked generation plan that was chosen as the Company's expansion plan is shown below in Table 7. The Company's expansion plan includes additional supply side generation resources – including purchased power (primarily from renewable generation resources), uprates at PEF's existing nuclear power plant, CR3, and an unsited combined cycle ("CC") unit – to meet the Company's reliability need to maintain a 20 percent Reserve Margin commitment prior to the expected commercial operation of Levy Unit 1 in 2016. This plan is a slight variation of the expansion plan published in the Company's 2007 Ten-Year Site Plan filed with the PSC on April 1, 2007. The current optimal generation expansion plan reflects additional information and analysis since the Ten-Year Site Plan was prepared. The additional generation resources, together with Levy Units 1 and 2 in the current optimal generation expansion plan, however, are consistent with, and the result of, the Company's Resource Planning process.

Table 7. PEF's Generation Expansion Plan.

PROGRESS ENERGY FLORIDA

GENERATION EXPANSION PLAN

PLANNED AND PROSPECTIVE GENERATING FACILITY ADDITIONS AND CHANGES

AS OF JANUARY 1, 2008 THROUGH DECEMBER 31, 2017

						CONST.	COML IN-	EXPECTED	GEN. MAX.	NET CAPABILITY	
	UNIT	LOCATION	UNIT	FUEL		START	SERVICE	RETIREMENT	NAMEPLATE	SUMMER	WINTER
PLANT NAME	NO.	(COUNTY)	TYPE	PRI.	ALT.	MO. / YR	MO. / YR	MO. / YR	KW	MW	MW
TIGER BAY	1	POLK	CC				5/2008			10	10
CRYSTAL RIVER	5	CITRUS	ST				5/2009			(30)	(30)
CRYSTAL RIVER	5	CITRUS	ST				5/2009			14	14
BARTOW	1-3	PINELLAS	ST					6/2009		(444)	(464)
BARTOW	4	PINELLAS	CC	NG	DFO	01/2007	6/2009			1,159	1,279
CRYSTAL RIVER	3	CITRUS	NP				12/2009			40	40
CRYSTAL RIVER	4	CITRUS	ST				4/2010			(30)	(30)
ANCLOTE	2	PASCO	ST				5/2010			10	10
CRYSTAL RIVER	4	CITRUS	ST				5/2010			14	14
ANCLOTE	1	PASCO	ST				5/2011			10	10
CRYSTAL RIVER	3	CITRUS	NP				12/2011			140	140
CRYSTAL RIVER	1	CITRUS	ST				3/2012			7	7
SUWANNEE RIVER	1-3	SUWANNEE	ST					6/2013		(129)	(146)
COMBINED CYCLE	1	PENDING	CC	NG	DFO	12/2010	6/2013			1,159	1,279
RIO PINAR	P1	ORGANGE	CT					6/2016		(12)	(16)
TURNER	P1-P2	VOLUSIA	CT					6/2016		(22)	(32)
AVON PARK	P1-P2	HIGHLANDS	CT					6/2016		(49)	(70)
HIGGINS	P1-P4	PINELLAS	CT					6/2016		(113)	(133)
LEVY	1	LEVY	NP	NUC	–	01/2010	6/2016			1,092	1,120
LEVY	2	LEVY	NP	NUC	–	01/2011	6/2017			1,092	1,120

The ultimate decision to add the Levy Units 1 and 2, advanced passive light water nuclear power generation, was driven by the Company's reliability need for both nuclear units, the favorable economics for the second nuclear unit addition within 12 to 18 months of the first unit, and the fuel diversity and fuel supply reliability benefits, technological benefits, and environmental benefits from the construction and operation of two nuclear units over their expected sixty-year period of commercial operation.

8. RELIABILITY NEED FOR LEVY UNITS 1 AND 2

By the summer of 2016, PEF's projected Reserve Margin will be 15.4 percent without any new generation resource addition, signifying the need for additional resources to meet the Company's minimum 20 percent Reserve Margin requirement. If Levy Unit 1 is added in the summer of 2016 the Reserve Margin will be 25.3 percent. PEF clearly has a reliability need for Levy Unit 1 in the summer of 2016. This is demonstrated in Table 8 below.

Table 8. Forecast of Summer Demand and Reserves With and Without Levy Unit 1

Progress Energy Florida - Summer Reserves							
	2008 Resource Plan Assessment, No New Nuclear Generation						
	2015	2016	2017	2018	2019	2020	2021
Total Supply Resources	13,252	12,644	12,644	12,644	12,644	12,644	12,644
System Firm Load	10,776	10,961	11,150	11,335	11,530	11,722	11,904
Reserve Margin	23.0%	15.4%	13.4%	11.5%	9.7%	7.9%	6.2%
MW Above/Below 20%	321	(509)	(736)	(958)	(1,192)	(1,423)	(1,641)
	2008 Resource Plan Assessment, Addition of Levy County 1						
Total Supply Resources	13,252	13,736	13,736	13,736	13,736	13,736	13,736
System Firm Load	10,776	10,961	11,150	11,335	11,530	11,722	11,904
Reserve Margin	23.0%	25.3%	23.2%	21.2%	19.1%	17.2%	15.4%
MW Above/Below 20%	321	583	356	134	(100)	(331)	(549)

The addition of Levy Unit 2 in the summer of 2017 does result in Reserve Margins above the minimum 20 percent Reserve Margin criterion that summer and for several subsequent years. Both Levy Units 1 and 2 are still needed, however, to allow PEF to satisfy its commitment to maintain a minimum 20 percent Reserve Margin in the period 2016 and beyond.

If Levy Unit 1 is added in the summer of 2016, but Levy Unit 2 is not added the next summer as planned, PEF's Reserve Margin falls below the 20 percent Reserve Margin criterion at 19.1 percent by the summer of 2019, just two years later, and the Reserve Margin further falls to just 17.2 percent in the summer of 2020, only three years after Levy Unit 2 is planned for commercial operation. This is demonstrated in Table 9 below, which shows the summer and winter reserve forecasts with Levy Unit 1 but without Levy Unit 2.

Table 9.

Forecast of Summer Demand and Reserves With Levy Unit 1 But Without Levy Unit 2

Progress Energy Florida - Summer Reserves							
	2008 Resource Plan Assessment, Addition of Levy County 1						
	2015	2016	2017	2018	2019	2020	2021
Total Supply Resources	13,252	13,736	13,736	13,736	13,736	13,736	13,736
System Firm Load	10,776	10,961	11,150	11,335	11,530	11,722	11,904
Reserve Margin	23.0%	25.3%	23.2%	21.2%	19.1%	17.2%	15.4%
MW Above/Below 20%	321	583	356	134	(100)	(331)	(549)
	2008 Resource Plan Assessment, Addition of Levy County 1&2						
Total Supply Resources	13,252	13,736	14,828	14,828	14,828	14,828	14,828
System Firm Load	10,776	10,961	11,150	11,335	11,530	11,722	11,904
Reserve Margin	23.0%	25.3%	33.0%	30.8%	28.6%	26.5%	24.6%
MW Above/Below 20%	321	583	1,448	1,226	992	761	543

Faced with a need for additional generation resources within this short window of time following the commercial operation of Levy Unit 1, the Company decided to move forward with plans for Levy Unit 2 in the summer of 2017. Considerable time is necessary to plan, site, obtain regulatory approval for, design and build, and place into commercial operation a nuclear unit. The Company has conservatively estimated this process will take ten (10) years. To preserve the option of meeting the Company's reliability need following Levy Unit 1 with

nuclear generation, it makes sense to proceed with both Levy Units 1 and 2 at this time for commercial operation in the summers of 2016 and 2017. In this way, the Company satisfies the customers' reliability needs in the time period from 2016 to 2019 and beyond with nuclear power generation while capturing the cost savings resulting from the economies of scale and engineering and construction efficiencies by building Levy Unit 2 closely coupled with Levy Unit 1.

It must be remembered too that the nominal 1,100 MW size of these units was determined by Westinghouse to be the most efficient, cost-effective MW capacity size for nuclear reactors in this generation of designs. To proceed with the option of nuclear generation resources, PEF cannot select different, alternative capacity designs to try to exactly match its 20 percent Reserve Margin commitment within a given year. Rather, if PEF determines that there is a need that is beneficially met with nuclear generation, then the selection of the Westinghouse AP1000 nuclear reactor design means that a nominal 1,100 MW nuclear generating unit will be placed in commercial operation.

There is also a reliability need for both nuclear units because the Company's Reserve Margin includes projected capacity resources from future renewable energy facilities under recently executed purchase power agreements that might not come to fruition or ultimately meet the contracted capacity production requirements. These facilities have not been built yet and they rely on unproven technologies or fuel sources, such as waste-wood biomass and biomass crops that have not yet been shown to support consistent, reliable capacity and energy production. The ultimate commercial development of these unique renewable fuel facilities also can be adversely affected by a lack of available financing or financing at a favorable rate, insufficient productive land, and weather impacts on biomass fuel production,

among other circumstances. As a result, these renewable generation facilities might not be built, their construction might be delayed, or they may fail to achieve reliable commercial operation at all or at the expected capacity when that capacity is needed. In that event, PEF could lose over 250 MW before Levy Units 1 and 2 are planned and the Company's need for additional capacity resources will increase to meet its minimum Reserve Margin commitment.

Additional generation capacity from the second nuclear unit will further provide PEF greater assurance that the minimum 20 percent Reserve Margin criterion will be met in the event that peak loads are higher than currently anticipated. Levy Unit 1 will be operational over eight years from now and Levy Unit 2 will be operational over nine years from this date under the current plan. Over such an extended period of time load growth may very well exceed projections. This would not be unusual in PEF's experience, as it has happened before even over shorter time periods than eight or nine years. With Levy Unit 2, PEF will have the capability it needs to reliably meet customer needs under changing circumstances affecting load growth and Reserve Margins.

Finally, the addition of Levy Unit 2 provides PEF the flexibility to reduce or replace the use of potentially less economic resources. Nuclear fuel historically is more stable in price and cheaper than fossil fuels. This relationship between nuclear and fossil fuels is expected to continue. Over the eight to nine year period required to bring the nuclear units on line, PEF and its customers will face growing uncertainty surrounding the cost of using carbon-based, fossil fuels. Having an additional nuclear unit in commercial operation in 2017 and beyond provides PEF with greater flexibility in meeting customer demands for reliable, low cost electrical power.

For all of these reasons, PEF reasonably determined that there is a reliability need for both Levy Unit 1 and 2 in the summer of 2016 and 2017, respectively, when they are currently planned for commercial operation.

9. COST-EFFECTIVENESS OF LEVY UNITS 1 AND 2.

The Company evaluated the Cumulative Present Value Revenue Requirements ("CPVRR") of the advanced passive light water nuclear generation units, Levy 1 and 2, against an all natural gas generation (reference) case. The Company included the economic benefits from economies of scale and engineering and construction efficiencies from constructing both units concurrently in its CPVRR evaluation. Additionally, the Company evaluated the cost-effectiveness of Levy Units 1 and 2 against an all natural gas generation reference plan using the standards expressed by the Florida Legislature in Section 403.519(4)(b)3. There, the Florida Legislature directed that the Commission, and thus the electric utility too, must consider whether the nuclear power plant will "provide the most cost-effective source of power, taking into account the need to improve the balance of fuel diversity, reduce Florida's dependence on fuel oil and natural gas, reduce air emission compliance costs, and contribute to the long-term stability and reliability of the electric grid." §403.519(4)(b)3, Florida Statutes.

a. *Cost Savings from Levy Units 1 and 2.*

With the current but tentative selection of the Westinghouse AP1000 reactor design, PEF has the opportunity to take advantage of favorable equipment and other contract terms that occur because there are economies of scale from building successive nuclear units at the same site based on a common design. The economies of scale in procurement, engineering,

manufacture, and construction can be achieved if the second unit, Levy Unit 2, is constructed and placed in service within twelve (12) to eighteen (18) months of the first unit, Levy Unit 1.

The projected cost savings for the construction of Levy Units 1 and 2 reflect anticipated engineering and construction efficiencies, for example, for concurrent engineering and manufacturing of large, key components of the nuclear reactor and related support structures. If long lead time equipment for both units can be procured concurrently or consecutively, these economies of scale in engineering and manufacturing can be achieved. The back-to-back construction of Levy Units 1 and 2 also allows for the continuous mobilization of engineers and construction personnel for on-site engineering and construction of both nuclear units. PEF will therefore avoid de-mobilization and re-mobilization costs if the second nuclear unit is built consecutively with the first unit. PEF can also obtain cost savings from the continuous use of an experienced, efficient work force on both units. These are just a few examples of the engineering, construction, and operational efficiencies and economies of scale that will likely be achieved if Levy Unit 2 is constructed within a year of Levy Unit 1.

The resulting economic effect is a lower dollar per-kW cost for Levy Unit 2 than Levy Unit 1. Levy Unit 2 is expected to cost $3,376/kW (summer basis, 2007$), significantly less than $5,144/kW (summer basis, 2007$), the cost of Levy Unit 1 on a per-kW cost basis. Similarly, the fixed O&M cost for Levy Unit 2 is $36.25/kW-yr (2007$), which is $15.54/kW-yr (2007$) lower than the fixed O&M cost for Levy Unit 1. These cost savings from the construction of Levy Unit 2 within a year of Levy Unit 1 represent substantial economic benefits to PEF and PEF's customers. These cost savings were reflected in the

Company's economic evaluation of Levy Units 1 and 2 against an all natural gas reference case on a CPVRR basis using the Strategist model.

b. *Production Tax Credit benefits.*

Under EPACT, federal production tax credits were provided as an incentive for utilities to invest in nuclear power generation. These production tax credits are only available for the first few nuclear power reactors that are put into commercial operation. The production tax credit is $0.018/kWH for the first eight years of the nuclear facility's operation, if the facility meets certain eligibility requirements and deadlines and is in service by January 1, 2021. PEF has conservatively estimated the value of the production tax credits for customers at $88 million to $167 million if Levy Units 1 and 2 are brought on line by 2016 and 2017. As indicated above, in the Company's initial economic evaluation of nuclear generation the economic value of these potential production tax credit benefits were included. In the Company's subsequent economic evaluation of nuclear generation against an all gas reference case the Company conservatively did not include this economic value in the Company's CPVRR evaluation. The production tax credit benefits, however, represent an additional (additive) potential benefit for PEF's customers.

In addition to the production tax credit benefits, EPACT provides utilities that develop and commence operation of new nuclear reactors DOE loan guarantees and DOE stand-by support. DOE stand-by support is a type of risk insurance. It is unclear at this time whether the DOE loan guarantees and stand-by support will be available to the Levy project. PEF continues to review whether such programs will be available.

c. *Scenario Analysis Modeling with Levy Units 1 and 2.*

The Company used the Strategist model to compare the relative economics of Levy Units 1 and 2 to the all natural gas reference case. The Strategist computer model is an economic simulation model of PEF's entire system that develops alternative forward looking resource expansion plans to address the Company's needs and develops cost comparisons of overall system economics in each scenario. The system economic comparison is developed within Strategist with an all-inclusive revenue requirements analysis to encompass operating costs for fuel and emission allowances (based on resource dispatch simulation), operating and maintenance costs, the cost of construction and capital, including debt service, taxes, depreciation and equity returns, and other relevant costs for comparison of alternatives. PEF normally performs Strategist studies for a thirty-year study period for resource decisions (e.g. contracts, peaking and combined cycle unit decisions) that have been considered over the past decade. Using this timeframe, the model covers ten years before the proposed nuclear units would come on line and therefore captures only twenty years of projected operation of the new units. In this case, PEF worked directly with New Energy Associates, the developer of the Strategist model, to extend the model beyond its typical thirty-year modeling period to a sixty-year modeling period. By extending the modeling period from thirty to sixty years, PEF was able to perform an extended CPVRR analysis to capture fifty of the expected sixty years of commercial operation of the two nuclear units rather than only the first twenty years of commercial operation.

The sixty-year portfolio development and simulation period was used because, while the initial license for the two nuclear units will be forty (40) years each, the accepted industry convention based on current practice and experience with existing, second generation nuclear power plants, is that the license can be extended an additional twenty (20) years. The sixty-

year period in the Strategist model, therefore, provides the best practicable method of capturing most of the economic benefits from the actual commercial operation of Levy Units 1 and 2. This is still a conservative analysis, however, because even with a sixty-year study period, the Strategist model is not capturing the last ten years of commercial operation of Levy Units 1 and 2 on PEF's system.

d. *The CPVRR Economic Analyses with Levy Units 1 and 2.*

Typically in the resource planning process to support a need determination, PEF would have a base case with various sensitivities to reflect changes in fuel or capital costs because the cost-effectiveness analysis was driven by the CPVRR determination. With the amendment of Section 403.519 to address nuclear fueled electrical power plants, however, economics alone no longer drives the cost-effectiveness determination. Rather, the Company must consider additional factors, which are discussed in more detail below, some which can and some which cannot be discretely evaluated on an economic basis. As a result, the Company's CPVRR analysis of Levy Units 1 and 2 must be expanded to account for these additional legislative considerations to the extent practicable in the Strategist model. The results of these CPVRR analyses are shown in Table 10 below.

Table 10. CPVRR of PEF Expansion Plan.

Levy 1&2 Nuclear Economic Benefits Assessment
Mid Reference Fuel and Fuel Sensitivities - Full Ownership
Comparison of Nuclear Expansion vs All Gas Reference Case
Base Year Cumulative PV Benefits ($2007 in Millions)

Base Capital Reference Case	Low Fuel Reference	Mid Fuel Reference	High Fuel Reference
No CO_2	($6,416)	($2,888)	$2,635
Bingaman Specter CO_2 Case	($3,834)	($343)	$5,212
EPA No CCS CO_2 Case	($2,684)	$793	$6,318
MIT Mid Range CO_2 Case	$85	$3,614	$9,077
Lieberman Warner CO_2 Case	$2,930	$6,380	$11,892

Table 10 represents the CPVRR analyses of the Resource Plan with Levy Units 1 and 2 compared to an all-natural gas reference resource plan over the Strategist sixty year production cost model period. These CPVRR analyses include the typical CPVRR economic evaluations and costs savings from the reduced price for the second unit, as well as the additional consideration of air emission compliance costs under the amended statutory need determination provision. As a result of these CPVRR analyses there were fifteen (15) different CPVRR scenarios. Because the Company's resource expansion plan with the nuclear generation alternative is more beneficial for customers on a CPVRR basis than an all natural gas generation resource plan in ten (10) of the fifteen (15) possible scenarios, it is the most economic generation alternative.

The CPVRR cases in Table 10 above include evaluations using the Company's low and high natural gas and oil fuel forecasts. The impacts of these evaluations are shown in

Table 10, above, in the far left vertical column (low fuel forecast) and the far right vertical column (high fuel forecast). The CPVRR cases also include evaluations of the impact of potential, future GHG regulations on the cost effectiveness of Levy Units 1 and 2. These impacts are shown in the five horizontal columns in Table 10 above.

The five GHG scenarios presented begin with a scenario where there is no GHG cost impact because there are currently no GHG regulations. Because some form of GHG regulation is likely in the future, and that such regulation would impose a cost for emissions of GHG gases in one way or another however, GHG cost scenarios have been included as a fundamental part of the analysis of cost-effectiveness. The timing and nature of future GHG regulation is at present uncertain, accordingly we elected to show a range of potential future costs for GHG to demonstrate the potential range of impacts on the economic analysis for the Levy units. These scenario ranges are drawn from various federal and state GHG regulations that have been proposed so far and other studies that have attempted to estimate what future GHG costs may be. From each of these sources, dollar per ton of CO_2, the principle GHG, were extracted and graphed and then several reasonable forecast estimates were selected for further study. The short-hand references to these cases are included to the left of the horizontal columns on Table 10 above. The collection of climate change studies reviewed to develop these representative case estimates are described in Mr. Kennedy's testimony.

From Table 10 above, in the event that natural gas prices fall in the future, as represented by the "low fuel" vertical column, the nuclear generation option is not cost-effective in the event that there is no carbon (GHG emission) regulation or in the event that such regulation falls within the low to mid-level GHG regulation projected cases. If, however, the more likely scenarios of future GHG regulation and/or future higher natural gas

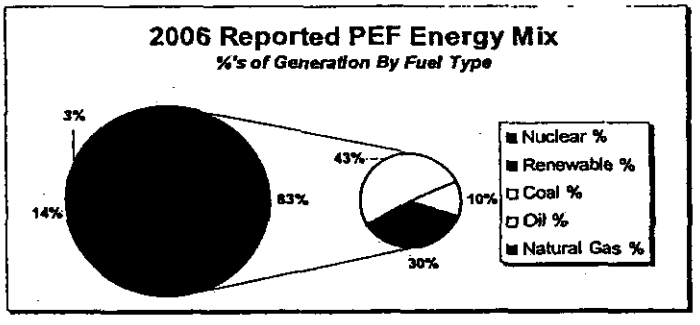
prices occur, the nuclear generation resource alternative is more cost-effective, in some cases (the high natural gas fuel cases, for example), dramatically more cost-effective than an all natural gas reference resource plan.

When potential GHG compliance costs are taken into account in PEF's CPVRR analyses, Levy Units 1 and 2 are more cost-effective than most of the all gas reference plan scenarios. The potential benefits for customers on a CPVRR basis for the ten (10) out of fifteen (15) scenarios where the nuclear generation resource alternative is more cost-effective than an all natural gas resource plan ranges from a low of $85 million to a high of $12 billion. Over the course of the expected 60-year life for Levy Units 1 and 2, then, the nuclear generation units are more cost effective than an all gas generation plan, in the Company's judgment, especially when the additional factors of fuel diversity and supply reliability, and long-term stability and reliability of the electric grid under the amended need determination provision are considered.

e. *The Balance of Fuel Diversity.*

Fuel diversity must also be considered in determining the cost-effectiveness of nuclear generation Section 403.519(4)(b)3. Fuel diversity refers to the Company's ability to reduce the impacts of price escalations in certain fuels by having available on the system additional generation or purchased power resources that use other fuels to produce energy. In other words, fuel diversity means the Company is not overly dependent on any one fuel type. PEF's generation system currently relies on a mixture of fuels to meet net energy load on the system. These fuels include oil, natural gas, coal, renewable fuels, and nuclear. Figure 7 below graphically shows PEF's current fuel mix to meet energy load.

Figure 7. PEF's 2006 Energy Mix.



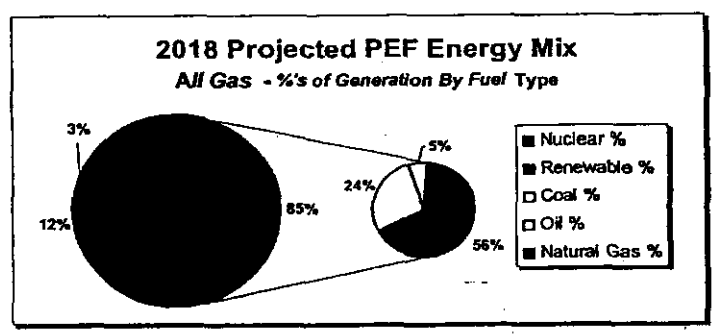
Fuel diversity is important not only because fuels have different prices but also because price volatility differs among fuels. Some fossil fuels, in particular natural gas and oil for example, are much more volatile in price than other fuels, such as nuclear fuel. More recently, natural gas prices have been even more volatile than was historically the case. Price escalations in natural gas and oil used for energy generation correspondingly cause an escalation in fuel costs that customers pay.

Physical conditions and weather can also influence the volatility of fuel prices. The volatility in natural gas prices for Florida utilities, for example, is influenced by the fact that Florida is a peninsula and natural gas transportation into the State is constrained. Similarly, Florida's location is subject to extreme weather conditions such as hurricanes. For example, the hurricanes in 2004 and 2005 demonstrated the vulnerability of the natural gas supply for PEF and other Florida utilities when natural gas supplies were temporarily precluded or disrupted by weather conditions and resulting damage caused by the storms. These supply disruptions naturally had an impact on fuel prices, causing the price of natural gas to increase dramatically. Nuclear fuel, on the other hand, is not subject to natural and physical

transportation constraints that can cause a further escalation in the price to Florida electric utilities. Nuclear fuel is added to the units during refueling outages, typically once every eighteen to twenty four months, and therefore an adequate fuel supply is available for an extended period of time. Further, the fuel supply for a nuclear unit is not subject to the same supply disruptions due to adverse weather conditions. As a result, the addition of nuclear generation, like Levy Units 1 and 2, reduces PEF's dependence on fuels that have a less reliable supply capability and thus, the reliability of the fuel supply to PEF's system will increase.

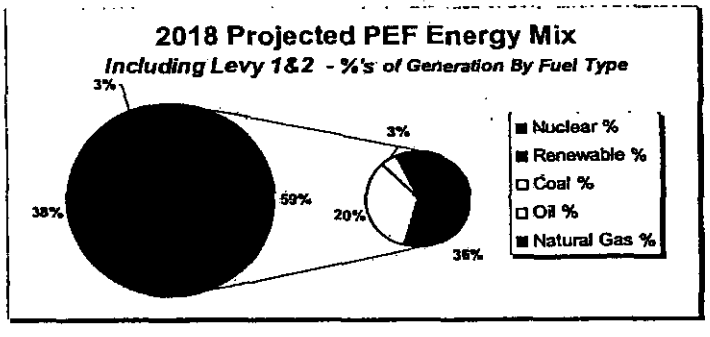
Adding additional nuclear fuel generation to meet net energy for load will increase PEF's fuel diversity. As demonstrated by Figure 8 below, without Levy Units 1 and 2, natural gas and oil will comprise 61 percent of PEF's energy mix to meet net energy load on its system by 2018 and nuclear will account for only 12 percent of the energy generation to meet load. Indeed, without Levy Units 1 and 2, by 2018, all fossil fuels will account for 85 percent of the energy generated on PEF's system.

Figure 8. PEF's 2018 Energy Mix Without Levy Units 1 and 2



With Levy Units 1 and 2, however, nuclear generation will contribute 38 percent of the total system energy to meet load in 2018. Coal-fired generation will fall by over one-half, from 43 percent today to 20 percent of PEF's total energy mix, and natural gas will contribute only 6 percent more to PEF's energy mix in 2018 than it does today and 20 percent less than what it would be without Levy Units 1 and 2. This is demonstrated by Figure 9 below.

Figure 9. PEF's 2018 Energy Mix With Levy Units 1 and 2



As a result of the addition of Levy Units 1and 2 to PEF's system, PEF's reliance on natural gas (and other fossil fuel) generation to meet load will be reduced significantly, providing greater fuel diversity to PEF and its customers.

f. *The Reduction of Florida's Dependence on Fuel Oil and Natural Gas.*

Florida has no natural fuel resources of its own. PEF must rely on the supply of fuel from sources outside the State, including fuel sources from foreign countries. This is particularly true for oil, but also for natural gas too, especially in the future. While domestic natural gas production, such as from the Gulf of Mexico and Texas, is expected to continue to

be a substantial source of supply for PEF and other electric utilities in Florida in the future, the percentage of natural gas supply from foreign sources, such as LNG, is expected to grow. Indeed, LNG is projected to represent a significant portion of the United States gas supply for electric generation by 2030. Additionally, foreign coal suppliers, in particular suppliers of low sulfur coals, have become a significant contributor of coal to Florida utilities, including PEF. As a result, PEF and other Florida utilities will continue to depend on foreign fuel sources for oil, natural gas, and coal.

This dependence on foreign fuel resources can have an impact on the price of the fuel. Foreign fuel resources are further away and beyond the control of the utility and they are often impacted by economic and political instability in the countries where these resources exist. For example, 70 percent of the world's oil and gas is held by national (state-owned) oil and gas companies in countries such as in Russia, Qatar, and Iran. These countries are among those who control the majority of the world's natural gas reserves. These reserves are the source of the LNG that will be needed to meet electric generation needs in the United States in the future. This foreign fuel supply is beyond the control of the electric utility and subject to unexpected disruptions and price increases.

The addition of Levy Units 1 and 2 further reduces PEF's dependence on foreign fossil fuel suppliers. As indicated above, the raw uranium used in nuclear fuel is a relatively abundant mineral. It is also found in a number of places around the world, including the United States and Canada. Because uranium is a common mineral there is little risk that there will be an insufficient supply of it to meet current or future nuclear energy production needs. Further, because uranium can be widely found across the world there is little risk of any one country or area controlling sufficient quantities of the material in order to control prices. PEF

expects that there will be a sufficient supply of uranium and the conversion, enrichment, and fabrication services for processed nuclear fuel to meet the needs of Levy Units 1 and 2 at relatively reasonable prices.

g. *The Reduction of Air Emission Compliance Costs.*

Nuclear generation is a clean source of electric capacity and energy. The generation of electric energy from nuclear fuel produces no SO_2, NOx, GHG, or other emissions. Fossil fuel and renewable fuel generation have some or all of these emissions. Nuclear generation therefore causes none of the environmental concerns caused by fossil fuel generation.

Current environmental requirements, like the Environmental Protection Agency ("EPA") and Florida Department of Environmental Protection ("DEP") Clean Air Interstate Rule ("CAIR") impose significant emission requirements, and therefore substantial costs, on fossil fuel generation. Levy Units 1 and 2 will not be subject to the EPA and DEP CAIR rules because they will produce no emissions that those rules regulate. Levy Units 1 and 2 will therefore face none of the CAIR compliance costs that additional fossil fuel generation must face. This is true with respect to current and future mercury and other potentially hazardous chemical emission compliance costs too. Levy Units 1 and 2, therefore, will assist the Company in complying with existing environmental regulations by providing an alternative clean source of generation. This is an economic and environmental benefit from future nuclear generation.

Levy Units 1 and 2 will also enable the Company to prepare to meet more stringent environmental regulations in the future. Because of global warming concerns, the potential regulation of GHG currently is a matter of much political and regulatory discussion and debate. Some form of GHG regulation seems inevitable. Presently, there are a number of

proposals for the regulation of GHG, in particular, carbon dioxide ("CO_2"). These proposals include the GHG emission targets set by executive order by the Governor of Florida and the FEC's recommendations to the Florida Legislature to adopt those targets, as slightly modified only to extend the dates to meet the initial two targets. The proposals to regulate GHG, if implemented, will have a profound impact on a utility's assessment of the most cost effective alternative generation resource to meet future reliability needs.

Because nuclear generation does not involve the burning of carbon-based fuels it produces no GHG emissions. All fossil fuels, however, when burned to produce energy release carbon into the air in the form of CO_2. Carbon dioxide is a GHG, and GHG contribute to global warming. In fact, CO_2 is probably the most significant GHG, although there are other GHG emissions from burning fossil fuels.

The relative impact of nuclear generation compared to conventional fossil fuel generation on emissions can be demonstrated by comparing the emissions that nuclear generation will displace in one year compared to the production of the same amount of energy by fossil fuel generation resources. Levy Units 1 and 2, for example, will, in the course of a typical year during the first ten years of operation, displace or avoid 8.5 million tons of CO_2 emissions, up to 7,000 tons of SO_2, up to 3,400 tons of NOx, and approximately 120 pounds of mercury when compared to the existing PEF generation system with an all gas reference expansion plan. Over the course of the study period (2016 – 2066), Levy Units 1 and 2, will displace or avoid an estimated 400 million tons of CO_2 emissions, 130 thousand tons of SO_2, 100 thousand tons of NOx, and approximately 2000 pounds of mercury when compared to the existing PEF generation system with an all gas reference expansion plan.

As demonstrated by PEF's CPVRR analyses, under the majority of scenarios where there is a direct or indirect cost for GHG emissions, nuclear generation, which has none, is preferred over fossil fuel generation, all other factors being equal. Levy Units 1 and 2 are, therefore, reasonable, cost-effective generation alternatives to meet customer energy needs in the event of future GHG regulations.

h. *The Contribution to the Long-Term Stability and Reliability of the Electric Grid.*

Levy Units 1 and 2 will operate nearly year-round, at a very high capacity factor, thus providing additional base load capacity to PEF's system and the Florida electric grid as a whole. Levy Units 1 and 2 will provide this additional, reliable base load capacity and energy through state-of-the-art, advanced nuclear generation technology. This additional, new base load technology will benefit PEF's customers and the State electric grid.

Technological advancements provide opportunities for relatively lower construction costs and greater efficiency in operation and thus lower maintenance costs. The Westinghouse AP 1000 design, which uses passive safety system designs and engineering simplicity that were not available in the second generation nuclear power plant designs like that employed at CR3, offers relatively lower construction and operation costs for Levy Units 1 and 2 compared to the conventional nuclear designs in the nuclear reactors operating today. For example, the AP1000 requires significantly less cable, valves, pumps and other equipment than the generation of nuclear reactors currently in operation. The more efficient design for the Westinghouse AP 1000 nuclear reactors will also mean greater operational reliability than what is expected from second generation nuclear power plants operating today. PEF and the

State electric grid will benefit from these technology advancements by receiving more reliable, efficient base load operation.

Additionally, the vintage of PEF's current base load generation runs from over twenty to nearly fifty years old. By the time Levy Units 1 and 2 achieve commercial operation in 2016 and 2017, the vintage of PEF's existing base load generation units will be even older, ranging from over thirty to nearly sixty years old. Indeed, PEF's existing nuclear unit, CR3, is currently over 30 years old and it will be over 40 years old by the time Levy Units 1 and 2 come on line. Levy Units 1 and 2 provide the opportunity to add new base load generation with the most advanced, efficient nuclear generation technology available. The addition of Levy Units 1 and 2 will change the vintage of PEF's base load generation for the better, providing PEF and the State with more reliable, efficient base load generation.

i. *Alternative Cost Scenarios.*

As the Company has indicated, PEF has been in negotiations with the Consortium for more than a year on pricing and the terms and conditions of an EPC contract. The Consortium has provided PEF with site specific pricing for the project but EPC contract negotiations continue. PEF expects that a portion of the power plant costs will be based on firm prices. Even with these firm prices, however, the total cost will still represent a non-binding cost estimate that is subject to change over the course of time leading up to commercial operation of Levy Units 1 and 2.

This is the nature of nuclear generation development, especially when you further consider the unique nature of this project, which will require the construction of the first nuclear power plants on a Greenfield site in more than thirty (30) years in this country. The long-lead time necessary to site and obtain regulatory approvals for new nuclear reactors, in

addition to the time to design and construct them, precludes the Company from receiving anything more than a cost estimate and a non-binding one at that at this time, even though the Company is working with the best information available today.

Circumstances are likely to change as cost estimates are refined and costs are incurred over the next decade as the Company proceeds toward commercial operation of these units. These circumstances include the potential risk of permitting and licensing delays at the state and federal level, litigation delays at the state and federal level, labor and equipment availability, vendor ability to meet schedules, material and labor cost escalations, the possible imposition of new regulatory requirements, inflation or increases in the cost of capital, and the ability to acquire necessary rights-of-way in a timely manner for associated transmission facilities, among others. Given the risk that any one or more of these circumstances may occur over the next ten years, the actual cost to place Levy Units 1 and 2 in commercial operation may be higher than the current, non-binding cost estimate.

To account for the inherent uncertainty surrounding the cost of Levy Units 1 and 2, PEF also evaluated the units in the Strategist model using five, fifteen and twenty five percent cost increase cases, and a five percent cost decrease case, with and without the impact of anticipated GHG emission regulation cost impacts and using a mid-level fuel forecast. The results of these CPVRR analyses are shown in Table 11 below.

Table 11. Alternative Cost CPVRR Analyses.

Levy 1&2 Nuclear Economic Benefits Assessment
Sensitivities to Nuclear Plant Capital Costs - Full Ownership
Comparison of Nuclear Expansion vs All Gas Reference Case
Base Year Cumulative PV Benefits ($2007 In Millions)

Capital Sensitivities Reference Case	*LNP CapEx (5%)*	*Mid Fuel Reference*	*LNP CapEx 5%*	*LNP CapEx 15%*	*LNP CapEx 25%*
No CO_2	($2,365)	($2,888)	($3,400)	($4,434)	($5,469)
Bingaman Specter CO_2 Case	$109	($343)	($926)	($1,960)	($2,995)
EPA No CCS CO_2 Case	$1,207	$793	$172	($862)	($1,897)
MIT Mid Range CO_2 Case	$3,975	$3,614	$2,940	$1,906	$871
Lieberman Warner CO_2 Case	$6,674	$6,380	$5,640	$4,605	$3,571

As you can see from Table 11 above, the cost-effectiveness of the units is adversely impacted against an all natural gas generation scenario in each of the cost increase cases in the unlikely event of no future GHG emission regulation cost impacts. When the likely potential future GHG emission costs are considered in the analysis, however, the nuclear units are more cost-effective in all of the cost decrease cases and in seven (7) of the twelve (12) cost increase scenarios. Based on these cost sensitivity analyses, the generation resource plan with Levy Units 1 and 2 appears the most cost-effective plan when the likely range of GHG emission cost compliance is accounted for even with potential capital cost increases. This is demonstrated by Table 11 above. The Company concluded, therefore, that a generation resource plan that included Levy Units 1 and 2 was still the most cost-effective source of power to meet the Company's need in 2016 to 2019 and beyond, taking into account all of the factors that must be considered in evaluating new nuclear power plants under the amended legislation.

i. *Potential Joint Ownership Sensitivity*

The Company has been engaged in discussions with other Florida utilities to determine what interest may exist for joint ownership of the nuclear units being proposed. Depending upon the terms and conditions of any joint ownership agreement, a joint ownership arrangement might provide benefits to PEF customers by, among other things, spreading the capital risks associated with a project of this magnitude. As such, PEF ran a sensitivity analysis on potential joint ownership up to 20 percent. The relative economics for eighty (80) percent PEF ownership are included in Table 12 as sensitivity for review.

Table 12. CPVRR of PEF Expansion Plan. – 80% Ownership Basis

Levy 1&2 Nuclear Economic Benefits Assessment
Mid Reference Fuel and Fuel Sensitivities - 80% Ownership
Comparison of Nuclear Expansion vs All Gas Reference Case
Base Year Cumulative PV Benefits ($2007 in Millions)

Base Capital Reference Case	Low Fuel Reference	Mid Fuel Reference	High Fuel Reference
No CO_2	($5,566)	($2,725)	$1,732
Bingaman Specter CO_2 Case	($3,530)	($733)	$3,756
EPA No CCS CO_2 Case	($2,619)	$171	$4,631
MIT Mid Range CO_2 Case	($448)	$2,403	$6,790
Lieberman Warner CO_2 Case	$1,799	$4,594	$9,018

While the results are directionally similar, less than full ownership has the effect of reducing the negative results in some cases, but also reduces the positive effect of the more beneficial cases. If interest level in joint ownership continues to develop, more of the details will evolve for financing, cost sharing, and the other structural elements of the relationships.

V. CONCLUSIONS: THE NEED FOR LEVY UNITS 1 AND 2.

Levy Units 1 and 2 will be state-of-the art, highly efficient, environmentally clean sources of electrical capacity and energy for PEF and its customers. They will be located at a site specifically selected for the development of nuclear generation and therefore well-suited to accommodate Levy Units 1 and 2. Levy Units 1 and 2 will provide PEF's customers adequate, base load electricity at a reasonable cost from the lowest cost fuel resource currently available to the Company. Levy Units 1 and 2 are the most cost-effective generation alternatives available to the Company to meet its reliability need in 2016 to 2019 and beyond, taking into account the need to improve the balance of fuel diversity, reduce Florida's dependence on fuel oil and natural gas, reduce air emission compliance costs, and contribute to the long-term stability and reliability of the electric grid.

For these reasons, PEF seeks an affirmative determination of need for Levy Units 1 and 2 and associated transmission facilities to meet PEF's need for electric system reliability and integrity and to enable PEF to continue to provide adequate electricity to its customers at a reasonable cost. PEF decided to seek this need determination approval only after conducting a rigorous internal review of supply-side and demand-side options, including renewable fuel generation options. The need for additional generating capacity in the time

period 2016 to 2019 and beyond cannot be cost-effectively deferred or avoided by additional demand-side options or renewable generation resources.

The addition of Levy Units 1 and 2 is necessary for the Company to meet its commitment to provide an adequate and reliable power supply. Levy Units 1 and 2 will allow the Company to satisfy its Reserve Margin planning criterion while maintaining an appropriate level of physical reserves for the PEF system.

Levy Units 1 and 2 are expected to be highly efficient, state-of-the-art, advanced passive light water nuclear power units with no adverse environmental emissions. Levy Units 1 and 2 will rely on nuclear fuel, which is the cleanest and most environmentally friendly fuel in terms of emissions that can be used today. Levy Units 1 and 2 will meet the Company's need to be able to provide adequate electric service at a reasonable cost to its customers.

VI. ADVERSE CONSEQUENCES OF NOT BUILDING LEVY UNITS 1 AND 2

If the need determination for Levy Units 1 and 2 is delayed or denied, the implementation of this project certainly will be delayed, it may be terminated, and PEF's future development of nuclear generation in Florida may need to be reconsidered.

PEF must proceed with the need determination at this time to remain on schedule. Nuclear generation units require considerably more time to site, obtain various regulatory approvals, design, engineer, and construct than other potential generation alternatives. The entire process is conservatively estimated to take ten years. PEF must, therefore, obtain a need determination at this time to begin the site certification process and the procurement process for long lead items and engineering work to ensure that the nuclear units will be completed in time to meet the Company's reliability need in the summer of 2016 and the

summer of 2017, respectively. PEF must also obtain a need determination at this time to begin the site certification and the specific routing, design and construction process supporting the transmission system upgrades required to support the commercial operations dates for Levy Units 1 and 2 in the summer of 2016 and the summer of 2017, respectively.

If there is a delay in the determination of need for Levy Units 1 and 2, PEF will not be able to satisfy its minimum 20 percent Reserve Margin planning criterion by the summers of 2016 and 2017 with nuclear generation. If other generation options are considered to meet the Company's reliability need in the same time frame, the Company may have to reconsider the development of additional nuclear generation facilities to meet future customer needs. Further, if PEF's need determination for Levy Units 1 and 2 is denied or delayed in all likelihood that will mean the construction of additional natural gas-fired combined cycle generation units in this time frame to meet customer reliability needs. The resulting generation mix will only expose PEF's customers to greater volatility in fuel costs and potentially more and more significant fuel supply disruptions.

If the Company must reconsider its plans to develop additional nuclear generation, PEF's customers would lose the benefits of reliable, efficient and cost-effective, base load nuclear generation. Without the commercial operation of Levy Units 1 and 2 in the 2016 to 2017 period, PEF's system will be less fuel diverse and more dependent on fossil fuel generation and foreign fuel supply resources to satisfy the energy demands of customers. As a result, PEF's customers likely will be subject to higher and more volatile fuel costs as higher cost fossil generation units or purchased power are used to meet their electrical power needs. PEF's customers will also potentially lose the benefits of the production tax credits and other financial benefits that EPACT provides for the first wave of new nuclear generation facilities.

Appendix C - LNP Integrated Master Plan

REDACTED