BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 100009-EI
FLORIDA POWER & LIGHT COMPANY

MAY 3, 2010

IN RE: NUCLEAR POWER PLANT COST RECOVERY
FOR THE YEARS ENDING
DECEMBER 2010 AND 2011

TESTIMONY & EXHIBITS OF:

TERRY O. JONES

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

FLORIDA POWER & LIGHT COMPANY

DIRECT TESTIMONY OF TERRY O. JONES

DOCKET NO. 100009-EI

May 3, 2010

Q. Please state your name and business address.

My name is Terry O. Jones, and my business address is 700 Universe Boulevard, Juno Beach, FL 33408.

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

A. I am employed with Florida Power & Light Company (FPL) as Vice President, Nuclear Power Uprates.

Q. Have you previously filed testimony in this docket?

A. Yes.

Q. Are you sponsoring any exhibits to this testimony?

A. Yes. I am sponsoring the following exhibits:

- Exhibit TOJ-14 consists of Appendix I, the Nuclear Filing Requirement (NFR) Schedules for the Extended Power Uprate Project. Page 2 of Appendix I contains a table of contents listing the NFRs that are sponsored and co-sponsored by FPL Witness Powers and myself.
- TOJ-15, Extended Power Uprate Project Schedule
- TOJ-16, Arrival of Barge with a St. Lucie Main Generator Rotor (February 2010)

- TOJ-17, Unloading the Main Generator Rotor at St. Lucie (February 2010)
- TOJ-18, 2010 Extended Power Uprate Work Activities
- TOJ-19, EPU Actual/Estimated 2010 Costs Tables
- TOJ-20, 2011 Extended Power Uprate Work Activities
- TOJ-21, EPU Projected 2011 Costs Tables

Q. Please describe how your testimony is organized.

A. My testimony includes the following sections:

1. Project Status
2. Project Approach
3. Project Management Internal Controls
4. 2010 Actual/Estimated Construction Activities and Costs
5. 2011 Projected Construction Activities and Costs
6. True-Up to Original Cost and Updated Cost Estimate Range
7. Long Term Feasibility

Q. What is the purpose of your testimony?

A. My testimony presents and explains the reasonableness of FPL's 2010 actual/estimated and 2011 projected costs for the Turkey Point and St. Lucie nuclear power plant extended power uprate project (Uprate or EPU). Because the activities planned and expenditures budgeted for 2010 and for 2011 are different from one another, the activities and expenditures for these years are described in separate sections below. My testimony also presents the True-up to Original (TOR) Projections for the Uprate project for the years 2008

through 2011, provides an updated total project cost estimate range, and summarizes FPL's EPU feasibility analysis, which continues to demonstrate that the project is the most cost-effective generation addition for FPL's customers. FPL Witness Dr. Steven R. Sim describes the economic feasibility analysis in detail in his testimony and exhibits.

Q. Would you please provide an overview of the expected benefits of the EPU project for FPL customers?

A. Yes. Taking into account the updated project information related in this testimony, FPL expects that the EPU project will:

- Provide estimated fuel cost savings for customers of approximately $146 million in the first full year of operation;
- Provide estimated fuel cost savings for FPL's customers over the life of the project of approximately $6 billion (nominal);
- Diversify FPL's fuel sources by decreasing reliance on natural gas by 3% beginning in the first full year of operation;
- Reduce annual fossil fuel usage by the equivalent of 5 million barrels of oil or 31 million mmBTU of natural gas;
- And, reduce CO_2 emissions by an estimated 33 million tons over the life of the project, which is the equivalent of operating FPL's entire generating system with zero CO_2 emissions for ten months.

These quantifications are set forth in FPL Witness Dr. Sim's testimony and Exhibit SRS-1.

Q. Please summarize your testimony.

A. FPL is working to deliver the substantial benefits of additional nuclear generating capacity to customers, without expanding the footprint of its existing nuclear generating plants, by performing an extended power uprate of its existing St. Lucie (PSL) Units 1 & 2 and Turkey Point (PTN) Units 3 & 4.

The EPU project is a complex project, in the early stages of engineering design and implementation, which will require elaborate choreography of multiple modifications of four nuclear generating units at two different operating nuclear plants, each of which uprate must be conducted within limited spaces densely packed with complex nuclear generating technology and which must be performed under an aggressive schedule in order to best benefit FPL's customers.

Since the initial conceptual scope was developed in late 2007, significant progress has been made to better define the scope of the project and understand the specific implementation activities necessary to successfully accomplish the EPU. As the engineering analyses continue and as modification designs are finalized and construction plans are developed, FPL will be able to refine the planned outage durations, implementation resource requirements, and the total project cost. FPL's internal controls – which include detailed and frequent reporting of project schedule, cost, and risk to

executive management and careful vendor oversight – will continue to ensure that prudent management decisions are made and expenditures are reasonable.

Upon completion, the Uprates will produce a minimum of 399 megawatts of electric power ("MWe") and could produce a theoretical maximum of up to 463 MWe for FPL's customers. The minimum reflects FPL's need determination assumption (414 MWe), less the St. Lucie Unit 2 co-owners' share of the output. The maximum reflects the turbine vendor's estimate of the turbine generator's performance (approximately 500 MWe) if the "best case scenario" of plant parameters are achieved, less the co-owners' share of PSL Unit 2 and increased house loads. Taking into account the current uncertainty of whether "best case" plant parameters will be achieved, FPL's current estimate is that a total of about 450 MWe will be produced by the uprated units for FPL customers.

As detailed in this testimony and accompanying FPL exhibits, FPL plans to invest a total of approximately $322 million during 2010 and approximately $586 million during 2011 in the Uprate project. FPL also plans to place certain Uprate project systems into service. The equipment in-service amounts for 2010 are approximately $139 million and for 2011 are approximately $700 million. (Please note that the dollar values in my testimony are the forecasted EPU resource requirements, and do not include certain accounting adjustments made by FPL Witness Powers, unless noted

otherwise.) These amounts contribute to a total company request to recover approximately $29 million in 2011, as described by FPL Witness Powers. This equates to a residential customer monthly bill impact of $0.31 per 1,000 kWh.

Pursuant to the Commission's direction in Order No. PSC-09-0783-FOF-EI, FPL has updated its nonbinding total cost estimate (including transmission, carrying costs, etc.) to a forecast range of approximately $2,050 million to $2,300 million, and has utilized the high end of this range as the starting point for an economic feasibility analysis performed consistent with the direction of the Commission in that Order. The derivation of and project management reasons for expressing the nonbinding cost estimate in a range at the present stage of the EPU Project are explained later in my testimony.

While the current nonbinding cost estimate range is higher than the $1,798 million total nonbinding cost estimate used in the economic analyses presented in the Uprate project need determination filings, the testimony and exhibits of FPL Witness Dr. Sim show that the EPU project continues to result in substantial economic benefits for FPL's customers. For example, FPL Witness Dr. Sim's Exhibit SRS-7 shows that in the Medium Cost Fuel, Environmental II cost scenario, the project is currently expected to reduce costs to customers by more than $1.1 billion in cumulative present value of revenue requirements (CPVRR) compared to a plan without the project.

FPL's EPU activities, internal processes and controls, the reasonableness of its 2010 and 2011 expenditures, the increase in expected MWe production from the uprates, and its updated nonbinding cost estimate range are described in more detail below.

PROJECT STATUS

Q. Please provide an overview of the current status of the Uprate Project.

A. As described in my March 1, 2010 testimony, the EPU is being achieved in four overlapping phases. The four phases are named and explained in my March testimony, and I am using that same terminology in my May testimony. In 2010, FPL will complete the Engineering Analysis Phase and will submit the PSL1, PSL2 and PTN EPU License Amendment Requests (LARs) to the Nuclear Regulatory Commission (NRC) for approval. FPL will also continue the Long Lead Procurement, Engineering Design Modification, and Implementation phases of the project to support the planned unit outages in 2010 and 2011. FPL is committed to approximately 95% of its long lead procurement items for the St. Lucie units and approximately 80% of its long lead procurement items for the Turkey Point units. FPL is currently in the early stages of Engineering Design Modification and the very early stages of Implementation.

Q. Please describe the Federal licensing needed for the EPU Project.

A FPL must obtain a license amendment to the renewed operating licenses for PSL 1, PSL 2, and PTN in order to operate at the EPU conditions. The EPU LAR submittals for all three licenses are being made in 2010. PSL 1 was submitted to the NRC in April 2010, the PTN LAR is scheduled for submittal in the third quarter of 2010, and the PSL 2 LAR is scheduled for submittal in the fourth quarter of 2010. According to NRC projections, each of these submittals will take approximately 14 months for the NRC to review, request additional information, and approve. Also, as a result of the LAR review process, the NRC may require additional modifications or analyses to be performed. If FPL is notified early of additional modification requirements, resources can be mobilized to minimize any schedule impact. If not, operation in the uprate condition would need to be postponed until the modification can be implemented to satisfy the NRC requirements. The submittal date of each of the LARs recognizes the potential risk of delayed NRC approval, and allows for NRC review time before the final EPU outage for each unit. Further, the time period of the final outages themselves can provide additional time for NRC approval.

Q. Please describe any remaining Local and/or State permitting needed for the EPU Project.

A. There is only one state permitting request still required for the EPU. FPL submitted an application to the Florida Department of Environmental Protection (FDEP) to modify the St. Lucie cooling water discharge permit. With the present permit conditions, it is possible that the uprated units would

have to reduce their electrical output for up to an average of eight weeks each summer to stay within the present cooling water discharge temperature limits. The requested modification to the discharge permit would increase the maximum discharge temperature limit by 2 degrees Fahrenheit and measure compliance based on the average discharge temperature, rather than the instantaneous discharge temperature. If approved, full operation of the uprated units would be expected to remain within the prescribed limit.

Q. Please elaborate on the potential to realize up to 463 MWe from the uprated units.

A. During the initial engineering analyses, the conceptual plant parameters in the uprate condition were developed. These parameters were used to conservatively estimate an increase in power output totaling approximately 414 MWe, which would equal approximately 399 MWe for FPL customers after accounting for the co-owners' share of PSL Unit 2. During turbine generator contract formation with Siemens Energy Inc. (Siemens), studies of these target plant parameters were refined and then provided to Siemens to determine the potential output of its turbine generators. Based on the target plant parameters, Siemens provided a contract "guarantee" of a total net increase in electrical output of approximately 500 MWe. Thus, after one deducts the co-owners' share for PSL Unit 2 and the incremental house loads of all units, FPL customers could realize up to approximately 463 MWe of increased output. By "incremental house load", I mean the additional electrical usage at the plants themselves to operate the larger pumps and other

equipment required to support the higher plant output in the uprate condition. Of course, this is a "best case scenario." If the target plant parameters are not achieved, which can occur for many reasons, the turbine generator output may be less than the performance guarantee. Because there is some variability in the reasonably achievable parameters at this time, FPL is currently estimating a range of increased electrical output of 399 MWe to 463 MWe for the uprate project. Within this range, our current best estimate is that the uprate projects will in total provide about 450 MWe of additional nuclear generation for FPL's customers.

PROJECT APPROACH

Q. Please describe FPL's assessment of what modifications are necessary to support the power uprate.

A. Exhibit TOJ–15, Extended Power Uprate Project Schedule, is the schedule of the EPU Project and the overlapping phases of the work activities presently proposed to take place. The work activities presented therein reflect the current known scope of the EPU project, which has been affected by the LAR engineering analyses conducted to date as well as the mobilization and work scope activities of FPL's EPC vendor, Bechtel Corporation (Bechtel). As the LAR analyses for the project are completed in 2010 and Bechtel continues its modification engineering and constructability reviews, the EPU Project team will continue to critically assess modifications, including their need to support

the uprate conditions (including from a separate and apart perspective), and the optimum time for execution of the physical work. Further, a third party cost estimating expert, High Bridge Associates, Inc. (High Bridge) has been engaged to prepare a bottom-up estimate of the remaining major work scope at Turkey Point Unit 3. This estimate will help serve as a check against the resource and cost estimates being provided by Bechtel, and will help FPL to further refine its total project cost estimate. The estimate for Turkey Point Unit 3 is scheduled to be complete by June 2010. FPL will then determine if additional third party cost estimates for the other units are warranted.

Q. Please describe how the preparation of the LARs resulted in changes to the scope of the EPU project.

A. The LAR engineering analysis process required for preparation of the LARs is a highly complex, iterative process. This process has resulted in both scope reduction and scope increases as compared to the initial EPU scoping study. For example, it was determined that the existing PSL feedwater heaters 1-4 can be inspected and modified as necessary in lieu of being replaced. This represents a scope reduction. Additionally, FPL has determined that it needs to add mini-purge valves to the PSL 1 containment, to regulate operational containment pressure and ensure the maximum design pressure of the containment is not exceeded in the event of an abnormal event. By the nature of the LAR engineering process, such an activity was not and could not have been identified in the initial scope of the EPU Project. This example represents a project scope increase.

Q. Please describe how Bechtel's engagement has affected the scope of the EPU Project.

A. Bechtel has begun performing the modification design engineering process and estimating the resources needed for implementation. These preliminary reviews indicate that implementation will be more complex than was anticipated prior to the performance of these reviews. As more modifications are identified as necessary through the LAR engineering analyses or modification engineering analyses, more resources will be required to complete the Uprate Project.

Q. How will the use of a third party cost estimator benefit the project?

A. FPL has hired High Bridge to develop an independent, bottom-up cost estimate for the remaining work at PTN 3. High Bridge starts with the list of modifications identified for the project, and then identifies any additional modifications that may be necessary as a result of those planned. It then quantifies and prices all aspects of the project costs, such as equipment, shipping costs, and materials, as well as craft labor, supervisors, and overhead. This detailed process will serve two purposes. First, it will serve as a check against Bechtel's estimates, helping to ensure that those costs are reasonable. Second, it will assist FPL in further refining its total project cost estimate range.

There are limitations to High Bridge's cost estimate work. For example, it too is being performed prior to completion of detailed design engineering work.

High Bridge's work, however, should serve as a valuable input into the project management process at the project's current stage.

Q. Please describe the modification installation planning process and the assignment of modifications to particular outages.

A. A critical component to the modification installation planning is the assignment of particular modifications, and the associated construction work, to particular outages and within those outages. This concept was introduced in my March 1, 2010 testimony. As part of the modification package engineering analyses, the modification assignments for each of the outages were reviewed in detail. During the review, consideration was given to several aspects of each of the modifications, such as whether the time provided for the engineering of the modification is sufficient to support the needed reviews, approvals, and planning by the unit's outage management; whether the equipment will arrive at the site early enough before the outage to allow for inspections and preparation work prior to installation; whether there is a sufficient labor force to support the amount of work planned; and whether the modification work can be performed in parallel with other work or if it needs to be performed in a series of critical activities. This detailed review resulted in re-assigning certain modifications to different outages. As the LAR engineering analysis is completed and design engineering progresses, additional reviews and adjustments to outage modification assignments are expected.

Q. Did the reassignment of certain modifications to different outages affect FPL's 2010 EPU costs?

A. Yes. As a result of the review described above, FPL's actual/estimated 2010 costs being presented in this docket are lower than what FPL projected its 2010 costs would be last year in Docket No. 090009-EI. FPL re-aligned a significant amount of work from PSL to later outages, thereby lowering FPL's 2010 construction costs. Additionally, due to this reassignment, fewer components will be transferred to plant in service in 2010 than originally anticipated, effectively lowering FPL's 2010 Uprate base rate revenue requirements for items placed in service in 2010. The revenue requirement computations are sponsored by FPL Witness Powers.

PROJECT MANAGEMENT INTERNAL CONTROLS

Q. Please describe the project management internal controls that FPL has in place to ensure that the project is effectively managed.

A. As described in detail in my March 1, 2010 testimony, FPL has robust project planning, management, and execution processes in place. FPL utilizes a variety of mutually reinforcing schedules and cost controls, and draws upon the expertise provided by employees within the project team, employees within the separate Nuclear Business Operations (NBO) group and executive management.

One of the key project management tools utilized by the EPU team is the project Risk Matrix. Risk registers, such as the EPU's Risk Matrix, are a common project management tool. The Risk Matrix allows for identified risks – including potential increases to scope – to be logged and assessed in terms of cost and probability. Resolutions are also tracked in the Risk Matrix, which may include avoidance or mitigation of the identified risk, or incorporation of the particular item within the Project scope. Periodic presentations are made to executive management where risks, costs, and schedules are discussed.

Q. Have there been any changes in the project management system FPL is using to ensure that the 2010 actual/estimated and 2011 projected costs are reasonable?

A. Yes. As described in my March 1, 2010 testimony, the EPU organizational structure was modified in late 2009 to fit the project needs in 2010 and beyond. Additionally, Project guidelines were reviewed and revised as needed.

Q. Are any internal audit activities are underway?

A. Yes. The annual Internal Audit of the EPU financials is currently being conducted, which provides a review of project expenditures through 2009. FPL anticipates that this audit will be completed this summer.

Q. Is FPL providing any additional reviews of its EPU project?

A. Yes. John Reed, CEO of Concentric Energy Advisors has also performed reviews which are described in his testimony.

2010 ACTUAL/ESTIMATED CONSTRUCTION ACTIVITIES AND COSTS

Q. Please summarize the activity planned for 2010.

A. In 2010, FPL will complete the LAR analyses and submit the EPU LARs to the NRC. FPL will also continue the Long Lead Equipment Procurement Phase, the Engineering Design Modification Phase and the Implementation Phase.

In 2010, FPL will submit the three outstanding EPU LARs to the NRC and will shift from performing the engineering analyses and developing the LARs to supporting the NRC's review of the LARs. The Long Lead Equipment procurement phase will continue as necessary equipment is ordered to support the outages in 2011 and 2012. In 2010, FPL received one of the Main Generator Rotors for the St. Lucie units. Exhibit TOJ-16 is a picture of the arrival of a barge with one of the St. Lucie Main Generator Rotors (weighing approximately 180 tons) in February 2010. Exhibit TOJ-17 is a picture of the off-loading of the Main Generator Rotor at St. Lucie. The Engineering Design Modification Phase will continue with the EPC vendor preparing modification packages, and performing support activities for outage modifications. The Implementation Phase will continue with the EPC vendor performing implementation activities, the planning and scheduling of EPU outage activities, and the execution of activities during the outages. Exhibit

TOJ-18, 2010 Extended Power Uprate Work Activities, is a listing of the activities to be performed in 2010 needed for the EPU Project. Additionally, the third party cost estimating vendor will complete its assessment of the cost estimate range for PTN 3 in the second quarter of 2010.

Q. Please describe how FPL developed its 2010 Actual/Estimated costs.

A. The 2010 projected costs were developed from Project Controls forecasts for all known project activities in 2010. Included in the forecasts are the vendor long-lead materials contracts that have scheduled milestone payments in 2010 and are cash flowed based upon the latest fabrication and delivery schedule information. Each major labor related services vendor forecast is based upon the most recent cumulative purchase order value, which would include the original awarded value and all approved changes. Added to this would be an estimate of any known pending changes to arrive at a best forecast at completion for each vendor. Owner engineering and project management support forecasts are derived from detailed staffing plans. Each approved position is cash flowed for the expected assignment duration and expected overtime, where applicable. The large construction related vendor forecasts are based upon previous experience, known scope(s) of work, productivity factors related to outage conditions and prevailing pertinent wage rates. Items identified in the Risk Register are cash flowed based upon anticipated engineering, material procurement and outage implementation time horizons.

Q. What types of costs does FPL plan to incur for the Uprate Project in 2010?

A. Schedule AE-6 of Appendix I breaks the 2010 actual/estimated costs down into the following categories: License Application $29,476,272; Engineering and Design $12,038,407; Permitting $176,062; Project Management $20,005,754; Power Block Engineering, Procurement, etc. $240,369,203; and Non-Power Block Engineering, Procurement, Etc. $7,388,472. Exhibit TOJ-19, EPU Actual/Estimated 2010 Costs Tables, includes 8 tables summarizing the EPU Project 2010 Actual/Estimated (A/E) costs by NFR category.

Q. Please describe the activities in the License Application category.

A. For the period ending December 31, 2010, License Application costs are estimated to be $29,476,272 as shown on Line 3 of Schedule AE-6 of Appendix I. These license application costs consist primarily of payments to vendors for the preparation of the PSL1 LAR, the PSL2 LAR, and the PTN 3 & 4 LAR. Evaluation of the license application process and the addition of project scope have resulted in FPL adjusting its internal milestones for the LAR submittal dates. Accordingly, FPL submitted the PSL1 EPU LAR in April 2010 and will submit the PSL 2 LAR in the fourth quarter of 2010. The PTN 3 & 4 LAR submittal is scheduled to be submitted to the NRC in the third quarter of 2010. Each of these was previously scheduled for submittal in late 2009. The change in the LAR submittal dates from the original plan is not expected to impact the EPU schedule. FPL will also support the NRC

review process, including responding to NRC Requests for Additional Information (RAIs), as necessary in 2010.

Q. Please describe the activities in the Engineering and Design category.

A. For the period ending December 31, 2010, Engineering & Design costs are estimated to be $12,038,407 as shown on Line 4 of Schedule AE-6 of Appendix I. This amount consists primarily of FPL's engineering and design work in support of review and approval of the engineered design modification packages prepared for the PSL and PTN sites by Bechtel.

Q. Please describe the activities in the Permitting category.

A. For the period ending December 31, 2010, Permitting costs are estimated to be $176,062 as shown on Line 5 of Schedule AE-6 of Appendix I. This amount consists primarily of environmental studies and application preparation and submittal to modify the PSL discharge permit, as described above.

Q. Please describe the activities in the Project Management category and how those activities help ensure that the Uprate Project is completed on a reasonable schedule and at a reasonable cost.

A. For the period ending December 31, 2010, Project Management costs are estimated to be $20,005,754 as shown on Line 6 of Schedule AE-6 of Appendix I. This category includes the FPL and contractor management personnel at each of the sites and those in the Juno Beach Office. This work and the associated costs are required to ensure the uprate project is managed in an efficient and cost-effective manner.

Q. Please describe the activities in the Power Block Engineering, Procurement, Etc. category.

A. For the period ending December 31, 2010, Power Block Engineering and Procurement costs are estimated to be $240,369,203, as shown on Line 9 of Schedule AE-6 of Appendix I. This amount is primarily for the development of the engineering design packages and for the implementation of the scheduled work shown on Exhibit TOJ-18, 2010 Extended Power Uprate Work Activities. This work includes preparation of the modification packages (part of the Engineering Design Modification phase); the development of directions for the removal, replacement and/or modification of components, equipment, systems or structures as needed to support the uprate condition, and the performance of field walkdowns by Bechtel. This also includes certain implementation activities, including the preparation of work orders for implementation and integration of modifications into the unit outage schedule. The second part of this phase is the physical execution of the work, some of which will occur in 2010.

Some needed modifications can be performed when the units are operating, reducing the complexity of the outage and limiting the outage extension. FPL evaluates the risk to the continued operation of the unit and if determined to be an acceptable risk, the modifications will be performed while the unit is on line. One such modification is the modification of the PSL 1 Turbine Gantry Crane. Modifications to the crane are necessary for increased efficiency in

removing and installing, with precise movements, many pieces of heavy equipment. The needed modifications to this crane will be performed while the respective unit is operating. The PSL 1 Turbine Gantry Crane modification work is scheduled to begin in June 2010 and complete in the fourth quarter of 2010.

Procurement costs include the purchase of long lead equipment items and progress payments to manufacturing vendors. FPL is purchasing major pieces of equipment which include steam turbines, main generator rotors, pumps, motors, valves, and heat exchangers of various specifications.

Q. Please describe the activities in the Non-Power Block Engineering, Procurement, Etc. category.

A. For the period ending December 31, 2010, Non-Power Block Engineering costs are estimated to be $7,388,472 as shown on Line 10 of Schedule AE-6 of Appendix I. This category consists primarily of the engineering, permitting and construction of a temporary fabrication and warehouse facility that will be located in the protected area of the Turkey Point Site. The fabrication area will be used to pre-fabricate piping and valves that are needed to complete modifications to PTN Units 3 and 4. Pre-fabrication of piping and valves reduces the outage time because work can be performed prior to the outage and at the same time as other work, instead of in a sequence with other field activities during the outage. The warehouse will be used to store and stage delivered materials for the EPU project prior to installation and to provide an

area for the training and qualification of craft labor. A training and qualification area is necessary to ensure PTN has the needed qualified craft labor support to perform the many tasks needed to remove, install or modify plant equipment. For example, there are several hundred small and large bore piping welds, each of which must be performed to stringent nuclear industry standards, that are necessary for the installation of just one set of feedwater heaters. It is necessary to train and qualify welders to ensure the necessary high quality of the welding. In addition, some of this small bore piping can be prefabricated in the fabrication area, which will improve installation efficiency during the outage durations.

This category also includes the upgrades to each site's operator training simulators. The training simulators require modifications to reflect the equipment and operating parameters in the uprate condition.

Q. Please describe the activities in the Transmission category.

A For the period ending December 31, 2010, Transmission costs are estimated to be $8,712,599 as shown on Line 33 of Schedule AE-6 of Appendix I. There are four sub-categories of transmission costs: Line Engineering, Substation Engineering, Line Construction and Substation Construction. This amount is primarily related to the following:

For PTN Units 3 & 4, FPL must: 1) install phase conductor spacers on the Unit 3 string bus and upgrade the Over Head Ground Wire (OHGW) between

the 230 kV system switchyard and each Generator Step Up (GSU) transformers; 2) perform Turkey Point 230 kV switchyard site expansion and foundation and piling installation for the construction of the 5 ohm phase inductors; 3) upgrade six switches to 3000 amps in Bay 7 of the Turkey Point 230 kV switchyard; 4) replace the breaker failure panels at the Flagami Substation switchyard; and 5) perform engineering for the replacement of the breaker failure panels at the Davis Substation. A portion of the work scope listed in items 1 through 4 above requires clearances only available during a fossil or nuclear unit outage, and is scheduled during the Fall 2010 PTN Unit 3 outage. Doing so will facilitate the ability to obtain transmission line and substation equipment clearances during the scheduled 2011 and 2012 unit outages to meet the anticipated completion dates of the unit uprates.

For PSL Units 1 & 2, FPL must: 1) install phase conductor spacers on the Midway–St. Lucie #1, and #3 230 kV lines (11.7 miles); 2) install phase conductor spacers on the Midway-St. Lucie #2 230 kV line at the Florida Turnpike, Interstate 95, and US Highway 1 crossings; 3) replace existing overhead ground wire with fiber optic overhead ground wire (OPGW) on the Midway-St. Lucie #2 and #3 230 kV lines (11.7 miles); 4) replace existing overhead ground wire with OPGW on the Midway-St. Lucie #1 230 kV line at the Indian River crossing; 5) replace thirteen 2500 amp disconnect switches with 3000 amp disconnect switches, remove one 2500 amp disconnect switch and replace with bus, and install panels for new fiber optic protection at the St.

Lucie 230 kV System Switchyard; and 6) perform engineering for the required upgrades to eleven switches and panels for new fiber optic protection at the Midway substation. The work described in items 1 through 4 above requires clearances which will be obtained during the Spring 2010 PSL Unit 1 outage. "Clearances" refers to the elaborate work planning and management choreography that has to be performed in detail, taking into account other station and system requirements and work, and approved prior to the work being performed. Doing so will facilitate the ability to obtain transmission line and substation equipment clearances during the scheduled 2011 and 2012 unit outages to meet the anticipated completion dates of the unit uprates.

Q. Please describe the 2010 actual/estimated recoverable O&M costs.

A. Actual/Estimated recoverable O&M costs for the EPU project in 2010 total $3,135,753 as shown on Line 19 of Schedule AE-4 of Appendix I as well as transmission O&M recoverable costs that are estimated to be $75,000, as shown on Line 28 of Schedule P-4 of Appendix I. Recoverable O&M primarily consists of costs for commodities that do not meet FPL's capitalization policy, such as non-capitalizable computer hardware and software, office furniture and fixtures, tooling needed for new project hires, incremental staff and augmented contract staff – all of which are segregated for EPU Project use only. Additionally, FPL is including the cost of performing inspections of the 1 through 4 feedwater heaters at PSL 1 and PTN 3, and an estimate of obsolete materials that will be expensed as a result of modifications completed in 2010. The transmission O&M amount consists of

work to uprate non-capital facilities within the St. Lucie, Flagami, and Midway switchyards required to support the Uprate project.

Q. Please describe the equipment going into service in 2010.

A. Exhibit TOJ-18, 2010 Extended Power Uprate Work Activities, is a listing by outage of major 2010 work activities for PSL Unit 1 and PTN Unit 3. To the extent the work activities are subject to capitalization as units of property and the modification is completed in 2010, the plant components will be placed into service. The items going into service include, but are not limited to, feedwater heaters, feedwater heater drain valves, Leading Edge Flow Meter (LEFM), Flow Accelerated Corrosion (FAC)-identified piping replacement, Iso-Phase bus duct modifications, and the main transformer cooler upgrade. Certain Transmission and Distribution (T&D) equipment will also be placed in service in 2010.

Q. Are the 2010 actual/estimated costs presented in your testimony "separate and apart" from other nuclear plant expenditures?

A. Yes, the 2010 actual/estimated costs presented are "separate and apart" from other nuclear plant expenditures.

The construction costs and associated carrying charges and recoverable O&M expenses for which FPL is requesting recovery through this proceeding were caused only by activities necessary for the uprate condition, and would not have been incurred otherwise. As explained in my testimony submitted in this docket on March 1, 2010, FPL's identification of the major components that

must be modified or replaced to enable the units to function properly and reliably in the uprated condition is based on engineering analyses. A review of historical site planning documents and the License Renewal Action Items compiled in conjunction with the NRC's approval of FPL's requested license renewals confirmed that the uprate costs were "separate and apart" from other planned nuclear activities and expenditures. FPL has continued to carefully follow all of the safeguards in this respect, which the Commission has previously reviewed and found to be reasonable and appropriate.

Q. Are FPL's actual/estimated 2010 EPU costs reasonable?

A. Yes. The majority of FPL's 2010 expenditures are for (i) payments to long lead equipment manufacturers pursuant to competitively bid contracts; (ii) payments to the EPC vendor, which vendor was chosen relying on a competitive bid process; and (iii) payments to original equipment manufacturers for LAR engineering analyses. All of these vendor selections and contracts were previously reviewed by the Commission and determined to be prudent in last year's review of 2008 costs and decisions (Docket No. 090009-EI). Another large component of FPL's 2010 expenditures is related to the turbine generator procurement from Siemens, which selection was also reviewed and approved as prudent in Docket No. 090009-EI. Careful vendor oversight, continued use of competitive bidding when appropriate, and the application of the robust internal schedule and cost controls and internal management processes all support a finding that FPL's actual/estimated 2010 expenditures are reasonable.

2011 PROJECTED CONSTRUCTION ACTIVITIES AND COSTS

Q. Please summarize the construction activity projected for 2011.

A. In 2011 for the EPU LAR Engineering Analysis phase, FPL will continue to support the NRC review process, for example, by responding to NRC requests for additional information (RAIs). The Long Lead Equipment Procurement Phase will nearly be completed, with equipment for the modifications in the 2012 outages being ordered. The Engineering Design Modification Phase will continue with modification package preparation for the 2011 and 2012 outages. Implementation will be worked for each of the three outages in 2011: the PSL 2 Spring outage, the PSL 1 Fall outage, and the PTN 4 Spring outage. Each outage requires planning, schedule integration, and the actual execution of the physical work in the plants, including extensive testing and systematic turnover to operations. Exhibit TOJ-20, 2011 Extended Power Uprate Work Activities, includes the unit outage, the work activity, and a description of why it is necessary for the EPU Project.

Q. Please describe how FPL developed its 2011 Projected costs.

A. The 2011 projected costs were developed from Project Controls forecasts for all known project activities in 2011. Included in the forecasts are the vendor long lead materials contracts that have scheduled milestone payments in 2011 and are cash flowed based upon the latest fabrication and delivery schedule information. Each major labor related services vendor forecast is based upon

the most recent cumulative purchase order value, which would include the original awarded value and all approved changes. Added to this would be an estimate of any known pending changes to arrive at a best forecast at completion for each vendor. Owner engineering and project management support forecasts are derived from proposed staffing plans. Each approved position is cash flowed for the expected assignment duration and expected overtime, where applicable. The large construction related vendor forecasts are based upon previous experience, known scope(s) of work, productivity factors related to outage conditions and prevailing pertinent wage rates. Items identified in the Risk Register are cash flowed based upon anticipated engineering, material procurement and outage implementation time horizons.

Q. What types of costs does FPL project to incur for the Uprate Project in 2011?

A. Schedule P-6 of Appendix I breaks the 2011 projected costs down into the following categories: License Application $10,435,967; Engineering and Design $9,281,524; Permitting $150,000; Project Management $23,903,816; and Power Block Engineering, Procurement, Etc. $491,272,127; and Non-Power Block Engineering, Procurement, Etc. $4,874,461. Exhibit TOJ-21, EPU Project 2011 Projected Costs Tables, provides a summary of the projected EPU Project costs for the NFR categories.

Q. Please describe the activities in the License Application category for 2011.

A. For the period ending December 31, 2011, License Application costs are projected to be $10,435,967 as shown on Line 3 of Schedule P-6 of Appendix

I. These amounts consist primarily of vendor payments necessary for responding to NRC RAIs, FPL support and interface with NRC staff, and NRC review fees.

Q. Please describe the activities in the Engineering and Design category.

A. For the period ending December 31, 2011, Engineering & Design costs are projected to be $9,281,524 as shown on Line 4 of Schedule P-6 of Appendix I. The amounts consist primarily of FPL engineering activities in support of the review and approval of the engineered modification packages.

Q. Please describe the activities in the Permitting category.

A. For the period ending December 31, 2011, Permitting costs are estimated to be $150,000 as shown on Line 5 of Schedule P-6 of Appendix I. This category includes funding to complete environmental permitting for the uprate projects.

Q. Please describe the activities in the Project Management category and how those activities to help ensure that the Uprate Project is completed on a reasonable schedule and at a reasonable cost.

A. For the period ending December 31, 2011, Project Management costs are projected to be $23,903,816 as shown on Line 6 of Schedule P-6 of Appendix I. This category includes the project management costs associated with the oversight and management of the engineering of modification packages, and implementation of modifications for the planned outages at PSL 2, PSL 1, and PTN 4 occurring in 2011. This work and the associated costs are required to ensure the uprate project is managed in an efficient and cost-effective manner.

Q. Please describe the 2011 activities in the Power Block Engineering, Procurement, Etc. category.

A. For the period ending December 31, 2011, Power Block Engineering and Procurement costs are projected to be $491,272,127, as shown on Line 9 of Schedule P-6 of Appendix I. This amount consists of milestone payments made to manufacturers of long lead materials and payments made to the EPC vendor for the vast work associated with the implementation of the engineered modification packages in the three planned 2011 outages and for the preparation of engineering modification packages for planned outage implementation in 2012. This includes final payments to vendors following installation and testing of the equipment supplied for the Uprates.

The St. Lucie Unit 2 Spring 2011 outage is the first of the two planned EPU outages for the unit. Some of the modifications planned for the Spring 2011 outage are: condensate pump replacement, Low Pressure (LP) turbine rotor replacements, Main Generator stator rewind and rotor replacement, and Main Transformer 2B replacement.

The St. Lucie Unit 1 Fall 2011 outage is the second of the two planned EPU outages for the unit. Some of the modifications planned for the 2011 outage are: the replacement of the LP turbine rotors, the main generator stator rewind and rotor replacement, main feedwater pump replacement, moisture separator

reheater replacement (2) and turbine cooling water heat exchanger replacement.

The Turkey Point Unit 4 Spring 2011 outage is the first of the two EPU outages planned for the unit. Some of the modifications planned for the Spring 2011 outage are: replace feedwater heaters #5a, 5b, 6a, and 6b, feedwater heater #5 drain piping upgrade, Iso-Phase bus duct cooling, Main Transformer cooler upgrade, and feedwater heaters 1-4 inspections and upgrade modifications.

FPL will also perform EPU modifications in 2011 at Turkey Point while the units are operating. A few of these modifications are: alternate spent fuel pool cooling, control room habitability, and Turbine Gantry Crane modifications.

Q. Please describe the activities in the Non-Power Block Engineering, Procurement, Etc. category.

A. For the period ending December 31, 2011, Non-Power Block Engineering costs are estimated to be $4,874,461 as shown on Line 10 of Schedule P-6 of Appendix I. This category consists primarily of costs for simulator upgrades and temporary facilities for the project.

Q. Please describe the 2011 activities in the Transmission category.

A. For the period ending December 31, 2011, Transmission costs are projected to be $7,839,000 as shown on Line 33 of Schedule P-6 of Appendix I. This amount is required primarily for the following:

For PTN Units 3 and 4, FPL must: 1) install 5 ohm phase inductors with shunt capacitors on the southeast and southwest busses along with associated buswork, switches, connectors, and relay protection equipment at the Turkey Point 230 kV System Switchyard; and 2) replace the breaker failure panels at the Davis Substation. A portion of the work scope listed in items 1 and 2 above requires clearances only available during a fossil or nuclear unit outage, and is scheduled during the Spring 2011 PTN Unit 4 outage and the 2011 Turkey Point fossil unit outage.

For PSL Units 1 and 2, FPL must: 1) replace four existing 2500 amp disconnect switches with 3000 amp disconnect switches; complete installation, testing, and commissioning of fiber optic relay protection equipment and remove existing wavetraps at the St. Lucie 230 kV Switchyard; and 2) replace eleven existing disconnect switches with 3000 amp disconnect switches; install, test and commission fiber optic relay protection equipment; and remove wavetraps at the Midway Substation. This work is scheduled for the Spring 2011 outage on PSL Unit 2 and the Fall 2011 outage on PSL Unit 1.

Q. Please describe the 2011 projected recoverable O&M costs.

A. Projected recoverable O&M costs for the EPU project in 2011 total $4,086,728 as shown on Line 19 of schedule P-4 of Appendix I. Recoverable O&M primarily consists of costs for commodities that do not meet FPL's

capitalization policy, such as non-capitalizable computer hardware and software, office furniture and fixtures, tooling needed for new project hires, incremental staff and augmented contract staff – all of which are segregated for EPU Project use only. Additionally, FPL is including the cost of performing inspections of the 1 through 4 feedwater heaters at PSL 2 and PTN 4, and an estimate of obsolete materials that will be expensed as a result of modifications completed in 2011. Recoverable O&M for this year also includes the cost of expensing inventory that will be rendered obsolete by the EPU modifications implemented in 2011 as well as transmission O&M recoverable costs that are estimated to be $75,000, as shown on Line 28 of Schedule P-4 of Appendix I. This amount consists of work to uprate non-capital facilities within the St. Lucie and Midway switchyards required to support the Uprate project. These activities are classified as O&M expense in accordance with FPL Accounting Guidelines.

Q. Please describe the items going into service in 2011.

A. Exhibit TOJ-20, Extended Power Uprate Work Activities for 2011, is the listing of equipment and control devices that are planned for installation and many of which are planned to be placed into service in 2011. This extensive list includes items such as the Main Generator rotors, Low Pressure turbine rotors, Main Transformer, feedwater heaters, and condensate pumps, among others.

Q. Are the 2011 cost projections presented in your testimony "separate and apart" from other nuclear plant expenditures?

A. Yes. The 2011 costs projections presented are "separate and apart" from other nuclear plant expenditures. As explained in my testimony submitted in this docket on March 1, 2010, FPL's identification of the major components that must be modified or replaced to enable the units to function properly and reliably in the uprated condition is based on engineering analyses. A review of historical site planning documents and the License Renewal Action Items compiled in conjunction with the NRC's approval of FPL's requested license renewals confirmed that the uprate costs were "separate and apart" from other planned nuclear activities and expenditures. FPL has continued to carefully follow all of the safeguards in this respect, which the Commission has previously reviewed and found to be reasonable and appropriate.

Q. Are FPL's projected 2011 EPU costs reasonable?

A. Yes. FPL's 2011 costs, which are higher than its expected 2010 costs, reflect the significant amount of implementation work that is planned to occur in that year and the larger number of systems going into service. Project staffing levels, including vendor staffing, will be higher to support the modification package engineering design, implementation, and outage support. The majority of FPL's costs, however, will continue to flow from the many contracts already reviewed by this Commission in prior proceedings. Careful vendor oversight, continued use of competitive bidding when appropriate, and the application of the robust internal schedule and cost controls and internal

management processes, all demonstrate that FPL's projected 2011 expenditures are reasonable.

TRUE-UP TO ORIGINAL COST AND UPDATED COST ESTIMATE RANGE

Q. Have you prepared a true-up of the total project costs through the current reporting period?

A. Yes. Appendix I includes the TOR schedules that compare the current projections to FPL's originally filed St. Lucie and Turkey Point Project costs. The TOR schedules provide information on the project costs through the end of 2011. The TOR schedules provide the best information currently available for the cost recovery period through 2011.

Q. Has FPL updated its total nonbinding cost forecast for the project?

A. Yes. Pursuant to the Commission's direction in Order No. PSC-09-0783-FOF-EI, FPL has updated its capital cost forecast. FPL has developed an updated cost forecast range for the EPU project that reflects the extensive LAR engineering analyses performed to date, the new scope identified during the preparation of the LARs, the initial EPC vendor engineering design modification and implementation cost estimates, and preliminary information from the third party cost estimating vendor for completing the EPU Project at PTN 3. The updated cost estimate range is approximately $2,050 million to $2,300 million

Q. Why is FPL providing a nonbinding range instead of a single point estimate at this time?

A. The progression of several activities over the last two years provides FPL with additional insight to revise its nonbinding cost forecast. The completion of the St. Lucie Unit 1 LAR and the progress made to date on the other two LARs has enabled FPL to either identify the modifications needed or quantify the known risks. In parallel with this effort, modification engineering has been started by Bechtel, and Bechtel has provided some preliminary cost estimates. Over time, these activities have provided information to the project team, such that updating the total projected cost is now warranted. At the same time, however, the project is still in a relatively early stage of design engineering (approximately 10% complete) and there remains an expected level of uncertainty with respect to project scope. Accordingly, it is only appropriate to provide the total project cost in terms of a range.

This approach is consistent with generally accepted project management best practices. For example, the Project Management Institute's "A Guide to the Project Management Body of Knowledge" states the following at page 161:

> The accuracy of a project estimate will increase as the project progresses through the project life cycle. For example, a project in the initiation phase could have a rough order of magnitude (ROM) estimate in the range of -50% to +100%. Later in the project, as more information is known, estimates could narrow to a range of -10% to +15%.

As activities such as final design engineering analyses, associated NRC requirements and reviews, and construction planning progress, FPL will be able to provide additional certainty to the total project cost forecast.

Q. Please describe the development of the current cost forecast range for the EPU Project.

A. The low end of the current cost forecast range represents the current cost forecast at this early stage of the project based on the following status of tasks: i) the completion of one LAR engineering effort with two others nearing completion; ii) the approximately 85% committed costs for long lead equipment; iii) the approximately 10% completion of the design modification phase of the project; and iv) a smaller percentage of the detailed implementation estimates. The LAR analyses and design modification engineering activities have added work scope to the project. This added work scope and identified risks have been quantified. These elements provide the basis for the low end of the cost forecast range of the project. This resulted in a low end cost forecast range amount of approximately $2,050 million.

The high end of the cost forecast range was developed using the current forecast and evaluating the existing trends for weighted risks and undefined scope. This resulted in a high end cost forecast range amount of approximately $2,300 million.

Q. Is this cost forecast range based on EPU project budgets?

A. No. The total project cost range is merely a project management tool, representing what is known and what is not known about the project at this time. FPL will not have a cost estimate that is supported by actual budgeted expenditures until modification design engineering is completed and final implementation planning and scheduling is completed.

Q. Please compare the current cost estimate range of the EPU Project to the nonbinding cost estimate presented in FPL's Need Filing.

A. FPL's need filing in September 2007 for the EPU Project included a nonbinding cost estimate of $1,798 million. This estimate was based on FPL's preliminary feasibility and scoping studies and reflected the best information available at that time. The present cost range is approximately $2,050 million to $2,300 million. The variance is approximately $250 million to $500 million. (Please note that FPL's original non-binding cost estimate included the participant's share of PSL Unit 2.)

Q. Please describe the primary reasons why the current nonbinding cost estimate range is higher than the nonbinding cost estimate previously provided.

A. The LAR engineering is forecast to cost more than originally estimated. The major reason for the expected higher cost is the increase in scope and effort to complete the engineering analyses required to support the LAR applications. In the NRC licensing process, the applicant must demonstrate through engineering analyses that the increased operating conditions meet regulatory

safety criteria. In many instances, in performing the LAR engineering analyses, the need for a modification to a system, structure, or component to obtain acceptable results was identified. As more modifications are identified by the LAR engineering process, costs for labor and non-labor resources will increase.

The EPC vendor costs are also expected to be higher than initially estimated. The EPC vendor is responsible for detailed design of the modifications, procurement of components, and the implementation of modifications. As described above the EPC vendor, Bechtel, has begun performing the modification design engineering process and estimating the resources required for implementation. These preliminary reviews indicate that modification implementation will be more complex than originally anticipated. This complexity is primarily related to the following:

- Structural Integrity
- Limited Work and Staging Space
- Rigging of Equipment
- Operating Plant Environment
- Work Order Planning and Integration with Routine Outage Activities

Structural Integrity: Structural integrity refers to the existing structures, secondary plant floor elevations and their ability to accommodate heavier and/or larger pieces of equipment supported from the existing structure.

Detailed engineering evaluations of the structures are required to support removal, transport and placement of the equipment.

Limited Work and Staging Space: The secondary plant equipment being modified for the EPU Project is located on all of the floors of the secondary plant which includes below grade areas with minimal space for removal, replacement or modification work. Typically, the modification or replacement of a piece of equipment during a normal refueling outage can be accomplished while routine work is scheduled to minimize interference with a planned major modification. The EPU Project replaces or modifies numerous major pieces of equipment during a single refueling outage. This work increases the complexity, planning, scheduling and duration of the outage. EPU modification engineering, work order planning and scheduling activities are integrated with routine outage activities to optimize outage performance.

Rigging of Equipment: Some of the equipment being replaced or modified weighs up to approximately 185 tons. This equipment must be stored, staged and carefully moved into proper location with precise execution. These heavy lifts, including moving existing equipment out of the way to allow new equipment to be installed, requires individual detailed rigging plans. A rigging plan defines the lifting devices to be used, where the equipment can be landed, and the safe load path for moving the equipment. These rigging plans

are then integrated into the work orders and the schedule for crane usage, space, and qualified craft labor availability.

Operating Plant Environment: Performing the work needed for the uprate condition, removing, replacing or modifying equipment requires appropriate precautions in the engineering design modification package, work order planning preparation and schedule integration when these activities are being performed at an operating plant. Performing work at an operating plant requires strict adherence to federal, state, and local regulations including safety practices, security requirements, and plant technical specifications. All these regulatory requirements are considered and factored into the integrated planning and scheduling when working in an operating plant environment.

Work Order Planning and Integration with Routine Outage Activities: Planned modifications are assigned to an outage to accomplish the work in a prescribed sequence of removing, installing, or modifying the equipment in preparation for operation in the uprate condition. Once the design engineering modification packages are completed, work orders delineating a step-by-step process for performing the work are prepared. The work orders may include equipment clearance orders to ensure equipment is isolated from mechanical energy and electrically de-energized, confined space entry permits requiring additional safety personnel, and hot work permits which may require a fire watch for grinding and welding activities for equipment being removed,

installed or modified. These work order activities are then integrated into the outage schedule for proper sequencing to accomplish the needed modifications. Schedule integration includes when and what equipment will be moved by the cranes, where equipment will be staged for supporting the work activity, when a confined space can be entered safely, and ensuring regulations are met.

LONG TERM FEASIBILITY

Q. What total project cost did FPL use for purposes of the economic feasibility analysis?

A. FPL performed its feasibility analysis with an estimated "going forward" project cost figure of $1,953 million, using the high end of its current nonbinding cost estimate range as the starting point for the feasibility analysis computations as explained in FPL Witness Sim's testimony. Pursuant to Order No. PSC-09-0783-FOF-EI, this amount accounts for sunk costs.

Q. Please describe how FPL calculated the cost estimate used for its economic feasibility analysis.

A. FPL began with the high end of the total project cost estimate range discussed above of $2,300 million. FPL then accounted for sunk costs as directed by the Commission, which through 2009 were approximately $347 million. Accordingly, the amount used for the feasibility analysis was $1,953 million.

Q. What assumed megawatt output did FPL use for purposes of the economic feasibility analysis?

A. FPL assumed that the Uprate would provide an additional 450 MWe for feasibility analysis purposes, as compared to the 399 MWe (after accounting for co-owners' share of 15 MWe) used in last year's feasibility analyses. FPL now expects that it will achieve more than 399 MWe. The "best case scenario" for FPL's customers, as discussed above, would be an increase in output of approximately 463 MWe. However, it remains to be seen whether the target parameters at each unit will be achieved. Accordingly, FPL used 450 MWe in its feasibility analysis, in order to provide feasibility results that are not reliant upon the best case scenario.

Q. Please summarize the results of the EPU economic feasibility analysis.

A. As discussed in detail by FPL Witness Dr. Sim, the most current feasibility analysis affirms the cost-effectiveness and benefits associated with the Uprate project. To summarize FPL Witness Dr. Sim's conclusions for the convenience of the reader, using an updated cost estimate, updated MWe output, and other updated assumptions such as those for fuel and environmental cost forecasts, the Uprate project remains a solidly cost-effective resource addition for FPL's customers.

Q. Is the cost-effectiveness of the EPU Project dependent upon the comparatively higher level of MWe output?

A. No. The EPU Project remains cost effective, even if analyzed with lower-than-expected output. Substituting 399 MWe for the assumed 450 MWe does

not change the fact that the EPU Project is cost effective in all base case fuel and environmental compliance cost scenarios. This information is detailed in FPL Witness Dr. Sim's testimony and exhibits.

Q. Has FPL examined other aspects of project feasibility?

A. Yes. FPL continuously assesses the financial, technical, and regulatory aspects of the EPU project, and the project remains feasible at this time. This assessment is reflected in the numerous reports and tracking tools used by the project.

Q. Is it technically feasible to accomplish the Uprate Project?

A. Yes. The Project remains technically feasible. The LAR engineering analyses revealed challenges to the Uprates, but they have been (or can be) addressed. Further, Bechtel has demonstrated that it is capable of performing both the necessary engineering design and implementation scope of work.

Q. Is it feasible to finance the Uprate Project?

A. Yes. The Uprate Project is financed by the general capital FPL raises each year, and FPL's finance department expects that adequate amounts of capital will be obtained to complete the project.

Q. Is it feasible to obtain all necessary licenses and permits?

A. Yes. As described above, FPL has applied for a modification to the St. Lucie cooling water discharge permit. If for some reason that permit is not obtained, the project will remain feasible, but there will be a risk that operations will need to be reduced at times to stay within current permit limits. FPL will also submit all necessary LARs to the NRC this year, has allowed time for

approval prior to the operation of the units at the uprated power levels. FPL expects that its LARs will be approved.

Q. Are there other aspects to feasibility that FPL has examined?

A. Yes. Inherent to the project management process is the recognition of factors such as resource availability/constraints, potential cost escalations, and industry-critical events such as the recent cancellation of the Yucca Mountain spent fuel project. FPL monitors these and other factors as summarized in its Risk Matrix for the project, which is continuously updated to reflect the most recent information available and analyzed for impacts to the project. None of these issues has caused the project to cease being feasible.

Q. How are the impacts to customers associated with the decision to continue or stop the project recognized?

A. Customer impacts resulting from project decisions are addressed inherently in the initial need determination proceeding and in the annual economic feasibility analysis provided in this docket. The determination of need takes into account the need for electric system reliability and integrity, the need for adequate electricity at a reasonable cost, the need for fuel diversity and supply reliability, and whether the plant is the most cost effective alternative. Each year the feasibility analysis addresses changes in the FPL system and the project to determine if the project remains economical. The analysis looks at a range of potential future scenarios to consider whether project viability is demonstrated. As described in detail by FPL Witness Dr. Sim, the Uprates project continues to be a cost-effective choice for FPL's customers.

Conversely, a determination not to continue with the project would cause customers to forego the significant fuel cost savings and reduction in emissions associated with the project.

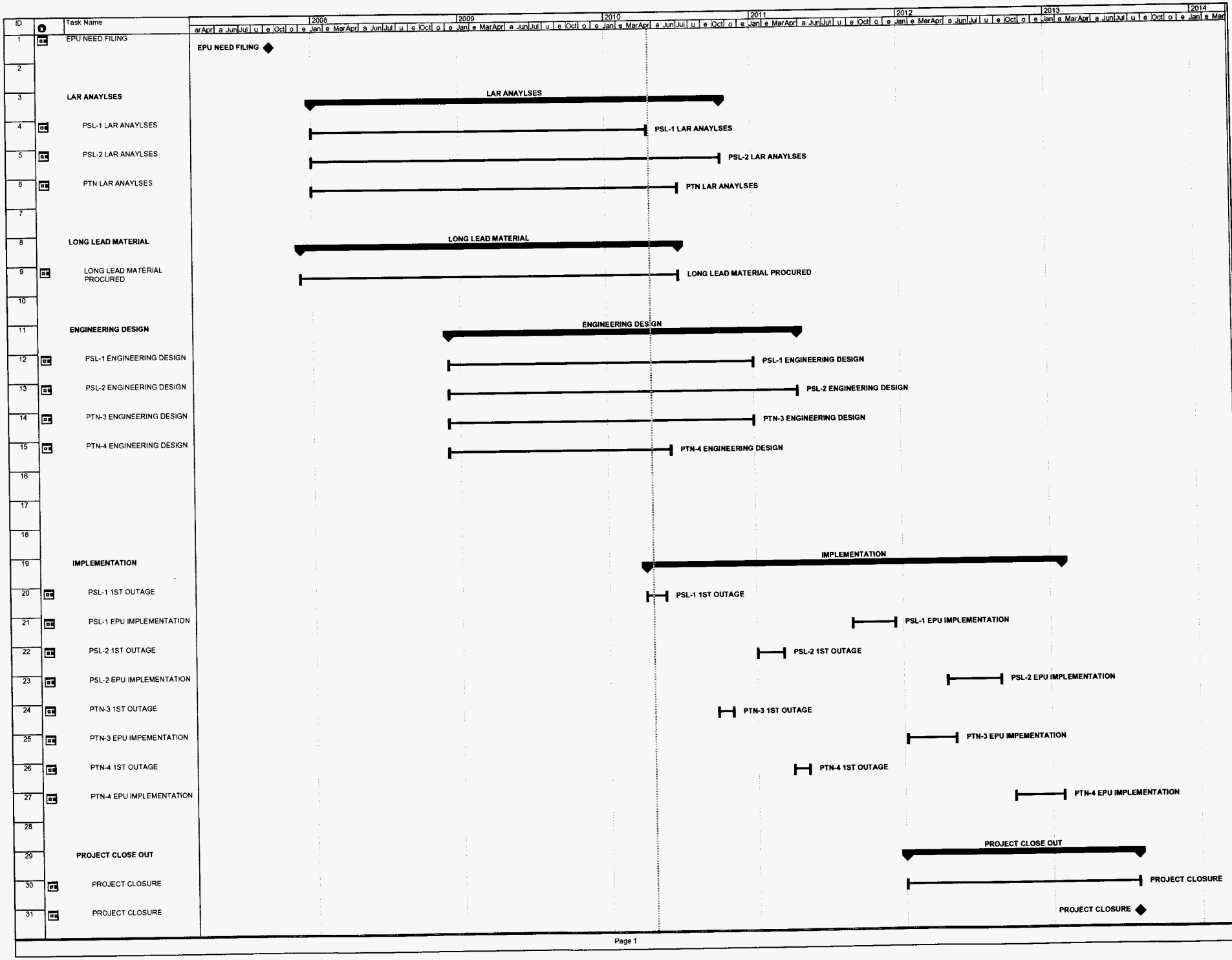
Q. Are these items required to be included in the feasibility analysis set forth in Rule 25-6.0423(c)5, F.A.C.?

A. No. FPL's economic feasibility analysis sponsored by Witness Dr. Sim is being provided in satisfaction of Rule 25-6.0423(c)5, F.A.C. On February 4, 2010, Commission Staff requested that FPL address these feasibility-related topics. Accordingly, FPL has summarized its assessment of the non-economic topics related to feasibility in response to Staff's request.

Q. Does this conclude your testimony?

A. Yes.

Appendix I is in a separate book



Docket 100009-EI
EPU Project Schedule
Exhibit TOJ-15, Page 1 of 1

Docket No. 100009-EI
St. Lucie
Main Generator Rotor
Exhibit TOJ-16, Page 1 of 1

Docket No. 100009-EI
Unloading the Main
Generator Rotor at St. Lucie
Exhibit TOJ-17, Page 1 of 1

2010 Extended Power Uprate (EPU) Project Work Activities

St. Lucie Spring 2010 Outage	Description	Contract	Scoping Document
Iso-Phase Bus Duct Cooling (Flow testing / Validation)	Increased cooling is needed for the electrical connections from the main generator to the main transformer in the uprate conditions. Testing to determine required modifications to the cooling system.	Bechtel and AZZ Calvert PO-120769	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Drain Coolers (Inspect & Clean, Baseline)	Required to validate basis/assumptions made by Shaw/Yuba and identify needed modifications to support operation at EPU conditions.	Bechtel	Balance of Plant analysis of component capabilities in the power uprate conditions
Turbine Performance Test Points Installation and Monitoring	Installation and monitoring of test points in main steam system to acquire baseline data before and after the power uprate conditions.	Shelby Jones Co. PO-119443 Florida Fluid PO-122350	Siemens turbine engineering requirement

2010 Extended Power Uprate (EPU) Project Work Activities

St. Lucie Spring 2010 Outage	Description	Contract	Scoping Document
Feedwater Heaters 1-4 Inspections and Repair for EPU conditions	Required to validate basis/assumptions made by Shaw/Yuba and identify needed modifications to support operation at EPU conditions	Bechtel	Balance of Plant analysis of component capabilities in the power uprate conditions
Moisture Separator Reheater (MSR) fe-11-08A/B Orifice Plate Inspections for EPU conditions	Validate flow basis / assumptions made by Shaw/Yuba to support operation at EPU conditions	Bechtel	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008

2010 Extended Power Uprate (EPU) Project Work Activities

St. Lucie Unit 1 2010 On-Line Activities	Description	Contract	Scoping Document
Turbine Gantry Crane Modifications	Upgrades needed to more efficiently and precisely move heavy EPU equipment loads.	ACECO PO-117272 Sargent & Lundy PO-79551	Identified during scheduling and planning for EPU heavy equipment moves
Training Simulator Modifications	Upgrades needed to replicate the plant in the power uprate conditions.	Western Services Corp. PO-118627	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008

2010 Extended Power Uprate (EPU) Project Activities

Turkey Point Unit 3 Fall 2010 Outage	Description	Contract	Scoping Document
Feedwater Heaters 1-4 Inspections with Contingency PCM for Feedwater Heater Modifications	Perform inspections to determine needed modifications for the uprate conditions	Bechtel / NPS	Balance of Plant analysis of component capabilities in the power uprate conditions
Feedwater Heater Drains Digital Upgrades	Instrumentation to provide control the feedwater heater control and dump valves in the uprate conditions.	PO -126227	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant Balance of Plant Extended Power Uprate Scoping Study, March 2008
Feedwater Heaters (#5 & 6)	Larger feedwater heaters are needed to process the steam and feedwater flows in the uprate conditions.	TEI PO-118241	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant Balance of Plant Extended Power Uprate Scoping Study, March 2008
Heater Drain Valves	Larger valves are needed to control the condensate flow in the uprate conditions	Bechtel PO-117809	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant Balance of Plant Extended Power Uprate Scoping Study, March 2008
Measurement Uncertainty recapture (MUR) Leading Edge Flow Meter (LEFM)	Precision flow measurement instrument and instrumentation provides for increased certainty of operating parameters supporting uprate conditions.	Cameron PO-116796	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant Balance of Plant Extended Power Uprate Scoping Study, March 2008
Flow Accelerated Corrosion (FAC) Identified Piping Replacement	Increased flows require replacement of piping affected by the flow accelerated corrosion in the uprate conditions.	Bechtel PO-117809	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant Balance of Plant Extended Power Uprate Scoping Study, March 2008

2010 Extended Power Uprate (EPU) Project Activities

Turkey Point Unit 3 Fall 2010 Outage	Description	Contract	Scoping Document
Sump PH Control	Alternate Source Term method requires pH greater than 7.0. The current pH control system is not sufficient at uprate conditions.	S&L PO-79551	Alternate Source Term (AST) License Amendment Request (LAR) Engineering
Feedwater Heater #5 Drain Piping Upgrade	Higher drain water flows require larger piping in the uprate conditions.	Bechtel PO-117809	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant Balance of Plant Extended Power Uprate Scoping Study, March 2008
Digital Control System (DCS) Modification	Modify DCS (Digital Control System) to all flux map for increase active fuel length.	Invensys	Modification is required to capture detector readings in the bottom 2.5" of 15x15 upgrade fuel
Main Transformer Cooler Upgrade	Increased cooling is needed to handle the increase in the main generator electrical output.	Siemens PO-122154	T&D
Switchyard Upgrades	Increased electrical output requires higher rated electrical equipment	T&D	Generation Interconnection Service and Network Resource Interconnection Service System Impact Study. 11/25/08

Table 1. Actual/Estimated 2010 Extended Power Uprate Construction Costs

Category	Detail Table No.	2010 A/E Costs
Licensing	2	$29,476,272
Engineering & Design	3	$12,038,407
Permitting	4	$176,062
Project Management	5	$19,832,603 (1)
Power Block Engineering, Procurement, etc.	6	$253,335,700 (2)
Non-Power Block Engineering, Procurement, etc.	7	$7,388,472
Total EPU Construction Costs	**NA**	**$322,247,516**
Recoverable O&M	8	$3,210,753
Transmission	9	$8,712,599
Total Construction Costs & Transmission	**NA**	**$334,245,868**

(1) Excludes accounting adjustment. NFR Schedule A/E-6 amount $20,005,754
(2) Includes removal costs and post in-service project costs. NFR Schedule A/E-6 amount $240,369,203

Table 2. Actual/Estimated 2010 Licensing Costs

Category	2010 A/E Costs
St. Lucie (PSL) License Amendment Request (LAR)	$14,014,388
Turkey Point (PTN) License Amendment Request (LAR)	$15,461,884
Total Licensing	$29,476,272

Table 3. Actual/Estimated 2010 Engineering and Design Costs

Category	2010 A/E Costs
St. Lucie (PSL)	
FPL and staff augmentation engineering	$5,066,911
Turkey Point (PTN)	
FPL and staff augmentation engineering	$6,971,496
Total Engineering and Design	$12,038,407

Table 4. Actual/Estimated 2010 Permitting Costs

Category	2010 A/E Costs
St. Lucie (PSL)	$116,821
Turkey Point (PTN)	$59,241
Total Permitting	$176,062

Table 5. Actual/Estimated 2010 Project Management Costs

Category	2010 A/E Costs
St. Lucie (PSL)	
FPL, staff augmentation, and regulatory accounting	$10,315,296
Turkey Point (PTN)	
FPL, staff augmentation, and regulatory accounting	$9,517,307
Total Project Management	$19,832,603

Table 6. Actual/Estimated 2010 Power Block Engineering, Procurement, Etc. Costs

Category	2010 A/E Costs
St. Lucie (PSL)	
FPL Procured Long Lead Material	$18,988,428
Turbine Generator Equipment procured from Siemens	$41,359,998
Siemens Labor – Alliance Agreement	$1,000,000
Bechtel EPC Contract	$32,307,844
Station Indirect Outage Costs	$594,760
Growth in Scope- Scope	$5,000,000
Growth in Scope - Contingency	$2,000,000
Other Costs (plant support, office equipment, supplies)	$10,790,460
Adjustments (Simulator, inspections, accounting timing)	($1,845,811)
St. Lucie (PSL)	**$110,195,679**
Turkey Point (PTN)	
FPL Procured Long Lead Material	$28,165,000
Turbine Generator Equipment procured from Siemens	$12,980,487
Siemens Labor – Alliance Agreement	$0
Bechtel EPC Contract	$63,136,992
Station Indirect Outage Costs	$5,636,364
Growth in Scope- Scope	$31,373,524
Growth in Scope - Contingency	
Other Costs (plant support, office equipment, supplies)	$14,197,383
Adjustments (Simulator, inspections, accounting timing)	($12,349,728)
Turkey Point (PTN)	**$143,140,022**
Total Power Block Engineering, Procurement, Etc.	**$253,335,700**

Table 7. Actual/Estimated 2010 Non-Power Block Engineering, Procurement, etc. Costs

Category	2010 A/E Costs
St. Lucie (PSL)	$1,728,811
Turkey Point (PTN)	$5,659,661
Total Non-Power Block Engineering, Procurement, etc.	$7,388,472

Table 8. Actual/Estimated 2010 Recoverable O&M Costs

Category	2010 A/E Costs
St. Lucie (PSL) and Turkey Point (PTN) Non capitalizable computer hardware and software, office furniture and fixtures for new project-bound hires, incremental staff and augmented contract staff.	$704,025
St. Lucie (PSL) and Turkey Point (PTN) Feedwater heaters inspections and materials and supplies write offs.	$2,431,728
Transmission and Distribution support switchyard and substation work scope	$75,000
Total Recoverable O&M	$3,210,753

Table 9. Actual/Estimated 2010 Transmission Costs

Category	2010 A/E Costs
Line Engineering	$221,591
Substation Engineering	$392,541
Line Construction	$3,983,526
Substation Construction	$4,114,941
Total Transmission	$8,712,599

2011 Extended Power Uprate (EPU) Project Work Activities

St. Lucie Unit 2 Spring 2011 Outage	Description	Contract	Scoping Document
Condensate Pump Replacement	Larger condensate pumps are needed to pump the increased condensate flows in the uprate conditions.	TBD	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Main Generator Exciter Coolers/Blower	Increased cooling of the main generator exciter is required in the power uprate conditions.	Siemens PO-116088	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Feedwater Heater/ Drain Cooler Tube Inspections	Perform inspections to determine needed modifications for the uprate conditions	Bechtel	Balance of Plant analysis of component capabilities in the power uprate conditions
Feedwater Heater Nozzle Inspections	Perform inspections to determine needed modifications for the uprate conditions	Bechtel	Balance of Plant analysis of component capabilities in the power uprate conditions
Main Generator Current Transformers (CT) and Bushing Replacement	Upgrades required due to the modifications to the generator rotor and stator for uprate conditions.	Siemens PO-116088	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Generator Environmental Structure	Required for provision of controlled environment to conduct Stator rewind in situ.	Bechtel	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Main Generator Hydrogen Seal Oil Pressure Increase	Increased hydrogen pressure for main generator cooling is required in the uprate conditions.	Siemens PO-116088	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008

2011 Extended Power Uprate (EPU) Project Work Activities

St. Lucie Unit 2 Spring 2011 Outage	Description	Contract	Scoping Document
Main Generator Hydrogen Coolers	Increased main generator cooling is required in the uprate conditions.	Siemens PO-116088	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Generator Loop Test Trailer	Test is to determine defects in the core that may be exacerbated under EPU conditions	Bechtel	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Main Generator Rotor Replacement and Stator Rewind	Larger generator is needed to increase electrical output in the uprate conditions.	Siemens PO-116088	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Low Pressure (LP) Turbine Rotor	Larger LP turbine rotors are required for the increased steam flow in the uprate conditions	Siemens PO-116088	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Main Transformer Replacement Unit 2	Larger main transformers are needed to handle the increase in the main generator electrical output.	Siemens PO-4500467077	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008

2011 Extended Power Uprate (EPU) Project Work Activities

St. Lucie Unit 2 Spring 2011 Outage	Description	Contract	Scoping Document
GL2008-01 CVCS System (Unit 2 only)	NRC Generic Letter (GL2008-01) requires licensees to ensure emergency systems are capable of being vented at their water high points to minimize air entrapment when the system is required to function	Alion 129895	Identified during the LAR engineering review.
Control Element Drive Mechanism (CEDM) System Upgrades	Upgrade the CEDM system to recover operational and safety margins in the uprate conditions.	Westinghouse PO-118271	OEM Recommendation
Transmission and Substation modifications. St. Lucie and Midway switchyard.	Implement meter and relaying upgrades at St. Lucie and replace switches in the St. Lucie switchyard. At the Midway switchyard, #1, #2, #3 increase ampacity, replace switches, and fiber optic protection	T&D	Facilities Study, FPL Extended Power Uprate project, St. Lucie 1&2, Q114 & Q115, March 2009

2011 Extended Power Uprate (EPU) Project Work Activities

St. Lucie 2011 On-Line Activities	Description	Contract	Scoping Document
Training Simulator Modifications	Upgrades needed to replicate the plant in the power uprate conditions.	Western Services Corp. PO-118627	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008

2011 Extended Power Uprate (EPU) Project Work Activities

St. Lucie Unit 1 Fall 2011 Outage	Description	Contract	Scoping Document
Condenser Material Upgrades includes air removal	Strengthening of the Main Condenser is needed with higher steam and condensate flows in the uprate conditions.	TBD	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Containment Mini-Purge	Reduction of maximum allowed Containment pressure per NRC Plant Technical Specifications	Bechtel PO-117820	PSL LAR Engineering
Feedwater Digital Modifications	Instrumentation to provide control the feedwater heater control and dump valves in the uprate conditions.	TBD	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Leading Edge Flow Meter (LEFM) Measurement Uncertainty Recapture (MUR)	Precision flow measurement instrument and instrumentation provides for increased certainty of operating parameters supporting uprate conditions.	Cameron PO-116107	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Digital Electro-Hydraulic (DEH) Computer System Upgrade	Upgrades needed for increased certainty of turbine operating parameters supporting uprate conditions.	TBD	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Electrical Bus Margin Upgrades	Required to restore margin on electrical busses as a result of uprate.	Bechtel PO-117820	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008

2011 Extended Power Uprate (EPU) Project Work Activities

St. Lucie Unit 1 Fall 2011 Outage	Description	Contract	Scoping Document
Piping Vibration Modifications	Increases in steam and feedwater flows may cause piping vibrations. Restraints dampen the vibrations.	Bechtel	Balance of Plant analysis of component capabilities in the power uprate conditions
EQ Equipment Modifications	Ensure and document that the equipment being modified meets equipment quality standards.	Bechtel	Engineering Design Modifications
Main Generator Exciter Coolers/Blower	Increased cooling of the main generator exciter is required in the power uprate conditions.	Siemens PO-116088	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Feedwater Heater Replacement (#5)	Larger feedwater heaters are needed to process the steam and feedwater flows in the uprate conditions.	TEI PO-118224	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Feedwater Heater 4A&4B, strengthen partition plates	Feedwater heater increases in steam and water flows requires stronger partition plates.	Bechtel	Balance of Plant analysis of component capabilities in the power uprate conditions
Feedwater Regulating Valves Upgrade	Larger operating mechanisms are required to operate the feedwater regulating valves in the increased uprate conditions.	TBD	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Main Generator Current Transformers (CT) and Bushing Replacement	Upgrades required due to the modifications to the generator rotor and stator for uprate conditions.	Siemens PO-116088	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008

2011 Extended Power Uprate (EPU) Project Work Activities

St. Lucie Unit 1 Fall 2011 Outage	Description	Contract	Scoping Document
Main Generator Hydrogen Seal Oil Pressure Increase	Increased hydrogen pressure for main generator cooling is required in the uprate conditions.	Siemens PO-116088	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Generator Hot Spots Repair	Repair hot spots to make the generator stator increased electrical output acceptable in the uprate conditions.	Siemens	Testing of the main generator
Main Generator Hydrogen Coolers	Increased main generator cooling is required in the uprate conditions.	Siemens PO-116088	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Main Generator Rotor Replacement and Stator Rewind	Larger generator is needed to increase electrical output in the uprate conditions.	Siemens PO-116088	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Moisture Separator Drain Control Valves Replacement	Larger valves are needed for the increased condensed water flow in the uprate conditions	TBD	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Heater Drain Control Valves	Larger valves are needed to control the condensate flow in the uprate conditions	TBD	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Feedwater Heater Drains/MSR Digital Controls	Reduce the operating band to optimize efficiency and maximize output	TBD	St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008

2011 Extended Power Uprate (EPU) Project Work Activities

St. Lucie Unit 1 Fall 2011 Outage	Description	Contract	Scoping Document
Heater Drain Pumps and Motors Replacements	Larger pumps and motors are required to pump the increased heater drain flows in the uprate conditions.	Flowserve Corp. PO- 125454	St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Hot Leg Injection Flow Improvements	Increasing required flow under EPU and eliminating SPV with cross train power on in-series valves	Bechtel PO-117820	PSL LAR Engineering
High Pressure (HP) Turbine Rotor	Larger inlet valves are required for increased steam flows in the uprate conditions	Siemens PO-116088	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Iso-Phase Bus Duct Cooling	Increased cooling is needed for the electrical connections from the main generator to the main transformer in the uprate conditions.	AZZ Calvert PO-120769	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Leading Edge Flow Meter (LEFM) Measurement Uncertainty Recapture (MUR)	Precision flow measurement instrument and instrumentation provides for increased certainty of operating parameters supporting uprate conditions.	Cameron PO-116107	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Low Pressure (LP) Turbine Rotor	Larger LP turbine rotors are required for the increased steam flow in the uprate conditions	Siemens PO-116088	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008

2011 Extended Power Uprate (EPU) Project Work Activities

St. Lucie Unit 1 Fall 2011 Outage	Description	Contract	Scoping Document
Main Feedwater Pump Replacement	Larger pumps are required to pump the increased feedwater flow required in the uprate conditions.	Flowserve PO-121985	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Main Steam Isolation Valve (MSIV) Upgrade	Larger operators on the MSIVs are required to operate against higher steam pressure	To Be Determined (TBD)	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Main Transformer Cooler Upgrade	Increased cooling is needed to handle the increase in the main generator electrical output.	ABB PO-112255, 126248	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008, ABB Engineering Thermal Loading Design Study, FPL St. Lucie, ABB Project Number, FP13469-1, Rev.1, August 25, 2008
Main Steam, Condensate and Feedwater Piping Supports Modifications	Increased steam and water flows in the uprate conditions require additional piping restraints	Bechtel	Balance of Plant analysis of component capabilities in the power uprate conditions
Moisture Separator Reheater (MSR) Replacement	Larger capacity MSRs are required to heat and dry the steam flow in the uprate conditions.	TEI PO-118205	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Control Element Drive Mechanism (CEDM) System Upgrades	Upgrade the CEDM system to recover operational and safety margins in the uprate conditions.	Westinghouse PO-118271	OEM Recommendation

2011 Extended Power Uprate (EPU) Project Work Activities

St. Lucie Unit 1 Fall 2011 Outage	Description	Contract	Scoping Document
Secondary Plant Instrumentation	Setpoint and scaling of plant instrumentation for uprate conditions	Bechtel PO-117820	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Nuclear Steam Supply System (NSSS) Plant Instrumentation	Setpoint and scaling of plant instrumentation for uprate conditions	Bechtel PO-117820	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Safety Injection Tank (SIT) Pressure Increase	Upgrade required to operate at higher pressure based on EPU conditions for small break Loss of Coolant Accident (LOCA) analysis	Bechtel PO-117820	PSL LAR Engineering
Steam Bypass Control System Unit 1 (DCS)	Add digital controls to the increased steam bypass system flow.	TBD	Engineering Design Modifications
Steam Bypass Flow to Condenser-Increase	Increased steam flow in the uprate conditions requires larger bypass capability to the main condenser.	Bechtel	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Turbine Cooling Water (TCW) Heat Exchanger Replacement	Larger heat exchangers are needed for increased cooling in the uprate conditions.	TEI PO-118278	St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008
Transmission and Substation Modifications	At St. Lucie, metering and relay work, at Midway switchyard, switch replacement	T&D	Facilities Study, FPL Extended Power Uprate project, St. Lucie 1&2, Q114 & Q115, March 2009

Extended Power Uprate (EPU) Project Work Activities

St. Lucie 2011 On-Line Activities	Description	Contract	Scoping Document
Training Simulator Modifications	Upgrades needed to replicate the plant in the power uprate conditions.	Western Services Corp. PO-118627	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, Balance of Plant, Extended Power Uprate, Scoping Study, February 2008

Exhibit TOJ-20
Extended Power Uprate (EPU) Project Work Activities

Turkey Point Unit 4 Spring 2011 Outage	Description	Contract	Scoping Document
Heater Drain Valves Replacement	Larger valves are needed to control the condensate flow in the uprate conditions	Bechtel PO-117809	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant Balance of Plant Extended Power Uprate Scoping Study, March 2008
Feedwater Heater #5 Drain Piping Upgrade	Higher drain water flows require larger piping in the uprate conditions.	Bechtel PO-117809	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant Balance of Plant Extended Power Uprate Scoping Study, March 2008
Main Transformer Cooler Upgrade	Increased cooling is needed to handle the increase in the main generator electrical output.	Siemens PO-122154	T&D
Switchyard Upgrades	Increased electrical output requires modification to switchyard equipment to support the uprate conditions.	T & D	Generation Interconnection Service and Network Resource Interconnection Service System Impact Study. 11/25/08
Feedwater Heaters (5,6) Replacement	Larger feedwater heaters are needed to process the steam and feedwater flows in the uprate conditions.	TEI PO-118241	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant Balance of Plant Extended Power Uprate Scoping Study, March 2008

Exhibit TOJ-20
Extended Power Uprate (EPU) Project Work Activities

Turkey Point Unit 4 Spring 2011 Outage	Description	Contract	Scoping Document
Measurement Uncertainty recapture (MUR) LEFM (Spool Piece Only)	Precision flow measurement instrument and instrumentation provides for increased certainty of operating parameters supporting uprate conditions.	Cameron PO-116796	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant Balance of Plant Extended Power Uprate Scoping Study, March 2008
Iso-Phase Bus Duct Replacement	Increased bus size is needed for the electrical connections from the main generator to the main transformer in the uprate conditions.	AZZ / Calvert PO-124436	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant Balance of Plant Extended Power Uprate Scoping Study, March 2008
Feedwater Heater Drains Digital Upgrades	Instrumentation to provide control the feedwater heater control and dump valves in the uprate conditions.	PO -126227	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant Balance of Plant Extended Power Uprate Scoping Study, March 2008
Feedwater Heaters 1-4 Inspections with Contingency PCM for Feedwater Heater Modifications	Perform inspections to determine needed modifications for the uprate conditions	Bechtel/NPS	Balance of Plant analysis of component capabilities in the power uprate conditions
Sump PH Control, Install NaTB Baskets	Alternate Source Term method requires pH greater than 7.0. The current pH control system is not sufficient at uprate conditions.	S&L PO-79551	Alternate Source Term (AST) License Amendment Request (LAR) Engineering

Exhibit TOJ-20
Extended Power Uprate (EPU) Project Work Activities

Turkey Point 2011 On-Line Activities	Description	Contract	Scoping Document
Training Simulator Modifications	Upgrades needed to replicate the plant in the power uprate conditions.	Western Services PO-118844	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant Balance of Plant Extended Power Uprate Scoping Study, March 2008
Control Room Habitability	Upgrade control room HVAC system to provide acceptable radiological doses to the control room operators at uprate conditions.	Bechtel PO-117809	AST LAR Engineering
Alternate Spent Fuel Pool Cooling – Units 3 & 4	Increased power from the fuel requires additional cooling of the fuel when it is placed into the spent fuel pool.	TBD	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant Balance of Plant Extended Power Uprate Scoping Study, March 2008
Turbine Digital Controls Upgrade – Units 3 & 4	Enhanced controls for the new turbines. Current design is not sufficient for the new turbine configuration in the uprate conditions.	Siemens PO-130272	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant Balance of Plant Extended Power Uprate Scoping Study, March 2008
Turbine Electro-Hydraulic Controls (EHC) Units 3 & 4	Enhanced controls for the new turbines. Current design is not sufficient for the new turbine configuration in the uprate conditions.	Siemens PO-116090	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant Balance of Plant Extended Power Uprate Scoping Study, March 2008

Exhibit TOJ-20
Extended Power Uprate (EPU) Project Work Activities

Turkey Point 2011 On-Line Activities	Description	Contract	Scoping Document
Measurement Uncertainty recapture (MUR) LEFM (Instrumentation) – Units 3 & 4	Precision flow measurement instrument and instrumentation provides for increased certainty of operating parameters supporting uprate conditions.	Cameron PO-116796	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant Balance of Plant Extended Power Uprate Scoping Study, March 2008
EQ Revise Documentation – Units 3 & 4	Ensure and document that the equipment being modified meets equipment quality standards.	TBD	FPL PTN Feasibility Study 2007
Turbine Gantry Crane Upgrades	Upgrades needed to more efficiently and precisely move heavy EPU equipment loads.	Bechtel PO-117809	Identified during scheduling and planning of moving EPU heavy equipment loads.

Table 1. Projected 2011 Extended Power Uprate Construction Costs

Category	Detail Table No.	2011 Projected Costs
Licensing	2	$10,435,967
Engineering & Design	3	$9,281,524
Permitting	4	$150,000
Project Management	5	$23,903,816
Power Block Engineering, Procurement, etc.	6	$537,737,610 (1)
Non-Power Block Engineering, Procurement, etc.	7	$4,874,461
Total EPU Construction Costs	**NA**	**$586,383,378**
Recoverable O&M	8	$4,161,728
Transmission	9	$7,839,000
Total Construction Costs & Transmission	**NA**	**$598,384,106**

(1) Includes removal and post in-service project costs. NFR Schedule P-6 amount $491,272,127.

Table 2. Projected 2011 Licensing Costs

Category	2011 Projected Costs
St. Lucie (PSL) License Amendment Request (LAR)	$7,159,736
Turkey Point (PTN) License Amendment Request (LAR)	$3,276,231
Total Licensing	$10,435,967

Table 3. Projected 2011 Engineering and Design Costs

Category	2011 Projected Costs
St. Lucie (PSL)	
FPL and staff augmentation engineering	$3,700,524
Turkey Point (PTN)	
FPL and staff augmentation engineering	$5,581,000
Total Engineering and Design	$9,281,524

Table 4. Projected 2011 Permitting Costs

Category	2011 Projected Costs
St. Lucie (PSL)	$100,000
Turkey Point (PTN)	$50,000
Total Permitting	$150,000

Table 5. Projected 2011 Project Management Costs

Category	2011 Projected Costs
St. Lucie (PSL)	
FPL, staff augmentation, and regulatory accounting	$15,536,604
Turkey Point (PTN)	
FPL, staff augmentation, and regulatory accounting	$8,367,212
Total Project Management	$23,903,816

Table 6. Actual/Estimated 2011 Power Block Engineering, Procurement, Etc. Costs

Category	2011 Projected Costs
St. Lucie (PSL)	
FPL Procured Long Lead Material	$29,773,813
Turbine Generator Equipment procured from Siemens	$64,222,250
Siemens Labor – Alliance Agreement	$41,000,000
Bechtel EPC Contract	$93,000,000
Station Indirect Outage Costs	$15,518,081
Scope Growth	$60,000,000
Other Costs (plant support, office equipment, supplies)	$20,887,289
Adjustments (Simulator, inspections, timing)	$8,883,539
St. Lucie (PSL)	**$333,284,971**
Turkey Point (PTN)	
FPL Procured Long Lead Material	$33,750,895
Turbine Generator Equipment procured from Siemens	$20,000,141
Siemens Labor – Alliance Agreement	$499,000
Bechtel EPC Contract	$64,445,254
Station Indirect Outage Costs	$5,636,364
Scope Growth	$30,411,460
Other Costs (plant support, office equipment, supplies)	$46,095,646
Adjustments (inspections, timing)	$3,613,877
Turkey Point (PTN)	**$204,452,637**
Total Power Block Engineering, Procurement, Etc.	**$537,737,610**

Table 7. Projected 2011 Non-Power Block Engineering, Procurement, etc. Costs

Category	2011 Projected Costs
St. Lucie (PSL)	$489,405
Turkey Point (PTN)	$4,385,056
Total Non-Power Block Engineering, Procurement, etc.	$4,874,461

Table 8. Projected 2011 Recoverable O&M Costs

Category	2011 Projected Costs
St. Lucie (PSL) and Turkey Point (PTN)	
Non capitalizable computer hardware and software, office furniture and fixtures for new project-bound hires, incremental staff and augmented contract staff.	$780,000
Feedwater heaters inspections, PSL1 TX move and materials and supplies write offs.	$3,306,728
Transmission & Distribution support for switchyard and substation work scope	$75,000
Total Recoverable O&M	$4,161,728

Table 9. Projected 2011 Transmission Costs

Category	2011 Projected Costs
Line Engineering	$14,000
Substation Engineering	$330,000
Line Construction	$100,000
Substation Construction	$7,395,000
Total Transmission	$7,839,000