

MEMORANDUM

JUNE 19, 2012

REDACTED

TO: OFFICE OF COMMISSION CLERK
FROM: MICHAEL LAWSON, SENIOR ATTORNEY *mu l*
RE: DOCKET NO. 120009-EI – NUCLEAR COST RECOVERY CLAUSE

Please find attached the original and six copies of the REDACTED Direct Testimony of David Rich and Lynn Fisher, appearing on behalf of the staff of the Florida Public Service Commission, to be filed in the above-reference Docket.

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Attachment

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BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Nuclear cost recovery clause.

DOCKET NO. 120009-EI

DATED: JUNE 19, 2012

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the Direct Testimony of David Rich and Lynn Fisher, appearing on behalf of the staff of the Florida Public Service Commission, has been served by U.S. Mail, on this 19th day of June, 2012, to the following:

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CERTIFICATE OF SERVICE
DOCKET NO 120009-EI
PAGE 2

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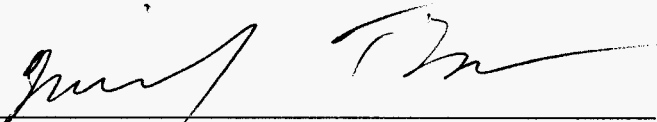
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Docket No. 120009-EI: Nuclear Cost Recovery Clause.

Florida Power & Light Company

St. Lucie Units 1 & 2 and Turkey Point Units 3 & 4 Power Upgrade and Turkey
Point Units 6 & 7 New Construction

Witness: **Direct Testimony of DAVID RICH and LYNN FISHER**, Appearing
on behalf of the staff of the Florida Public Service Commission

Date Filed: June 19, 2012

1 **BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**

2 **COMMISSION STAFF**

3 **DIRECT JOINT TESTIMONY OF**

4 **LYNN FISHER AND DAVID RICH**

5 **DOCKET NO. 120009-EI**

6 **JUNE 19, 2012**

7
8 **Q. Mr. Fisher, please state your name and business address.**

9 A. My name is Lynn Fisher. My business address is 2540 Shumard Oak Boulevard,
10 Tallahassee, Florida 32399-0850.

11 **Q. By whom are you employed?**

12 A. I am employed as a Government Analyst II by the Florida Public Service Commission
13 in the Office of Auditing and Performance Analysis.

14 **Q. What are your current duties and responsibilities?**

15 A. I perform audits and investigations of Commission-regulated utilities, focusing on the
16 effectiveness of management and company practices, adherence to company procedures, and
17 the adequacy of internal controls. Mr. Rich and I jointly conducted the 2012 audit of Florida
18 Power & Light Company's (FPL) project management internal controls for the nuclear plant
19 uprates and new construction projects underway at the St. Lucie and Turkey Point sites.

20 **Q. Please describe your educational and relevant experience.**

21 A. In 1972, I graduated from Florida State University with a Bachelor of Science degree in
22 Marketing. My relevant background includes over twenty years with the Florida Public
23 Service Commission in management auditing, performance analysis, process audits, and
24 complaint investigation. Since joining the Commission, I have participated in numerous
25 reviews of utility operations, systems, and controls, culminated in a written audit report

1 similar to the one attached as an exhibit to this testimony. I also participated in the 2008
2 through 2011 reviews of FPL's project management controls for FPL's nuclear plant uprate
3 and new construction projects and filed those audit reports in the respective dockets.

4 **Q. Have you filed testimony in any other dockets before the Commission?**

5 A. Yes. I filed similar testimony in Docket No. 080009-EI, 090009-EI, 100009-EI, and
6 110009-EI. In addition to these, I previously filed testimony during 2005 in Docket No.
7 050045-EI. This testimony addressed an audit of distribution electric service quality for
8 Florida Power & Light Company's Vegetation Management, Lightning Protection, and Pole
9 Inspection processes.

10 **Q. Mr. Rich, please state your name and business address.**

11 A. My name is David Rich. My business address is 2540 Shumard Oak Boulevard,
12 Tallahassee, Florida 32399-0850.

13 **Q. By whom are you employed?**

14 A. I am employed as an Operations Review Specialist by the Florida Public Service
15 Commission in the Office of Auditing and Performance Analysis.

16 **Q. What are your current duties and responsibilities?**

17 A. I perform audits and investigations of Commission-regulated utilities, focusing on the
18 effectiveness of management and company practices, adherence to company procedures and
19 the adequacy of internal controls. Mr. Fisher and I jointly conducted the 2012 audit of Florida
20 Power & Light Company's project management internal controls for uprate and new
21 construction projects currently underway at the St. Lucie and Turkey Point sites. I also
22 participated in similar audits of FPL's project management controls for FPL's uprate and new
23 construction projects during 2009 through 2011 and filed those reports as testimony in the
24 appropriate dockets.

25 **Q. Please describe your educational and relevant experience.**

1 A. In 1978, I graduated from the United States Military Academy at West Point with a
2 Bachelor of Science degree with a concentration in Engineering. A Masters of Arts degree in
3 National Security Affairs from the Naval Postgraduate School followed in 1987. I am a
4 graduate of both the US and Republic of Korea Command and General Staff Colleges. My
5 relevant work experience includes nine years with the Florida Public Service Commission in
6 management auditing, utility performance analysis, process reviews, and trend analysis. Since
7 joining the Commission, I have participated in numerous audits of utility operations,
8 processes, systems, and controls which culminated in a written audit report similar to the one
9 attached as an exhibit to this testimony.

10 **Q. Have you filed testimony in any other dockets before the Commission?**

11 A. Yes. I have previously filed testimony in Docket No. 090009-EI, 100009-EI, and
12 110009-EI.

13 **Q. Please describe the purpose of your testimony in this docket.**

14 A. Our testimony presents the attached audit report entitled *Review of Florida Power &*
15 *Light Company's – Project Management Internal Controls for Nuclear Plant Update and*
16 *Construction Projects* (Exhibit FR-1). This audit was requested by the Commission's
17 Division of Economic Regulation to assist with the evaluations of nuclear cost recovery
18 filings. The report describes key project events and contract activities completed from
19 January 2011 through May 2012 for the uprate projects at St. Lucie Units 1 & 2 and Turkey
20 Point Units 3 & 4, and the new construction project for Turkey Point Units 6 & 7.

21 **Q. Please summarize the areas examined by your review of controls.**

22 A. The Office of Auditing and Performance Analysis conducted an audit of the internal
23 controls and management oversight of the nuclear projects underway at FPL. We examined
24 the organizations, processes, and controls being used by the company to execute the Extended
25 Power Upate of St. Lucie Units 1 & 2 and Turkey Point Units 3 & 4 and the construction of

1 the new Units 6 & 7 at Turkey Point. This is the fifth annual audit of the company's controls
2 for its nuclear uprate and construction projects. The 2008 through 2011 reports, entitled
3 *Florida Power & Light Company's Project Management Internal Controls for Nuclear Plant*
4 *Uprate and Construction Projects*, were published and filed in Dockets No. 080009-EI
5 through 110009-EI. The primary objective of each annual audit is to document project key
6 developments, along with the organization, management, internal controls, and oversight that
7 FPL has in place or plans to employ for these projects. The internal controls examined
8 annually are related to the following areas of project activity: planning, management and
9 organization, cost and schedule controls, contractor selection and management, auditing, and
10 quality assurance.

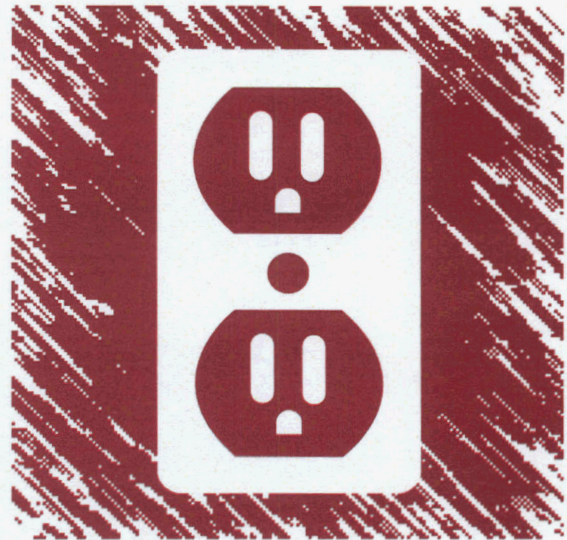
11 **Q. Are you sponsoring any exhibits?**

12 A. Yes, our completed audit report is attached as Exhibit Number FR-1. The audit
13 report's conclusions and recommendations are summarized in the Executive Summary chapter
14 for both the Extended Power Uprate projects and the Turkey Point 6&7 construction project.

15 **Q. Does this conclude your testimony?**

16 A. Yes.

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**REVIEW OF
FLORIDA POWER & LIGHT
COMPANY'S
PROJECT MANAGEMENT
INTERNAL CONTROLS
FOR
NUCLEAR PLANT UPRATE AND
CONSTRUCTION PROJECTS**

J U N E 2 0 1 2

**BY AUTHORITY OF
THE FLORIDA PUBLIC SERVICE COMMISSION
OFFICE OF AUDITING AND PERFORMANCE ANALYSIS**

**REVIEW OF
FLORIDA POWER & LIGHT COMPANY'S
PROJECT MANAGEMENT
INTERNAL CONTROLS
FOR
NUCLEAR PLANT UPRATE AND
CONSTRUCTION PROJECTS**

DAVID F. RICH
OPERATIONS REVIEW SPECIALIST
PROJECT MANAGER

R. LYNN FISHER
GOVERNMENT ANALYST II

JUNE 2012

**BY AUTHORITY OF
THE STATE OF FLORIDA
PUBLIC SERVICE COMMISSION
OFFICE OF AUDITING AND PERFORMANCE ANALYSIS**

PA-11-11-005

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1.0 EXECUTIVE SUMMARY

AT A GLANCE

NEW NUCLEAR PROJECT (NNP)

- ◆ Cost estimate is unchanged from 2011, ranging from \$12.85 billion to \$18.75 billion
- ◆ In-service date estimates remain 2022 and 2023
- ◆ In its May 2012 filing, FPL describes the project as feasible in 5 of 7 scenarios
- ◆ Plant portion of the Site Certification Application determined complete by FDEP
- ◆ No Turkey Point 6&7 construction contract yet
- ◆ Current long lead forging agreement expires in October 2012
- ◆ NRC disputes some FPL analyses; suspends parts of the license review

EXTENDED POWER UPRATE PROJECT (EPU)

- ◆ Cost estimate rises over \$600 million, to a range of \$ 2.95 billion to \$3.15 billion
- ◆ In its May 2012 filing, FPL describes the project as feasible in 6 of 7 scenarios
- ◆ Turkey Point Units 3&4 License Amendment Request (LAR) approval expected in 2Q 2012
- ◆ St. Lucie Unit 1 LAR approval expected in 2Q 2012
- ◆ St. Lucie Unit 2 LAR approval expected in 3Q 2012
- ◆ Outage completion target date rescheduled from January 2013 to March 2013
- ◆ Project close out scheduled for August 2013
- ◆ Commission Audit Staff recommends disallowance of \$3.5 million

1.1 PURPOSE AND OBJECTIVES

At the request of the Florida Public Service Commission (Commission or FPSC) Division of Economic Regulation, the Office of Auditing and Performance Analysis performed the fifth annual review of internal controls and management oversight of the nuclear projects underway at Florida Power & Light (FPL or the company). This review examines the adequacy of project management and internal controls for FPL's New Nuclear Project (NNP) and Extended Power Upate (EPU) organizations.

The primary objective is to provide an independent account of project activities and to evaluate internal controls used on these projects. Information in this report may be used by the Division of Economic Regulation to assess the reasonableness of FPL cost-recovery requests.

FPSC audit staff published previous reports in 2008 through 2011, each entitled *Review of Florida Power & Light's Project Management Internal Controls for Nuclear Plant Upate and Construction Projects*. These reports are available electronically using the following links:

- ◆ <http://www.floridapsc.com/publications/pdf/electricgas/FPLNuclear2008.pdf>
- ◆ <http://www.floridapsc.com/publications/pdf/electricgas/FPLNuclear2009.pdf>
- ◆ <http://www.floridapsc.com/publications/pdf/electricgas/FPLNuclear2010.pdf>
- ◆ <http://www.floridapsc.com/publications/pdf/electricgas/FPLNuclear2011.pdf>

1.2 SCOPE

The time frame covered by the annual review is January 2011 to May 2012. This annual review examined the adequacy of project management and internal controls for FPL's uprate and new nuclear construction projects.

The internal controls assessed were related to the following key areas of project activity:

- ◆ Planning
- ◆ Management and organization
- ◆ Cost and schedule controls
- ◆ Contractor selection and management
- ◆ Auditing and quality assurance

Internal controls are the vital mechanisms used by the company to stay within budget and on schedule. According to the Institute of Internal Auditors' *Standards for the Professional Practice of Internal Auditing*, appropriate internal controls allow an organization to:

- ◆ Produce accurate and reliable data
- ◆ Comply with applicable laws and regulations
- ◆ Safeguard assets
- ◆ Employ resources efficiently
- ◆ Accomplish goals and objectives

Well-conceived, comprehensive internal controls cannot exist in a vacuum. Ineffective unless emphasized and embraced throughout an organization, internal controls leverage the challenges associated with risk management and decision making. Risks must be quickly and accurately identified and appropriate safeguards established to prevent, mitigate, or eliminate them, and prudent decision making results from well-defined processes that address risks, needs, and capabilities. Adherence to clear written procedures, effective communication, and vigilant internal and contractor oversight, combined with ongoing auditing and quality assurance efforts are essential to ensure that project decisions and actions are prudent.

Specifically, according to the Internal Control Integrated Framework designed by the Committee of Sponsoring Organizations of the Treadway Commission, an internal control should consist of five interrelated components. The components are:

- ◆ Control environment
- ◆ Risk assessment
- ◆ Control activities
- ◆ Information and communication
- ◆ Monitoring

When looking at the effectiveness and efficiency of operations, the reliability of financial reporting, and compliance with applicable laws and regulations, all five components must be present and functioning well to conclude that internal controls are effective. This report will document the existence of each of these five components for FPL project management.

1.3 METHODOLOGY

The initial planning, research, and data collection for the annual internal controls review occurred in January through March 2012. The first of two staff interview and inspection visits took place in January 2012. Staff conducted interviews of new nuclear and uprate leadership at the FPL corporate offices in Juno Beach and visited the nuclear facility at St. Lucie. A second round of interviews occurred in March 2012, staff again visiting the FPL corporate offices in Juno Beach and meeting with uprate managers at the Turkey Point nuclear facility.

Staff conducted additional data collection, sampling, analysis, and production of a draft report from March to late May 2012. Audit staff also reviewed testimony, discovery, and other filings in this and previous, related dockets.

A large volume of information was collected and analyzed. Information collected from FPL included the following categories:

- ◆ Policies and procedures
- ◆ Organizational charts
- ◆ Project timelines
- ◆ Vendor and contract updates
- ◆ Vendor invoices
- ◆ Scope analysis studies by FPL and consultants
- ◆ Internal and external audit reports
- ◆ Quality control reviews

1.4 CONCLUSIONS

1.4.1 NEW NUCLEAR PROJECT

FPL states that it remains committed to pursuing the option to build two new AP1000 nuclear reactors, Turkey Point Units 6&7, and continues to use a deliberate and incremental project management approach focused on licensing. Licensing remains the critical path. Achieving Combined Operating License Application (COLA) approval is FPL's primary near term focus.

The new nuclear project timeline endpoints remain unchanged from a year ago. An NRC review of FPL's COLA milestone schedule added 11 months to the Final Site Evaluation Report (FSER) completion date and 16 months to the Final Environmental Impact Statement (FEIS) completion date. The same study, however, targeted completion of the COLA process five months earlier than FPL's current project schedule. Due to the shifts in the FSER and FEIS completion dates, FPL reevaluated possible downstream schedule turbulence. FPL believes further delay is possible, but that the completion of Unit 6 in 2021 and Unit 7 in 2022 remains achievable. Start-up for each unit follows a year later, in 2022 and 2023. **EXHIBIT 1** shows the project timeline.

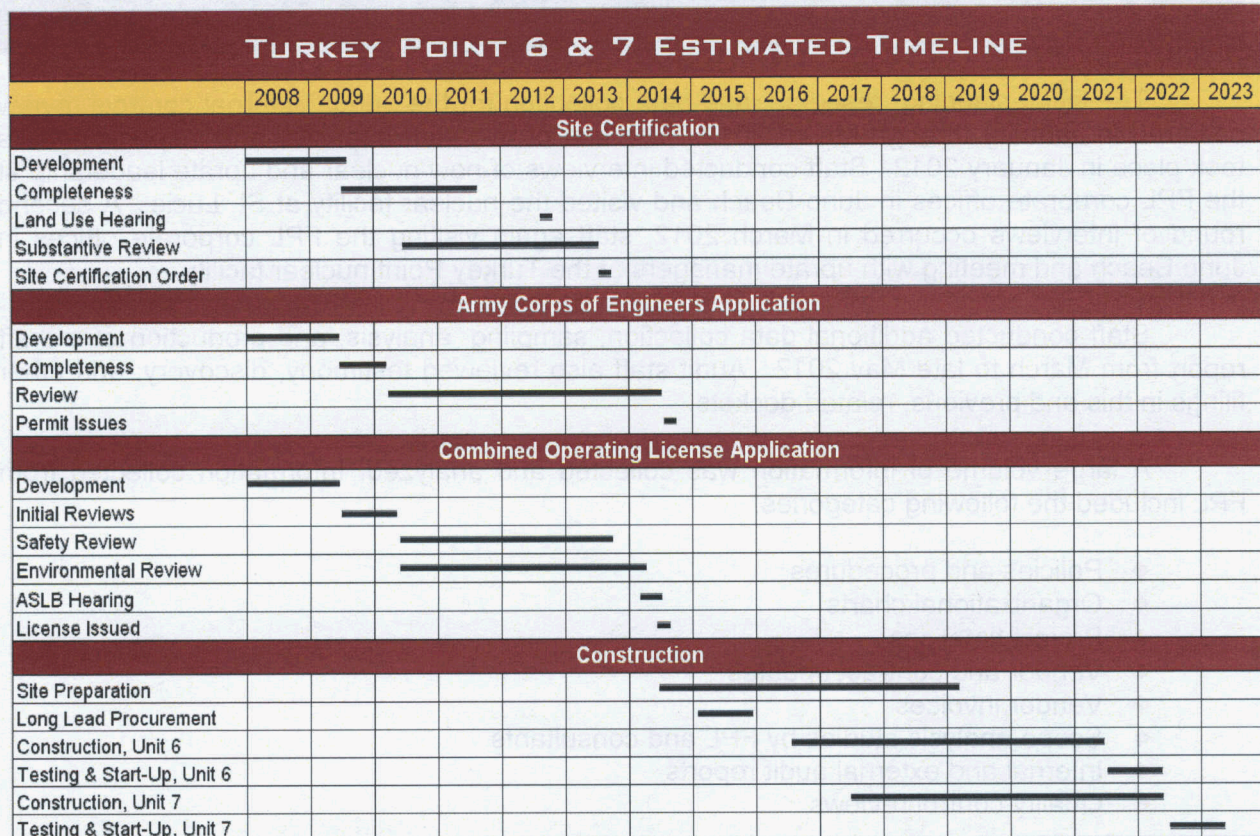


EXHIBIT 1

Source: Staff Interviews, FPL, March 2012

The Turkey Point 6&7 project cost estimate range remains unchanged from last year. The low end of the range is \$12.85 billion and the high is \$18.75 billion. FPL states that its feasibility analysis shows the project is solidly cost-effective in five of seven scenarios, one fewer than last year's feasibility study. **EXHIBIT 2** shows historic and estimated costs for the project, from 2007-2012.

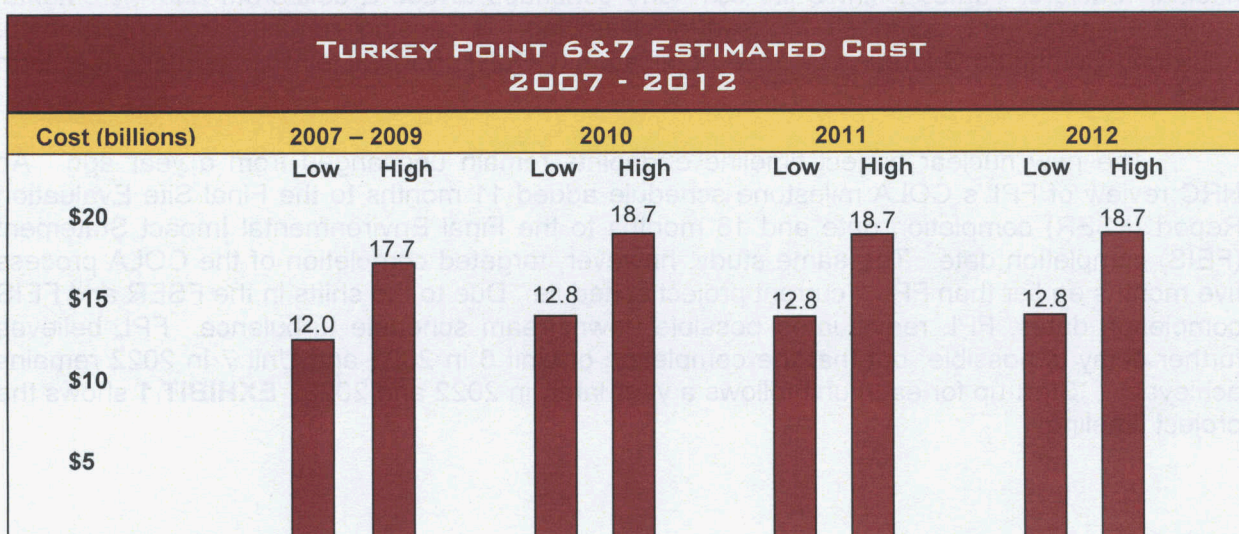


EXHIBIT 2

Source: DR-6; New Nuclear Update

Total pre-construction expenditures for 2011 totaled \$23.2 million, \$14.8 million below estimates. The variance stems from lower than anticipated costs and shifting some tasks to later project phases.¹

The Turkey Point 6&7 COLA was submitted to the Nuclear Regulatory Commission (NRC) in June 2009 and continues to move through the review and approval process. The current FPL project timeline predicts approval by June 2014.

At the federal level during 2011, FPL continued to respond to NRC requests for additional information (RAI) and updated their COLA with Revision 3. The NRC approval review is underway but in mid-May 2012, the NRC identified two significant issues impacting its ability to complete the COLA safety and environmental reviews. The agency disputed FPL analyses for (1) geology, seismology, and geotechnical engineering and (2) the alternative sites. The first disputed area impacts the COLA safety review and the second affects the environmental review. The NRC cited the analyses as unclear, incomplete, or unsupported by the references provided.² The NRC will continue its COLA evaluation in all other areas, but review of these two segments is halted until satisfactory revisions are submitted. The NRC will then publish a new COLA review schedule. The NRC also requested that FPL conduct an internal audit of quality assurance, informing the NRC of any findings and corrective actions. Turkey Point 6&7 project schedule and cost impacts are unknown at this point.

At the state level, Site Certification Application (SCA) received a declaration of completeness and is currently moving through the review process. Local permitting is taking longer than expected. Uncertainty over when regulatory approvals will be received exists and staff believes some additional schedule shift may occur.

Based on the current project schedule, FPL believes that a comprehensive construction contract will be awarded no later than November 2014. Whether it will be an Engineering, Procurement, and Construction contract with a single vendor, or the Engineering and Procurement portion with one vendor and the Construction portion of the contract with a separate vendor is undecided. FPL has not engaged recently in any preliminary discussions and no talks are currently scheduled. Staff believes the window of opportunity is still relatively distant but should be executed by November 2014 to avoid negatively impacting project schedule.

During 2011 and into 2012, FPL extended its long lead forging agreement with Westinghouse. As each expiration date approached, the companies agreed upon a new extension with terms and conditions unchanged. The current extension expires in October 2012 and FPL states that it intends to seek another extension. Forfeiture by FPL could cost the company up to \$10.8 million in lost reservation fees. Staff believes that FPL should negotiate a binding agreement no later than 2015 to avoid in-service date slippage.

The bulk of project execution, construction, and expenditures lie beyond 2014. The overall project schedule remains unchanged, with the Turkey Point 6&7 in-service dates still targeted for 2022 and 2023, respectively.

FPL states that to date there has been no regulatory impact from the Fukushima accident that will affect the pace or schedule of the Turkey Point 6&7 COLA. However, the

¹ Docket No. 120009-EI, March 1, 2012 Testimony (Scroggs), SDS-6, Table 1, 2011 Preconstruction Costs.

² NRC letter to FPL, May 4, 2012, Subject: Turkey Point 6 and 7 Combined License Application Review Schedule, pg 1.

company states that it is reasonable to anticipate that additional regulatory and/or safety requirements may result from lessons learned from Fukushima. Subject matter and potential impacts on new nuclear schedule or costs cannot be predicted.

Staff believes that FPL employs internal controls, risk evaluation, management oversight, and regular reporting requirements that adequately address project schedule, budget, costs, vendor performance, and risks. FPL controls will need to evolve as project requirements change.

EXHIBIT 3 is a depiction of the history of relevant key issues.

TURKEY POINT 6&7 ISSUES					
KEY EVENTS	Cost Estimate	COLA	EPC or EP&C	Long Lead Forging	Fukushima
PRE-2010	2007 to 2009, a range of \$12.08B to \$17.76B	COLA submitted 6/09 NRC dockets in 11/09	No decision on EPC or EP&C; opting to wait	Signed 2008, expired 12/09. \$10.8M fee; Extended to 6/10	Occurred in 2011
2010	Range revised in 2010; \$12.854B to \$18.746B	NRC issues COLA review schedule 5/10	No decision on EPC or EP&C; opting to wait	Extended to 3/11	Occurred in 2011
2011	Slight revision; \$12.852B to \$18.750B	Responding to RALs	No decision on EPC or EP&C; opting to wait	Extended to 6/11, then 7/11; negotiating extension	Impact(s) unknown; possible regulatory changes
2012	Unchanged \$12.852B to \$18.750B	Finish Safety, Environment, & ACOE RALs	No decision on EPC or EP&C; opting to wait	Extended to October 2012; seeking further extension	Adapt to regulatory and/or safety changes
FUTURE	Use project controls and oversight to control costs	SCA hearing & FSER (2013); FEIS, COLA & ACOE permit (2014)	Sign an EPC or EP&C by 11/14	Must begin forgings NLT 2015 to meet in-service schedule	Adapt to regulatory and/or safety changes

EXHIBIT 3

Source: Staff Analysis

1.4.2 EXTENDED POWER UPRATE PROJECT

In 2011, the EPU project team continued to prepare License Amendment Requests (LARs), and complete engineering modifications. EPU project scope also increased, due to the completion of more refined engineering design packages and design evolution. Detailed

engineering provided greater certainty to work scope and costs. As project scope was modified, cost and schedule changes were adjusted.

FPL experienced additional LAR license engineering and support costs, from changing NRC requirements and the project design modifications required by them. Construction and implementation costs also increased, as final designs were implemented and outages were completed.

According to FPL, EPU project management began evaluating whether to reschedule the remaining outages in March 2011, and finalized a revised schedule by June. FPSC Audit Staff's July 2011 report expressed concern about potential schedule shift and delays caused by longer and more complex second outages and added LAR engineering costs. Shortly after publication of staff's 2011 report, FPL adjusted the remaining outage dates and durations. Due to the adjustments, the uprate project completion was rescheduled from late January to March 2013.

The timeline for the EPU project is shown in **EXHIBIT 4**.

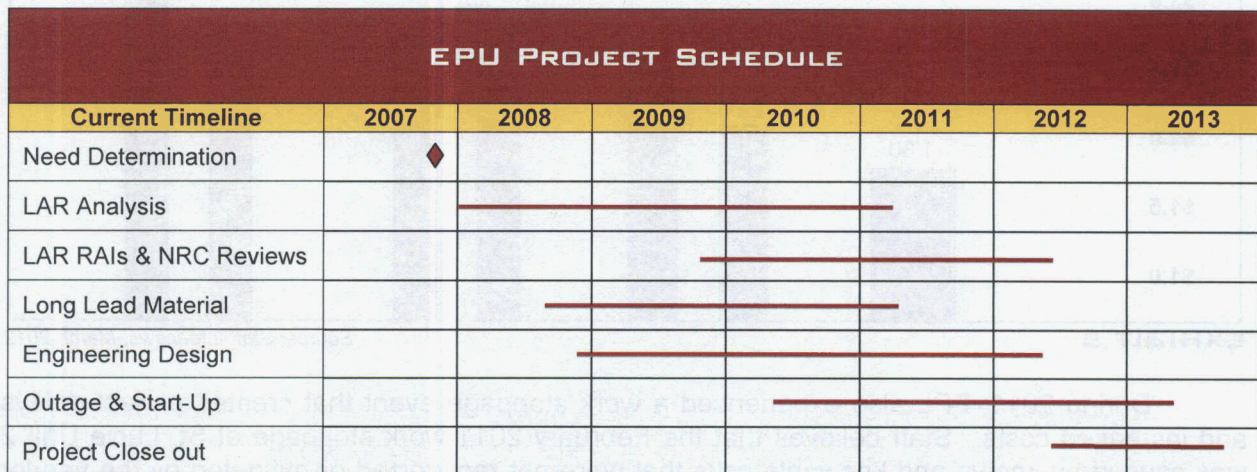


EXHIBIT 4

Source: DR-6; EPU 2012 Management Update

In May 2012, FPL again revised their non-binding cost estimate upward. According to FPL, the revision was based on more refined data from Bechtel, detailed design engineering, first outage experience, and greater project certainty. FPL now believes the final EPU cost will be in a range from \$2.95 billion and \$3.15 billion. This is an increase of \$632 million (27 percent) over the low end and \$671 million (27 percent) over the high end of the 2011 estimate range.

Compared to the initial Need Determination estimate of \$1.8 billion, the high end of the new estimate range is approximately \$1.35 billion greater (75 percent). With engineering modification packages now nearly complete, FPL believes far greater cost certainty exists and further increases are less likely.

FPL asserts that although project scope increased, design engineering remained behind schedule, estimated project completion costs increased, and NRC licensing delays occurred, five of eight outages have been completed to-date and approximately 53 MWe of the total 490 MWe estimated increase has been achieved. The uprate project currently remains on schedule for completion in 1Q 2013.

EXHIBIT 5 shows the estimated costs for the EPU project from 2007 to the present. In 2010 FPL began providing an estimate range, rather than a single estimate. FPL has increased its estimate range each year 2010 through 2012. However, in 2011 and 2012 FPL also increased its estimated MWe output for the EPU project. Currently FPL estimates the project will provide 490 MWe of additional power to its customers. FPL also states that its feasibility study shows the project is viable in six of seven scenarios used annually to judge project viability.

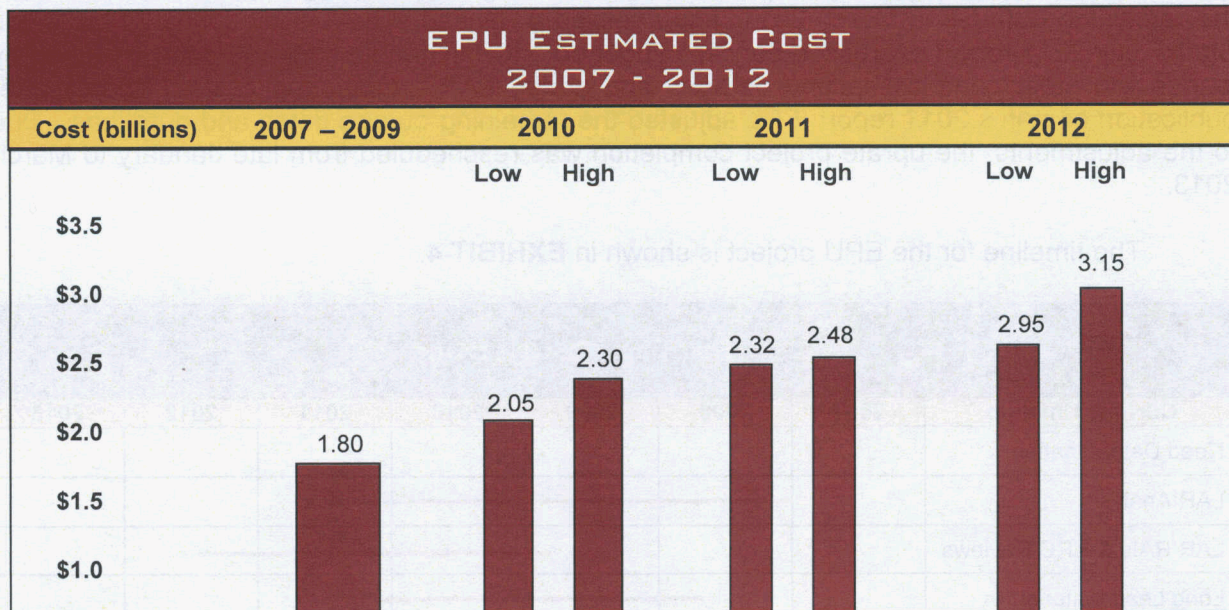


EXHIBIT 5

Source: Staff Interviews, March 2012

During 2011, FPL also experienced a work stoppage event that created project delays and increased costs. Staff believes that the February 2011 work stoppage at St. Lucie Unit 2 was caused by known and knowable risks that were not recognized or mitigated by the vendor or FPL. Staff believes FPL's cost of approximately \$3.5 million was avoidable and the result of control failures, specifically ineffective tool accountability, lack of oversight, and inadequate training. Audit staff recommends that the Commission disallow FPL cost recovery of \$3.5 million.

With the serious exception of the work stoppage at St. Lucie 2, staff believes FPL has in place and employs an adequate system of EPU project controls, risk evaluation, and management oversight.

EXHIBIT 6 is a depiction of the history of relevant key issues for the uprate project.

EPU PROJECT ISSUES					
KEY EVENTS	Project Cost Estimate	LAR Schedule	Outages	Work Stoppage	Fukushima
PRE-2010	2007 to 2009 \$1.798B	NRC accepts PTN AST LAR for review	Eight outages required; goal is to finish all by 2012	No work stoppages	Occurred in 2011
2010	Range revised to \$2.053B to \$2.299B	LARs for PSL 1 and PTN 3&4 submitted	Two done; revised schedule; finish in 2013	10/10: PTN 3 Siemens 11/10: PTN 3 Bechtel	Occurred in 2011
2011	Range revised to \$2.324B to \$2.479B	LAR: PSL 2 submitted; PSL 1, PTN3&4 under review	Two more complete; start date for last 3 of 4 revised	2/11 – PSL 2 Siemens; generator stator; 2011 NCRC item	Full impact(s) unknown; slowed NRC reviews
2012	Range revised to \$2.956B to \$3.150B	Obtain final NRC approvals	Continue outage work	Identify recoverable costs; submit to NCRC	Adapt to regulatory and/or safety changes
FUTURE	Potential for cost increases	NRC approvals complete	Finish outages by 3/13; Close out by 3Q 2013	Identify recoverable costs; submit to NCRC	Adapt to regulatory and/or safety changes

EXHIBIT 6

Source: Staff Analysis

2.0 NEW CONSTRUCTION, TURKEY POINT 6&7

2.1 KEY PROJECT DEVELOPMENTS

2.1.1 SIGNIFICANT EVENTS OVERVIEW

As of June 2012, the new nuclear construction project for Turkey Point 6&7 has focused on federal and state licensing and permitting processes. Below is a list of milestones achieved or anticipated 2011 through 2013.

Milestones 2011:

- ◆ Continued to respond to RAI (various agencies; January through December)
- ◆ Submitted revised groundwater modeling (SCA / COLA; February)
- ◆ Began exploratory Underground Injection Control well (May)
- ◆ Submitted alternative transmission corridors (SCA; August)
- ◆ Received a declaration of plant track completeness (SCA; September)
- ◆ Submitted COLA Revision 3 (NRC; December)

Milestones 2012:

- ◆ Determination of Completeness – Transmission, Alternative Corridors (February)
- ◆ Agency reports on transmission alternative corridors (February)
- ◆ Agency reports on plant and non-transmission items (March)
- ◆ S. Florida Water Management District report on plant & non-transmission (June)
- ◆ Issue land use consistency determination (Miami-Dade County; July)
- ◆ FDEP Project Analysis on proposed transmission corridors (August)
- ◆ Miami-Dade County report on Plant & Non-Transmission (August)
- ◆ Land use hearings (September)
- ◆ Land Exchange Environmental Impact Statement draft – (September)
- ◆ Land use consistency order (October)
- ◆ Siting Board hearing on land use consistency (December)
- ◆ FDEP Project Analysis on Plant and Non-Transmission (December)

Milestones 2013:

- ◆ Site Certification hearings (March-April)
- ◆ Recommended Order on Site Certification (June)
- ◆ Siting Board hearing on Site Certification (July)
- ◆ Complete Everglades National Park land exchange
- ◆ Planning studies and early site preparation design activities

STATE SITE CERTIFICATION APPLICATION (SCA) PROCESS CONTINUES

The SCA process continues along two parallel tracks, transmission and plant. Focus areas include wetland mitigation, threatened and endangered species mitigation, and the radial collector well impact and monitoring plan.

Florida Department of Environmental Protection (FDEP) is currently reviewing transmission reports received from interested parties and agencies through January 2012 and

addressing conditions of certification. FPL and some municipalities are in disagreement over whether future cable that will be required to carry the electricity should be above ground or buried. FDEP has also received proposals for alternate transmission corridors from interested parties. These proposals are currently under review. Cost and schedule impacts are possible if alternate corridors are selected instead of those favored by FPL.

Negotiations are ongoing for the Everglades National Park land exchange. A key component of the process, the draft Environmental Impact Statement (EIS), is expected in September. FPL states the draft EIS may be delayed until November 2012. FPL expects to complete the exchange in 2013.

NRC COLA REVIEW SCHEDULE REVISED

An October 2011 NRC revision to its review process added approximately 16 months to the Turkey Point 6&7 schedule. The latest NRC revisions to the COLA review schedule are shown in **EXHIBIT 7**.

TURKEY POINT 6&7 REVISIONS TO THE NRC SCHEDULE		
Phases	Target Completion Date	
<u>Phase of Safety Review</u>	Previous	Current
Phase A - RAIs and Supplemental RAIs	5/2011	Fall/2012
Phase B – Advanced Safety Evaluation Report (SER), no Open Items	5/2012	1/2013
Phase C – ACRS review of Advanced Final SER	9/2012	7/2013
Phase D – Final SER	12/2012	11/2013
<u>Phase of Environmental Review</u>		
Phase 1 – Environmental Impact Statement scoping report issued	Completed	
Phase 2 – Draft Environmental Impact Statement	10/2011	2/2013
Phase 3 – Final Environmental Impact Statement	10/2012	2/2014
<u>Hearing</u>		
Mandatory Hearing	6/2014 ³	

EXHIBIT 7

Source: NRC Letter to FPL, October 27, 2011

FPL states that site preparation sequencing and a reduction of schedule margin allowed it to accommodate the change without disrupting the estimated commercial operation dates for Units 6&7. The company anticipates early site preparation bid and evaluation activities to begin in late 2012 and continue through 2013.

FPL continues responding to safety and environmental NRC Requests for Additional Information and anticipates completion of RAI responses in late 2012. Hundreds of separate RAIs have been issued by the NRC for Turkey Point 6&7, about equally divided between safety (including security and emergency preparedness) and environmental issues. As of May 2012, 44 RAIs remained open.

FURTHER IMPACT TO THE NRC COLA REVIEW SCHEDULE POSSIBLE

An event that will likely impact the COLA review schedule occurred late in staff's annual review. In a mid-May 2012 letter to FPL, the NRC identified two significant issues impacting its ability to complete the COLA safety and environmental reviews. Specifically, the agency

³ The objective for completing the mandatory hearing is four months after issuance of the FSER or FEIS; NRC letter to FPL, October 27, 2011, *Issuance of a Revised Review Schedule for the Combined License Application Review for Turkey Point, Units 6 and 7*.

disputed FPL seismic and alternate site analyses, finding them unclear, incomplete, or unsupported by the references provided.⁴ The NRC stated that it will continue working on all other areas of the COLA, but review of the two segments is halted until satisfactory revisions are submitted. The NRC will then issue a new COLA review schedule. In the same letter to FPL, the NRC requested that FPL:

- ◆ Conduct an internal audit of its quality assurance processes and management oversight that was in place when FPL performed the analyses,
- ◆ Conduct an extent of condition quality assurance audit of the contractor that performed disputed analyses and any other work the contractor has performed on the Turkey Point 6&7 COLA, and
- ◆ Inform the NRC of its findings and any corrective actions taken in developing it revised analyses.⁵

Staff believes that Turkey Point 6&7 project schedule and cost impacts are likely but impossible to predict at this point.

PROJECTED IN-SERVICE DATES UNCHANGED

The in-service target dates are unchanged. **EXHIBIT 8** shows the schedule over time.

TURKEY POINT 6&7 PROJECT MILESTONE SCHEDULE				
Phase		Original	1 Year Ago	Current
Licensing	Start	2007	2007	2007
	Finish	2012	2013	2013
Site Preparation	Start	2010	2014	2014
	Finish	2012	2016	2016
Generation Plant	Start	2013 / 2015	2016	2016
	Finish	2018 / 2020	2022 / 2023	2022 / 2023
Transmission Facilities	Start	2010	2014	2014
	Finish	2020	2023	2023

EXHIBIT 8

Source: Schedule TOR-7, May 2010, and DR-1.33

While maintaining that there is currently no negative effect on Unit 6&7 in-service target dates, FPL states that it is experiencing some regulatory schedule variance and minor scheduling delays. The company undertook a complete schedule review in early 2012 to determine if the current timeline and internal milestones were in need of adjustments. By eliminating some schedule margin, FPL states that although some intermediate dates may shift, the overall schedule and commercial operation dates for both units remain viable.

FPL management recognizes that schedule turbulence is possible at all regulatory levels and attempts to minimize it. Toward that goal, FPL states that it maintains close coordination with regulatory approval agencies at all levels and holds regular meetings with them and other interested parties. The company believes that its RAI process quickly and comprehensively responds to NRC inquiries, employing a review and vetting process to insure completeness.

⁴ NRC Letter to FPL, May 4, 2011. NRC file MIL120740390

⁵ Ibid.

Going forward, securing required licenses and permits will remain the near-term focus. FPL expects the draft EIS to be available in 2012, with the final EIS and Record of Decision following in 2013. FPL's expectation is that the Combined Operating License could be issued and the Army Corps of Engineers permit received by mid-2014. This is approximately six months later than anticipated a year ago.

ESTIMATED COST RANGE UNCHANGED - \$12.85B TO \$18.75B

The estimated final cost of Turkey Point 6&7 is unchanged from a year ago, remaining in a range from \$12.85 billion to \$18.75 billion.⁶

2011 PROJECT EXPENDITURES LOWER THAN EXPECTED

FPL new nuclear project expenditures during 2011 were \$23.15 million. The variance is \$14.80 million below the original estimate of \$37.95, nearly 40 percent less than forecast, and represents project costs deferred to the future. There were no expenditures associated with transmission or construction in 2011. Specific areas of lower than expected costs include:

Licensing - Costs totaled \$19.34 million compared with the earlier company estimate for the year of \$28.79 million. Variance (\$9.45 million) results primarily from lower than anticipated NRC and NuStart fees. Additionally, the NRC licensing process moved more slowly than originally forecast, exacting lower fees from FPL. Forecasted NuStart fees were not required for 2011.⁷ Unused contingency also played a role in reducing the licensing costs.⁸

Permitting - Expenditures for 2011 were lower than anticipated. Originally estimated at \$2.42 million, the project actually spent \$0.68 million. The variance (\$1.74 million) resulted from reductions in staffing and other support due to schedule delays.

Engineering - With an original projection of \$6.75 million, actual engineering expenditures totaled only \$3.13 million. The variance resulted from an FPL decision to defer the start of the underground injection well until various regulatory agency consultations were satisfactorily completed.

NRC APPROVES THE AP1000 FOR USE IN THE UNITED STATES

In December of 2011, the NRC approved the AP1000 reactor design for use in the United States. In rendering its decision, the NRC stated that the design provides enhanced safety margins by means of simplified, inherent, passive, and innovative safety and security functions, and that it had also been assessed to ensure it could withstand damage from an aircraft impact without significant release of radioactive materials.

CONSTRUCTION CONTRACT DECISION DELAYED UNTIL 2014

FPL continues without a construction contract, believing that lack of schedule and licensing clarity make it advantageous to defer the decision. The company has not made a decision whether it is more advantageous to pursue an EPC or an EP&C contract.⁹ Project management feels no pressure to enter into either type and believes a lack of schedule clarity makes it advantageous to the company to defer the decision.

⁶ DR-1.3 and Docket No. 110009-EI, TOR-2 (True -Up to Original), SDS-18, filed May 2, 2011 and DR-1.3

⁷ Witness Scroggs, Docket No. 110009-EI, testimony of March 1, 2012, pg 38. NuStart to be dissolved.

⁸ Docket No. 110009-EI, T-Schedules, SDS-1, Pre-Construction, T-6B (True-up), filed March 1, 2011

⁹ EPC - Engineering, Procurement, and Construction by one vendor; EP&C - one vendor for Engineering and Procurement, and a second vendor for Construction.

Although FPL may be accepting some increased craft availability risk and cost risk by deferment, it believes this best serves company interests. The current schedule calls for awarding a contract by the end of November 2014.¹⁰ FPL does not believe deferring a major construction contract negatively impacts the overall project cost or schedule.

LONG LEAD FORGING RESERVATION

The Forging Reservation Agreement was originally signed by FPL and Westinghouse in 2008. This reserved manufacturing capacity until December 2009 for specialized, ultra-heavy forgings. The original agreement included a reservation fee of \$10.8 million.

Several extensions of the original expiration date have been negotiated between the parties, the latest extending it through October 2012 and preserving original terms and conditions. Negotiations are ongoing to further extend the expiration date. FPL expects another extension before the current contract expires.

FPL believes that continuing to extend the original terms and conditions meets its interests. Keeping the agreement reduces current costs and preserves schedule flexibility while maintaining a critical manufacturing slot. Extending the agreement also defers the cost of manufacture and eliminates storage costs FPL would incur for delivered items. It also minimizes exposure should FPL opt to significantly defer or cancel the project.

FPL acknowledges risk that the agreement could be dissolved instead of extended. This would result in a partial refund, minus 15 percent for administration, if Westinghouse is able to remarket the slot. If unable to remarket the slot, FPL could lose the entire \$10.8 million reservation fee.

The company also acknowledges that this long lead forging manufacturing must begin no later than 2015 in order to meet current in-service dates.

JOINT OWNERSHIP DISCUSSIONS

FPL has complied with the Commission order to maintain regular discussions with prospective joint owners, conducting annual meetings and providing the Commission with required status reports. Potential participants remain unchanged and include the Florida Municipal Energy Association, Florida Municipal Power Agency, Orlando Utilities Commission, Jacksonville Energy Association, Seminole Electric Cooperative, Ocala Electric, and Lakeside Electric. The latest meeting occurred in May 2012.

New Nuclear management believes FPL will need 100 percent of the Turkey Point 6&7 capacity for its own customers. Sharing with joint owners would diminish the amount of power available to FPL consumers. New Nuclear management states that serious, detailed discussions of joint ownership would be premature. Staff does not believe joint ownership will become a priority unless FPL projections for power needs drop.

2.1.2 TURKEY POINT 6&7 PROJECT COST ESTIMATES

The original Determination of Need in 2007 outlined a Turkey Point 6&7 project cost estimate ranging from \$12.08 billion to \$17.76 billion. The total was divided into four categories: site selection, pre-construction, construction, and Allowance for Funds Used During Construction (AFUDC). See **EXHIBIT 9**.

¹⁰ Staff Document Request DR-1.4

TURKEY POINT 6&7 2007 DETERMINATION OF NEED COST ESTIMATE		
Category	Low	High
Site Selection (Actual)	\$8,000,000	\$8,000,000
Pre-construction	\$465,000,000	\$465,000,000
Construction	\$8,149,000,000	\$12,124,000,000
AFUDC	\$3,461,000,000	\$5,160,000,000
TOTAL	\$12,083,000,000	\$17,757,000,000

EXHIBIT 9

Source: Schedule TOR-2, SDS-18, May 2011 Testimony

Current project cost estimates remain unchanged from a year ago, ranging from a low of \$12.85 billion to a high of \$18.75 billion. See **EXHIBIT 10**. Also unchanged is the company belief that the most likely outcome is that the project will be in the upper end of the range.

TURKEY POINT 6&7 CURRENT TOTAL IN-SERVICE COST ESTIMATE		
Category	Low	High
Site Selection	\$6,118,105	\$6,118,105
Pre-construction	\$229,490,909	\$251,411,898
Construction	\$8,974,728,121	\$13,153,504,833
AFUDC	\$3,642,182,163	\$5,335,446,159
TOTAL	\$12,852,519,298	\$18,750,480,995

EXHIBIT 10

Source: Schedule TOR-2, SDS-18, May 2011 Testimony

Turkey Point 6&7 site selection was completed as of 2009, with actual costs 24 percent lower than estimated. The current range for pre-construction is 50.6 percent (low end) and 45.9 percent (high end) less than the original Need Determination filing. These figures represent funds deferred to the construction phase when licensing and construction were decoupled in 2010. Deferment caused an increase of \$825.7 million on the low end of the construction phase estimate and \$1.03 billion on the high side.

2.1.3 PROJECT FEASIBILITY ANALYSIS SUPPORTS CONTINUATION

Annual feasibility analyses are performed that consider multiple scenarios, varying conditions, and assumptions to determine project feasibility. These analyses provide another layer of project accountability and management oversight. Each annual feasibility study uses the most current fuel and environmental forecasts, capital cost estimates, and sunk cost data.

FPL states that the analytical methodologies and approaches used in the current feasibility study are nearly identical to those used in the Need Determination and every previous annual analysis. Prior to the annual analysis in 2011, FPL updated its analytical assumptions. Among the assumptions revised were:

- ◆ FPL's load forecast
- ◆ Assumed in-service dates of 2022 and 2023, and

- ◆ Financial / economic assumptions.

By compliance with the FPSC affirmative Determination of Need Order No. PSC-08-0237-FOF-EI, FPL updates and includes five informational categories in its annual long term feasibility analysis including:

- ◆ Fuel forecasts
- ◆ Environmental forecasts
- ◆ Breakeven costs
- ◆ Capital cost estimates, and
- ◆ Sunk costs.

The company states that its most recent feasibility analysis predicts the project is solidly cost-effective in five of seven scenarios, one fewer than last year's feasibility study. In the other two scenarios, which assumed either continued low environmental costs for at least 30 years, or continued low costs for natural gas and environmental compliance, combined cycle generation showed equivalent or slightly favorable outcomes.

FPL believes the annual analyses strongly support continuation of the Turkey Point 6&7 project, that it remains feasible and viable, and offers substantial benefit to the consumer compared to any non-nuclear alternative.

2.2 PROJECT CONTROLS AND OVERSIGHT

2.2.1 PROJECT CONTROLS MATURE

Staff believes that the New Nuclear project controls are mature, universally well known, and routinely employed as intended by those responsible for Turkey Point 6&7 control and oversight. Controls are present in various financial and accounting systems, department procedures, desktop instructions, and best practices supplying oversight for project schedule and cost. Staff believes the controls appear to be adequate, sufficiently comprehensive, and responsive to the needs of the project at the current stage.

FPL did not create any new project instructions in 2011 or delete existing ones. Internal audits, quality assurance reviews, and external audits performed during the past year did not cite any weaknesses in project instructions.

Four project instructions were revised in 2011, including NNP-PI-03 which improved project document retention and records processing procedures. Revisions were determined necessary as a result of employee/operator input and regular update reviews. Two project instructions are currently scheduled for revision in 2012, including NNP-PI-06 governing New Nuclear correspondence with the NRC.

White papers are used by the Turkey Point 6&7 project leadership to memorialize key project decisions. Management uses white papers to record the process and rationale behind key project decisions, preserving details for later review, recall, or regulatory oversight. Management believes white papers are an integral part of project transparency.

Over time, as the current pace of licensing ebbs and gives way to construction, FPL should continue to monitor, regularly assess, and adjust program controls as needed.

The primary controls currently in use by the FPL Turkey Point 6&7 project team are:

- ◆ Budgeting and reporting process,
- ◆ Schedule and activity reporting processes,
- ◆ Contract management process, and
- ◆ Internal and external oversight processes.

Internal and external oversight elements and processes consist of:

- ◆ Executive management,
- ◆ Subordinate managers,
- ◆ Subject matter experts (SME) and team members,
- ◆ Mutually reinforcing schedules and cost controls, and
- ◆ Regular updates on risk, cost, and schedule.

The Project Controls group provides management with regular reports on schedule, budget, costs, vendor performance, and risks. They use Primavera-6 scheduling software, capable of real time updating and monitoring. Primavera can also sort data by need, producing customized status reports.

In mid-2011, FPL migrated its nuclear accounting and financial system to SAP¹¹ software. SAP has components similar in nature to the former FPL system -- financial accounts, general and subsidiary ledgers, financial statement modules, and budget sections. Nuclear Business Operations (NBO) personnel validated the new system and informed operators. FPL believes SAP is more user-friendly, with improved reporting and uploading capabilities. No problems have been reported since the changeover. SAP is the only system used to initiate and record management approval for commitment of Turkey Point 6&7 project funds.

FPL project managers, technical representatives, and quality assurance personnel continue to monitor vendor performance on a daily basis. Monitoring at various levels by supervisory and management personnel is intended to ensure that the performance of tasks assigned to vendors meets contract time and cost parameters.

Integrated Supply Chain (ISC) sourcing specialists and contract managers monitor contract change orders and contractor invoicing for any anomalies. Cost or schedule items outside established contractual norms are routinely reported up the chain of command to the appropriate level(s). In this way, project risks for time and dollars are quickly identified and prioritized. Mitigation strategies can then be devised and solutions implemented.

2.2.2 RISK MANAGEMENT REPORTING

FPL states that tracking and characterization of project risk is a central principle behind all project reporting. These reports include the monthly accounting variance report, vendor status report, or quarterly risk assessments.

Formal risk management is focused in two specific documents. Monthly, a project specific dashboard tracks key project aspects that constitute major risk areas. Quarterly, a broader review is conducted to determine and refine significant risks and associated trends. These are reported in the Quarterly Due Diligence Report.

¹¹ A world recognized software application, SAP is a German company, originally named *Systeme, Anwendungen, Produkte*, for "Systems Applications and Products."

Additionally, on a monthly basis New Nuclear reports project status to the executive team through meetings and formal presentations. If particular situations or decisions warrant, Turkey Point 6&7 project leadership has the option of presenting the information to and obtaining the advice of the FPL Risk Committee. No such presentations were made about Turkey Point 6&7 project during 2011 or during early 2012.

A monthly dashboard report was created in 2011, meshing with and contributing input to the Quarterly Risk Analysis. Staff requested and reviewed all Turkey Point 6&7 monthly dashboard reports for 2011 and through the first quarter of 2012. Monthly reports provide more clarity and detail, probability of occurrence for each risk, and analysis of potential project impact, cost, and schedule. Areas routinely assessed include:

- ◆ NRC Licensing
- ◆ US Army Corps of Engineers Permitting
- ◆ Site Certification Application
- ◆ Underground Injection Control well
- ◆ Miami-Dad County
- ◆ Development
- ◆ Project Design
- ◆ Pre-Construction Planning
- ◆ Budget
- ◆ Schedule
- ◆ Procurement
- ◆ Safety

2.2.3 MANAGEMENT OVERSIGHT CONTINUES TO EVOLVE

Within the New Nuclear project, no personnel changes were made in 2011 and none are planned for 2012. However, the company undertook a corporate reorganization in third quarter 2011 and some project reporting relationships were modified. Nuclear and non-nuclear power generation project development were split, with nuclear development now under the Vice-President for Engineering, Construction and Corporate Services.

2.2.4 AUDITS TARGET PROJECT EXPENDITURES AND CONTROLS

As part of the annual NCRC process audit, FPL Internal Audit reviewed the New Nuclear Project during 2011. As in the previous annual audit, [REDACTED]

[REDACTED] A 2012 internal audit will be conducted with similar subject area coverage.

AUDITS OF 2010 & 2011 PROJECT EXPENDITURES

In early 2011, the *Engineering & Construction - New Nuclear Projects - 2010 Expenditures Review* was performed by Jefferson Wells (now known as Experis) under Internal Audit's direction and supervision. The review examined approximately [REDACTED]

Areas of review included [REDACTED]

Early in 2012, FPL Internal Audit began the annual audit of 2011 project expenditures and again contracted with Experis. Areas reviewed were the same -- [REDACTED]

The review examined approximately [REDACTED]

EXTERNAL AUDITS

Concentric Energy Advisors conducted a review of project controls early in 2011 and cited six project subject areas in need of improvement.¹² These included shortcomings in procedures, reporting, and training. FPL revised management dashboard reports, updated invoicing checklists and approval sheets, and adopted improvements to its Cost Recovery Detail report to address these shortcomings. However, Mr. Reed concluded that FPL appropriately and prudently managed the PTN 6&7.

2.2.5 FPL QUALITY ASSURANCE AUDITS

The Quality Assurance (QA) function holds vendors accountable for process and product quality while working for FPL. Regular oversight of vendor activity and procedures, development of new Quality Assurance programs, off-site inspections of key component manufacture, and review of New Nuclear Project procedures continues. During 2011, Quality Assurance assessors monitored vendor compliance with contracts and FPL procedures. No areas of non-compliance were noted in 2011.

2.3 CONTRACT OVERSIGHT AND MANAGEMENT

Project contractor selection methodologies and contract management policies remain unchanged. During 2011, FPL signed new contracts and made changes to existing ones through change orders.

Three years ago, FPL decided that significant expenditures for preliminary design, procurement, and construction planning were premature. The company opted to defer these activities, concentrating instead on the licensing effort. FPL continues to believe this strategy provides additional risk control.

Bechtel continues as the primary contractor for COLA and SCA support. Specialty engineering companies support the Army Corps of Engineers permit and other applications. Westinghouse/Shaw is assisting FPL and Bechtel in COLA review and RAI responses.

FPL believes simple invoicing mistakes and vendor overcharges are quickly discovered by existing systems and protocols. Monthly, invoicing specialists review every invoice received during the month. Each is checked against current contract provisions and prevailing labor rates. Hours are vetted against the applicable sub-job and travel expenses are checked for appropriateness, applicability, justifications, and contractual relevance.

2.3.1 CONTRACTS EXECUTED OR MODIFIED

In 2011, FPL New Nuclear entered into five new contracts greater than \$100,000, with one new contract greater than \$1 million as shown in **EXHIBIT 11**.

¹² FPL witness Reed, Docket No. 110009-EI, testimony filed March 1, 2011, Exhibit JJR-5.

TURKEY POINT 6&7 NEW CONTRACTS GREATER THAN \$100,000					
Vendor	Description	Price	Value ¹³	Issued	Expiration
Layne Christensen Co.	Underground Injection Control Exploratory Well	T&M		03/03/11	03/03/12
McCallum Turner, Inc.	COLA Site Selection RAI	T&M		02/08/11	07/01/14
Brigham, Moore, LLP	Legal Support	T&M		01/05/11	12/31/11
Curtis Group	Expert Support	T&M		05/04/11	12/31/11
Gunster, Yoakley & Stewart, PA	Expert Legal Services	T&M		08/26/11	12/31/11

EXHIBIT 11

Source: Staff Document Request DR-1.51

Change orders (CO) with values over \$100,000 appear in **EXHIBIT 12**. Eleven change orders greater than \$100,000 were entered into with various vendors in 2011.

TURKEY POINT 6&7 CHANGE ORDERS GREATER THAN \$100,000					
Vendor	Description	Price	CO Value	Issued	Expires
Bechtel	COLA Development Support	T&M		10/11/11	08/31/15
EPRI	Advanced Nuclear Tech	T&M		01/28/11	12/31/13
McNabb Hydro	UIC SME	T&M		11/29/11	12/31/12
Golder Associates	SCA Phase 2 Support PO 4500518160, CO 4	T&M		03/23/11	12/31/11
Golder Associates	SCA Phase 2 Support PO 4500518160, CO 5	T&M		06/24/11	12/31/11
Environmental Consulting & Tech	SCA Phase 2 Support PO 4500518167, CO 6	T&M		09/14/11	12/31/11
Environmental Consulting & Tech	SCA Phase 2 Support PO 4500518167, CO 4	T&M		03/23/11	12/31/11
EcoMetrics Inc	Environmental Consultation	T&M		11/29/11	12/31/12
McCallum Turner, Inc.	COLA Site Selection RAI PO 4500645896, CO 2	T&M		12/15/11	07/01/14
HDR Engineering	Engineering, Cooling Water	T&M		01/03/11	04/30/11
McCallum Turner, Inc.	COLA Site Selection RAI PO 4500645896, CO 1	T&M		08/04/11	12/31/11

EXHIBIT 12

Source: Staff Document Request DR-1.53

Open contracts signed prior to 2011 with a value greater than \$250,000 appear in **EXHIBIT 13**, reflecting original contract amounts plus subsequent increases from change orders. Commission audit staff reviewed all single or predetermined source change orders for required justifications. No discrepancies were noted. The Bechtel contract remains the largest [REDACTED]. Originally signed in 2007, the contract has nearly 40 change orders.

¹³ Value includes original contract and any subsequent change orders

TURKEY POINT 6&7 EXISTING CONTRACTS GREATER THAN \$250,000				
Status	Vendor	Service	Value	Type
Open	Bechtel Power Corporation	COLA / SCA prep & RAI support		C, S, P
Open	Layne Christensen Co.	Exploratory / UIC well installation		C
Open	Dickerson Florida, Inc.	Exploratory UIC well site prep		C
Open	Golder Associates Inc.	Post-SCA submittal support		S
Open	Environmental Consulting & Technology, Inc.	SCA support		S, P
Open	Electric Power Research Institute	Membership		S
Open	McNabb Hydro geologic Consulting	UIC SME support		C, S
Open	Westinghouse Electric Co.	COLA prep & RAI support		S, P
Open	HDR Engineering	Cooling water supply / discharge		C, S
Open	Eco Metrics, Inc.	Environmental consulting		S
Open	Jefferson Wells	New Nuclear audit		C/S
Open	McNabb Hydrogeologic Consulting, Inc.	Post-SCA / UIC licensing		S
* C = Competitive Bid, S = Single/Sole Source, and P = Predetermined Source				

EXHIBIT 13

Source: Schedule T-7A, FPL Testimony, March 2012

2.3.2 INVOICE SAMPLING

As part of ongoing oversight of FPL contract controls and processes, Audit Staff reviewed invoices for the Turkey Point 6&7 project. The sample population set consisted of invoices for seven project vendors and FPL membership fees for the Electric Power Research Institute (EPRI). The sample period was January through December 2011.

Staff chose for review the highest invoice month for each company every quarter. The evaluation checked for proper authorizations, required signatures, uniform application of FPL invoicing procedures, and that the company appropriately challenged the vendors and pushed backed for any questionable charges.

The total sampled was \$5.89 million, or 56.4 percent, of the \$10.44 million invoiced by these vendors or functions during the period.

Staff's review indicated that invoicing policies and procedures are well understood and that FPL invoicing personnel followed established project practices and procedures. There were no major amounts in dispute. Proper approval signatures were present for invoices reviewed, invoice amounts were properly reconciled, supporting documentation and amounts invoiced were challenged where necessary, and questionable amounts were suspended from payment until properly supported. Supporting memos documented communications between FPL and the contractor regarding questionable submissions and information.

2.3.3 CONTRACT MANAGEMENT POLICIES UNCHANGED

No revisions to contract management or selection policies were made during 2011.

However, one new contract procedure was adopted by New Nuclear in January 2011. NNP Procurement Guideline "Award of Critical Project Agreements" is specifically applicable to projects \$5 million or greater in value. Among its main provisions is that proposal pricing will not be reviewed prior to the proposal due date and that the review must be done by two or more ISC members in an approximately concurrent time frame.

FPL contract management regularly reviews existing controls and does so in an ongoing, systematic manner. Those controls and procedures found deficient are scheduled for revision.

PPJ contract management (regularly reviews existing controls and those so in an ongoing systematic manner. Those controls and procedures found deficient are subject to revision.

3.0 EXTENDED POWER UPRATES

3.1 KEY PROJECT DEVELOPMENTS

3.1.1 2012 COST ESTIMATE INCREASE

During 2011, the EPU project team continued to work on the final submission of License Amendment Requests (LARs), and completion of engineering modifications. In May 2011, FPL filed a new non-binding project estimate range of between \$2.324 to \$2.479 billion to complete the EPU project. At that time, Bechtel had completed approximately half of the design modification phase of the project. FPL also indicated that Bechtel's design modification hours for the project may increase, but could not definitively define the size and nature of potential increases. In November 2011, an estimate of final costs from the EPC vendor pushed the estimate range beyond the prior non-binding project estimate.

As of May 2012, FPL believes final EPU project completion costs will range between \$2.956 billion and \$3.150 billion. FPL states that greater than 94 percent of the engineering design modification packages are 90 percent complete for the project outages, and this high degree of engineering completion provides greater certainty that the new non-binding project estimate will reflect the actual final project costs. The new project cost estimate is based on more refined design engineering and cost estimate information. The revised total cost range represents an increase of \$632 million (27.2 percent) over the 2011 low end estimate range and \$671 million (27.1 percent) over the high end of the range. Compared to the initial 2007 Need Determination estimate of \$1.798 billion, the high end of the 2012 estimate range is \$1.352 billion greater (75.2 percent).

EXHIBIT 14 shows newly estimated construction costs, carrying charges, and allowance for funds used during construction (AFUDC) from 2007 through 2012.

EPU COST ESTIMATES AND PERCENT CHANGE 2007 - 2012								
Category	2007 Need Estimate (Billion)	2010 Range (Billion)		2011 Range (Billion)		2012 Range (Billion)		2007 to 2012 Change High
		Low	High	Low	High	Low	High	
Construction	\$1.446	\$1.900	\$2.141	\$2.114	\$2.265	\$2.696	\$2.887	99.7 percent
AFUDC & Carrying Costs	\$.352	\$.153	\$.158	\$.209	\$.214	\$.260	\$.263	-25.3 percent
TOTAL	\$1.798	\$2.053	\$2.299	\$2.324	\$2.479	\$2.956	\$3.150	75.2 percent

EXHIBIT 14

Source: May 2012 – Schedule TOR-2, and Witness Jones' Testimony

3.1.2 INCREASED MEGAWATT PRODUCTION EXPECTED

Based on detailed licensing engineering, refined design engineering modifications, and outage testing experience, EPU management expects to generate an additional 40 MWe (8.9 percent) output beyond the 450 MWe estimate of May 2011. The increase in production brings the total expected output from all four unit uprates to 490 net MWe. FPL has included the 490

MWe output in its assumptions for the annual project feasibility analysis. **EXHIBIT 15** provides a summary of the estimated capacity increases.

EPU ESTIMATED INCREASE IN CAPACITY (MWe)		
Unit	Scheduled Completion	Estimated Increased Capacity (MWe)
PSL 1	July 2012	129
PSL 2	November 2012	115
PTN 3	August 2012	123
PTN 4	March 2013	123

EXHIBIT 15

Source: Document Request DR-4.11

3.1.3 PROJECT FEASIBILITY ANALYSIS SUPPORTS CONTINUATION

FPL conducts an annual analysis to evaluate the cost effectiveness of the project. The analysis determines whether the uprate project remains feasible and cost effective against seven different fuel and economic scenarios. In past years the project was determined to be favorable in all seven scenarios. However, in 2012 FPL found the project to be favorable in six of seven scenarios. FPL states that the seventh scenario assumes environmental compliance costs, or both environmental compliance and natural gas costs, remain low for at least 30 years. FPL believes the results of the annual analysis still confirm the uprate project remains feasible and cost effective.

3.1.4 LAR SUBMISSIONS

All FPL LAR submissions to the NRC were completed in February, 2011. The estimated final approval dates for each LAR are shown in **EXHIBIT 16**.

EPU LICENSE AMENDMENT REQUEST SCHEDULE				
Unit/LAR	Submitted	Accepted by NRC	Estimated Approval	NRC Review Progress
PSL1 EPU LAR	November 2010	March 2011	2Q 2012	Under review
PSL2 EPU LAR	February 2011	June 2011	3Q 2012	Under review
PTN3&4 EPU LAR	October 2010	March 2011	2Q 2012	Under review; ACRS approval of LAR received
PTN-Core Operating Limits Report LAR	February 2011	March 2011	1Q 2012	Approved February 2012
PTN AST LAR	June 2009	September 2009	2Q 2011	Approved June 2011
PTN Spent Fuel Criticality LAR	August 2010	August 2010	3Q 2011	Approved October 2011

EXHIBIT 16

Source: Document Request DR-1.2 and DR-8.2

The NRC accepted four LAR submittals for review in 2011, and approved the Alternate Source Term LAR and the Spent Fuel Criticality LARs for Turkey Point. FPL currently awaits NRC final approval for the Turkey Point and St. Lucie EPU LARs.

3.1.5 EPU OUTAGE LENGTHS EXTENDED

In early 2011, FPL made changes to three of the four remaining outages scheduled to start in 2011 and 2012. Since that time, additional changes have been made to anticipate contingencies and potential scope changes for each outage.

By the end of March 2012, FPL had completed the first set of outages for all four units, and the second outage for St. Lucie Unit 1 was almost complete. FPL had scheduled this outage to be complete by April 1, 2012. However, St. Lucie Unit 1 experienced delays during start-up. FPL states that there is no impact on other outage schedules.

FPL believed that the EPU modifications were completed and began reactor start-up in late March 2012. During start-up, reactor control rod system issues caused FPL to suspend activities and move the reactor to a lower mode of operation. Later in March, FPL identified leaks from the Main Feed Pump, which required repairs. On April 7, FPL experienced an additional issue with the condenser that required repairs and further delayed the outage completion.

According to FPL, a steam bypass valve was not operating properly during the restoration of the unit to full power, and required repair. The PSL1 output breaker was closed on April 21, 2012 and the unit was operating at 80% power and holding. The unit achieved 100 percent power on May 27, 2012. At that time, FPL measured the unit output and had gained approximately 22 MWe. The unit will operate under the current licensed power level until the NRC approves the EPU LAR to operate at final uprated power and FPL completes a mid-cycle outage.

Due to expected delay of the St. Lucie Unit 1 EPU LAR until June 2012, FPL planned a short mid-cycle outage of [REDACTED] July. The mid-cycle outage was planned to change instrumentation set points to the new uprate level, complete minor modifications necessary for operation at the uprate condition, and implement new plant processes and procedures for plant operations in the uprate condition. FPL estimates the mid-cycle outage cost to be approximately \$19 million. Once the NRC has approved the EPU LAR and FPL completes the mid-cycle outage, the unit can begin delivering the full increased EPU output.

EXHIBIT 17 shows the current schedule for the final outages. The number of days scheduled shows the target outage length and an approved contingency period. The contingency reflects the potential impact of additional scope discoveries during implementation. For example, the contingency period allowed for PSL1 is [REDACTED]. FPL explained that the start and finish dates are target dates. However, if emergent scope or unexpected delays are encountered, there is a planned contingency period allowed for each outage.

EPU SCHEDULE FOR FINAL OUTAGES			
Unit	Final Outage Start	Final Outage Finish	Number of Days (approved contingency)
PSL 1	November 2011	April 2012	110 (127)
PSL 1 Mid-cycle	July 2012	July 2012	
PSL 2	August 2012	November 2012	
PTN 3	February 2012	August 2012	
PTN 4	November 2012	March 2013	

EXHIBIT 17

Source: Document Request Response, EPU DR 2.8

The issues identified in the St. Lucie 1 outage extended beyond the contingency period estimated for the outage. Any similar outage delays, due to construction and implementation or NRC LAR approval can further adversely impact the final project schedule and costs. Additionally, extended delays in outage completion may introduce additional replacement fuel costs.

3.1.6 WORK STOPPAGES OCCURRING IN 2010 AND 2011

Stand downs and work stoppages are used to ensure safe project work conditions and quality work. Both can be used to effectively manage work methods, techniques, safety and quality. Stand downs are generally short in nature, reinforcing certain aspects of work safety. Work stoppage events are generally called to make contractors aware of problems in work quality and adherence to procedures or practices. Generally work stoppages are longer in length, impact larger groups, and used to avert damage to equipment and injury or death to workers. Work stoppages often include re-training and re-emphasis of techniques and methods to complete work safely and efficiently. In some instances, personnel actions are taken to further enforce the importance of following standard practices, methods and procedures.

Depending on the severity and length of these events, stand downs and work stoppages may create project delays and increase costs. If effectively managed, they can prove to be useful project management tools to prevent unsafe conditions or poor work quality.

FPSC audit staff's July 2011 audit report discussed two EPU work stoppage events that impacted EPU project costs and schedule. These were a November 2010 work stoppage at Turkey Point Unit 3 and a February 2011 event at St. Lucie Unit 2. Since then, FPL has taken actions to settle both events with the contractors involved. **EXHIBIT 18** provides a summary of the two events discussed in staff's 2011 report.

BECHTEL 2010 AND SIEMENS 2011 EPU WORK STOPPAGES						
Vendor	Date	Work Stop	Duration	Critical Path Impact	Estimated Cost	Resolution
Bechtel	11/1/10	Yes	13 days for corrective actions	No critical path impact; two week delay in post-outage demobilization; delayed pre-outage for PTN4	██████████	██████████ paid for Bechtel for re-training time during stoppage ██████████ recovered from Bechtel for pipe repair
Siemens	2/11/11	Yes	Extended outage 22 days	Significant damage and schedule/cost impact	██████████	Siemens - ██████████ FPL - \$3.5 million

EXHIBIT 18

Source: Document Request Response, EPU DR-1.3 and DR-4.9(g)

BECHTEL 2010 WORK STOPPAGE AT TURKEY POINT UNIT 3

On November 1, 2010, FPL required Bechtel to halt all uprate work, curtailing plant walk downs being performed at the Turkey Point Unit 3 site. FPL ordered the stoppage after a Bechtel electrician accidentally cut into the turbine plant cooling water piping. FPL required Bechtel to immediately develop a human performance improvement action plan which included retraining of personnel. Upon completion of the corrective actions Bechtel was allowed to resume work on November 15, 2011.

According to FPL site personnel, the project incurred a two-week delay in demobilization activities after the Turkey Point Unit 3 initial outage. The stand down also delayed the start of Turkey Point Unit 4 pre-outage construction activities.

FPL determined the actual costs for the work stoppage to be ██████████. This amount included ██████████ for Bechtel personnel expense and ██████████ for Bechtel subcontractor expense. FPL explained that these costs were for training and re-emphasis to the Bechtel work force. According to FPL, Bechtel invoiced the company and was paid the ██████████ in accordance with the terms of the contract.

Although FPL paid ██████████ for the training and re-emphasis to Bechtel and its subcontract workers, FPL separately recovered the ██████████ repair cost for the damaged turbine cooling water pipe by withholding that amount from a Bechtel invoice. Bechtel did not dispute the withheld payment and FPL considers the commercial resolution complete.

FPSC staff has not contested the costs of this work stoppage event because Bechtel and FPL had existing work procedures in place prior to the event that provided specific instruction regarding proper grinding technique. Staff believes this event was due to human error and performance, not the failure of management to provide methods, procedures, and controls.

SIEMENS WORK STOPPAGE AT ST. LUCIE UNIT 2

Begun in January 2011, this first of two planned uprate outages for St. Lucie Unit 2 had progressed about a month when work was halted. It was determined that Siemens workers had inadvertently left a component of a multi-piece tool set, a metal alignment pin, inside the refurbished rotor stator. When energized for initial recertification testing, the stator was severely damaged. An immediate work stoppage was called. FPL personnel witnessed the preparation for the test and were present when the damage occurred.

The damage to the stator core extended the outage completion date and resulted in increased costs to the project. Repair efforts required extensive replacement of damaged core iron within the stator. Without sufficient replacement core iron on hand, FPL had to seek quantities through other electrical utilities and through expedited new manufacture of core iron. Following repairs, Siemens satisfactorily tested the rotor stator and it was accepted by FPL. The unit was brought back on line on May 7, 2011. The repair lasted approximately 22 days. This extended the outage and may have resulted in FPL incurring replacement fuel costs.

FPL's initial estimates for repairs were as high as \$15 million. But after more cost clarity was achieved, the figure was reduced to approximately [REDACTED]. Examination of the contract and circumstances associated with the event convinced FPL that Siemens limit of liability was approximately [REDACTED]. EPU management informed Commission audit staff that Siemens eventually paid approximately [REDACTED].

FPL originally estimated its portion of the cost for the stator repair at \$3.75 million. FPL states that this amount was later reduced to approximately \$3.5 million as further cost clarity was achieved. This total was the result of approximately \$1.5 million in direct costs and \$2.0 million in indirect costs.

In January 2012, FPL and Siemens signed a settlement indicating the parties consider the commercial resolution complete. Under the terms, FPL [REDACTED] Siemens [REDACTED] FPL [REDACTED] The agreement [REDACTED]

FPL and Siemens conducted a root cause analysis of the damage event. The report stated that, "although there is no direct nuclear safety significance associated with this condition, the foreign material if left in the generator core could have resulted in subsequent challenges to safety items via turbine and reactor trips"¹⁴.

The root cause report cites three primary findings related to the stator core damage:

Root Cause 1: An effective inspection was not performed by the vendor to ensure alignment pins were removed from the axial vent passages prior to electrical testing.

Root Cause 2: Ineffective tool control by the vendor in the work area resulted in alignment pins being unaccounted for.

Root Cause 3: Alignment pins were not designed for fail-safe installation; they could be lost in the ventilation passages, did not have good color contrast with the core

¹⁴ Staff DR-2.2, Root Cause Evaluation St. Lucie Nuclear Station, pg 11.

environment and were made of material that had severe ramifications if left in the generator.¹⁵

Commission audit staff believes that this work stoppage and its associated cost and schedule impacts were a direct result of a series of control failures and missing controls. Staff believes these control failures primarily exist in three critical areas:

Ineffective Tool Accountability:

Department of Energy publication DOE-STD-1069-94 states that "Policies governing the control of tools and equipment should be clearly established. Policies and procedures should emphasize personnel accountability and traceability. These policies should address all aspects of tool control including inventory, issue, tracking, use, and return."¹⁶

FPL acknowledges its responsibility and accountability in conducting an appropriate review and approval process for its vendor's procedures. The FPL Plant General Manager or designee (in this case, the EPU Site Director) reviewed and approved Siemens procedures and determined them to be adequate.¹⁷

However, Siemens did not have adequate tool accountability for this multi-piece tool set although the tool had been in the Siemens inventory for approximately 18 months and used at other nuclear sites. The Siemens tool room at the St. Lucie worksite signed the pin set out as a single item. No procedure existed to account for the individual pieces of this specific multi-piece tool at either sign-out or sign-in.

Though Siemens was executing the work on behalf of FPL as its contractor, Commission audit staff believes the owner is ultimately responsible. FPL had reviewed the Siemens tool accountability procedures prior to the incident and determined them to be appropriate. An accountability control should have been implemented by Siemens but FPL project oversight and subsequent, periodic FPL quality assurance inspections also failed to detect this deficiency. Accountability of individual components of the multi-piece tool set would have prevented the alignment pin from being left behind unnoticed, avoided significant damage to the stator, precluded project delays, and eliminated additional costs. Either through a lack of adequate supervision or an inadequate application of existing controls over its vendor, FPL allowed this situation to exist.

About tool accountability, the Root Cause analysis report stated:

- ◆ "Ineffective tool control by the vendor in the work area resulted in alignment pins being unaccounted for."¹⁸
- ◆ "The risk of losing alignment pins was not recognized by vendor personnel even though several alignment pins had to be retrieved from the vent passages with a magnet or vacuum during the stacking process."¹⁹

¹⁵ Staff DR-2.2, Root Cause Evaluation St. Lucie Nuclear Station, pg 3.

¹⁶ Section 3.4.1.4, DOE-STD-1069-94, Guideline To Good Practices For Maintenance Tool And Equipment Control At DOE Nuclear Facilities, June 1994, pg 7.

¹⁷ FPL response to DR-8.1f, DR-8.1m, DR-8.1n.

¹⁸ Staff DR-2.2, Root Cause Evaluation St. Lucie Nuclear Station, Root Cause (RC2), pg 3.

¹⁹ Ibid., Contributing Cause (CC2), pg 3.

- ◆ “A ‘Poke-Yoke’ type box for alignment pin storage would have easily shown if an alignment pin was missing, but was not used.”²⁰
- ◆ “...no clearly defined process for accounting for the location of the pins.”²¹

Lack of Oversight

Commission audit staff believes that an evaluation of this tool set by FPL or Siemens would have helped maximize the safety of worksite personnel and equipment. Evaluation leads to development of accountability methods, worker training requirements, and proper subsequent use of the tool. The first time a new, multi-piece tool set is used on a particular project, thorough evaluation of the tool and its use should lead to adoption of appropriate safeguards. This was not done for the alignment pin set.

Commission audit staff further believes that risk and possible consequences of failing to evaluate a multi-piece tool set in order to implement effective safeguards were known and knowable. Consideration of such risks for this new multi-item tool set was not demonstrated by either FPL or Siemens. Comprehensive measures easily implemented, capable of providing ongoing and universally understood supervisory controls, were also known and knowable. Similar controls already existed in Siemens, in FPL, and throughout the nuclear industry. In its initial inspection and approval of Siemens accountability procedures, FPL either did not perceive or appreciate the potential consequences of an accountability control failure for this particular tool. Subsequent FPL oversight inspections and quality assurance spot checks did not identify the potential risk.

FPL and Siemens are both highly experienced in the zero-defect environment of nuclear power generation, construction and uprates. Both companies understand the importance and necessity of appropriate, robust, and comprehensive worksite controls. The lack of controls in this instance increased risk and probability that one or more parts of the multi-piece tool set could be misplaced and accountability lost.

Among other things concerning lack of proper oversight, the Root Cause noted:

- ◆ “An effective inspection was not performed by the vendor to ensure alignment pins were removed from the axial vent passages prior to the electrical testing.”²²
- ◆ “The risk of losing alignment pins was not recognized by vendor personnel even though several alignment pins had to be retrieved from the vent passages with a magnet or vacuum during the stacking process.”²³
- ◆ “...pins were lost in the bore holes....they were left for the next shift to retrieve. A verbal turnover was provided. He indicated that this was standard process.”²⁴
- ◆ “Stator iron holes not inspected for foreign material.”²⁵
- ◆ “Foreign material isolation and control was not required...”²⁶

²⁰ Ibid., RC-2 Supporting Information, No. 2, pg 15.

²¹ Ibid., RC-2 Supporting Information, No. 3, pg 15.

²² Ibid., Root Cause (RC1), pg 3.

²³ Ibid., Contributing Cause (CC2), pg 3.

²⁴ Ibid., Attachment 3, Hazard Barrier –Target Analysis, pg 37.

²⁵ Ibid., Attachment 2, Apollo Analysis, pg 36.

²⁶ Ibid., RC-2 Discussion, pg 14.

- ◆ "Failure to recognize significance of hazard associated with foreign material."²⁷

Inadequate Training

Adequate training is required for the proper storage, care, accountability, use, and supervision of new tools introduced to the inventory. Department of Energy guidelines for nuclear facilities states that among other responsibilities the maintenance supervisor must train personnel on applicable tool control process and provides sample lesson plans.²⁸

According to the root cause analysis, workers and supervisors at the St. Lucie worksite were unfamiliar with the proper use of the alignment pins, learned to employ them without formal training, and developed usage techniques from their own experience or those shared by other workers.

Workers or supervisors interviewed as part of the root cause analysis reported receiving no formal training or accountability instruction. The root cause points out that this resulted in these pins being used more widely than intended and for uses other than the intended purpose. Wider use increased the risk of losing accountability and of a mishap.

About inadequate training, the Root Cause analysis report said:

- ◆ "Siemens front line workers and supervisors were unfamiliar with the intended purpose and use of the alignment pins."²⁹
- ◆ "...the pins were used more widely than necessary...which increased the opportunity to leave them unaccounted for."³⁰
- ◆ "No training was provided on use of the alignment pin."³¹

Discussion and Recommendation

The bedrock principles of responsibility and accountability place overall burden squarely on the owner. This belief is supported by the U. S. Department of Energy (DOE) and the U. S. Nuclear Regulatory Commission. In a DOE-sponsored report on project risk management, it states, "The owner has the ultimate responsibility for identifying, analyzing, mitigating, and controlling project risks..." and "...There remains an essential role for the owner that cannot be delegated – the responsibility for the management of the owner's interests and the owner's risks."³² Then NRC Chairman, Nils J. Diaz, in a speech concluded, "Whether poor performance comes from the licensee's staff or its contractor, the licensee bears the responsibility and must accept the consequences."³³

Staff believes that an evaluation of the tool set by FPL or Siemens would have identified key shortcomings in its design. As noted in the Root Cause Analysis, "Alignment pins were not

²⁷ Ibid., Attachment 3, Hazard Barrier –Target Analysis, pg 39.

²⁸ Section 3.3.2, DOE-STD-1069-94, Guideline To Good Practices For Maintenance Tool And Equipment Control At DOE Nuclear Facilities, June 1994, pg 5

²⁹ Staff DR-2.2, Root Cause Evaluation St. Lucie Nuclear Station, Contributing Cause (CC1), pg 3.

³⁰ Ibid., Contributing Cause (CC1), pg 3

³¹ Ibid., Attachment 3, Hazard Barrier –Target Analysis, pg 41.

³² The Owner's Role in Project Risk Management , Board on Infrastructure and the Constructed Environment, National Academies Press, 2005, pg 8-9.

³³ *Maintaining the Safety Management Perspective for Licensee's Contractors*, Remarks by Nils. J. Diaz, Chairman, U.S. Nuclear Regulatory Commission before the CNRA Regulatory Forum, June 2004. NRC News No. S-04-011, page 3.

designed for fail-safe installation; they could be lost in the ventilation passages, did not have good color contrast with the core environment, and were made of material that had severe ramifications if left in the generator.”³⁴

This control failure was not exclusive to either FPL or Siemens, but a shared failure to impose and apply appropriate, reasonable controls. More comprehensive accountability controls were put into place after the event, including a requirement for accountability of all individual pieces of this alignment pin set. Such controls were known and knowable, and in use for other multi-piece tools at the worksite.³⁵ However, they were absent for this specific multi-piece tool set prior to the event. Commission audit staff believes such controls would have prevented the damage.

Commission audit staff believes that these failures in accountability, oversight, and training, each stemming from known and knowable risks, led to foreseeable and preventable human performance failure and avoidable damage, cost, and schedule impact. As a consequence, audit staff recommends that the Commission should disallow FPL cost recovery of \$3.5 million.

OTHER 2011 WORK STOPPAGES

FPL reported five additional EPU work stoppage events during 2011. Three events involved Bechtel and two involved Whiting Services’, a Bechtel subcontractor. Two of the five work stoppage events lasted an hour, one lasted two days, one lasted three days, and one lasted four days. All five work stoppage events were safety-related. FPL states that because these were fixed cost contracts and sufficient margin was built into the schedule there were no additional cost or schedule impacts.

According to FPL, one other work stoppage event created additional costs for the EPU project. The Bechtel December 17, 2011 work stoppage event at St. Lucie Unit 1 involved 147 employees and estimated costs were approximately [REDACTED]. All Bechtel craft and staff were given a mandatory stand-down that lasted approximately one hour. Some electrical craft, field engineers, and supervisors were also required to receive mandatory clearance refresher training and pass an examination before returning to work. This refresher training and examination process was completed on December 19, 2011.

FPL stated that, under the terms of the time and materials contract between FPL and Bechtel, FPL is obligated to pay Bechtel for hours worked by Bechtel personnel on the EPU project, including hours spent in stand-down mode and in training classes. After reading an explanation of the event, and visiting the locations involved, FPSC audit staff believes that proper procedures and controls to prevent the work stoppage event were in place. However, Bechtel employees failed to follow procedures or instructions to the proper work location. This failure caused the workers to begin work at the wrong location. The Bechtel supervisor was late in getting to the work location, but averted a situation that could have ended in serious injury or death to the workers. In this case, controls were in place, but not followed by employees. A work stoppage to re-train the work force and reinforce safety procedures was appropriate.

EXHIBIT 19 provides a summary of the stand downs and work stoppages from June through December 2011.

³⁴ Ibid., Root Cause (RC3), pg 3.

³⁵ FPL response to DR-8.1s.

EPU STAND DOWNS AND WORK STOPPAGES JUNE – DECEMBER 2011							
Vendor	Date	Stand Down	Work Stop	Duration	Critical Path Impact	Estimated Additional Cost	Description
Bechtel	6/30/11	Safety	Yes	1 Hour	None	██████	Bechtel imposed; PTN3 fall protection violation
Whiting Services	8/26/11	Safety	Yes	1 Hour	None	None	Bechtel imposed; subcontractor safety violation at PTN; no injuries; no damage
Bechtel	9/24/11	Safety	Yes	4 days	No significant impact	██████	Bechtel imposed; craft personnel suspended without pay for OSHA recordable injury
Whiting Services	11/4/11	Safety	Yes	3 days	None	None	Bechtel imposed subcontractor fall protection safety violation at PTN
Bechtel	12/17/11	Safety	Yes	2 days	None	██████	Bechtel PSL electrical craft worked on wrong motor control center; no injuries and no damage

EXHIBIT 19

Source: Document Request Response, EPU DR-1.3

3.2 PROJECT CONTROLS AND OVERSIGHT

3.2.1 CHANGES TO CONTROLS AND OVERSIGHT

On an ongoing basis, FPL's EPU project team makes revisions to its EPU Project Instructions to reflect changes within the project procedures and controls. If necessary, each EPU site management team has the flexibility to implement additional meetings, procedures, and controls for their site. This is intended to provide consistent project instructions, procedures and controls, and allow site management the flexibility to reflect the level of control necessary at each plant site. In addition to EPU Project Instructions, EPU project management must follow FPL Nuclear Policies and Procedures. These procedures are directed at nuclear operations fleet-wide, and must be followed by EPU project management during the uprate project.

During 2011, two new EPU Project Instructions were completed and 16 were revised. There were no EPU Project Instructions deleted from service. The two new instructions address developing the non-binding cost estimate range and the processing of obsolete and spare parts. There are five being considered for further revision during 2012.

In addition to the FPL Nuclear Policies and Procedures and EPU Project Instructions, Bechtel also has an established set of policies and procedures that guide it in the engineering, procurement, and construction of the project. Bechtel's Nuclear Work Process Procedures are required to conform to FPL's policies and procedures, as well as all regulatory requirements for nuclear construction and operation. Bechtel updates these Nuclear Work Process Procedures as required, for consistency with FPL policies and procedures.

3.2.2 PROJECT RISK MANAGEMENT

The potential for risk exists with any project. The management and mitigation of risks is important to the successful undertaking of that project. The EPU project uses a series of management meetings, conference calls, and reporting tools to help identify and mitigate project risks.

The Executive Vice President & Chief Nuclear Officer holds daily fleet operations conference calls with all FPL uprate sites. These daily calls provide all FPL sites at the fleet level the ability to discuss site events, exchange operational best practices, discuss similar operating experiences and solutions, offer insights to problematic conditions, and brainstorm common issues. During outage conditions, these daily calls aid EPU management in a similar way by considering conditions and situations experienced in other uprate projects.

FPL identifies significant EPU project risks weekly in the Risk Registers and includes them in the Monthly Operating Performance Report. The probability of each identified risk occurring and the estimated potential cost impact determine the weighted cost value assigned. Mitigation activities and strategies are developed and assigned to specific project team individuals for risk resolution. When each risk is satisfactorily mitigated, the risk is closed in the Risk Registers and removed from the total risk potential estimated for the project.

Project risks are updated and vetted in periodic Key Supplier Meetings that include vendor management, FPL executive management, and EPU project management representatives. FPL conducts a weekly meeting with the Executive Vice President Nuclear Division & Chief Nuclear Officer to update FPL senior level management of project risks and mitigation strategies employed. The Vice President of Uprates also provides project updates to the Nuclear Board Committee periodically to keep the NextEra Board of Directors apprised of project status, outage preparation, and project readiness efforts.

3.2.3 INTERNAL/EXTERNAL AUDITS AND INVESTIGATIONS

FPL Internal Audit annually determines its audit schedule after coordination with FPL executive and EPU project management. To ensure Internal Audit resources are used most efficiently, some audits have been contracted to external companies with appropriate expertise. FPL Internal Audit also completes unscheduled investigations as the need occurs. The audits and investigations completed during 2011 and planned for 2012 are discussed below.

2011 AUDITS AND INVESTIGATIONS

In 2011, four audits and two investigations were conducted regarding the EPU project. The four audits consisted of three scheduled audits and one EPU self audit. Scheduled audits included the annual EPU expenditures audit, conducted by Experis under FPL internal audit oversight (May), the Bechtel vendor audit completed by FPL internal audit (December), and the Concentric Energy Advisors audit of EPU and PTN 6&7 project controls. The EPU self-audit completed by EPU staff examined augmented staff timekeeping processes at Turkey Point (November). **EXHIBIT 20** is a summary of the EPU audits and investigations conducted during 2011.

EPU INTERNAL/EXTERNAL AUDITS, INVESTIGATIONS, AND REVIEWS 2011				
Reviewer	Audit/ Investigation/ Review	Internal/ External	Completion	Subject
Experis	2010 annual audit of EPU project expenditures	External	May	Reviewed sample transactions related to project expense reporting, invoices, and payroll processes
FPL Internal Audit	[REDACTED]	Internal	September	[REDACTED]
FPL Internal Audit	[REDACTED]	Internal	November	[REDACTED]
EPU staff	Self Audit	Internal	November	PTN augmented staffing timekeeping processes
FPL Internal Audit	Vendor audit of EPC contractor	Internal	December	Reviewed [REDACTED]
Concentric Energy Advisors	Review of EPU project controls	External	March 2012 submitted as testimony	Reviewed EPU system of internal controls in 2011

EXHIBIT 20

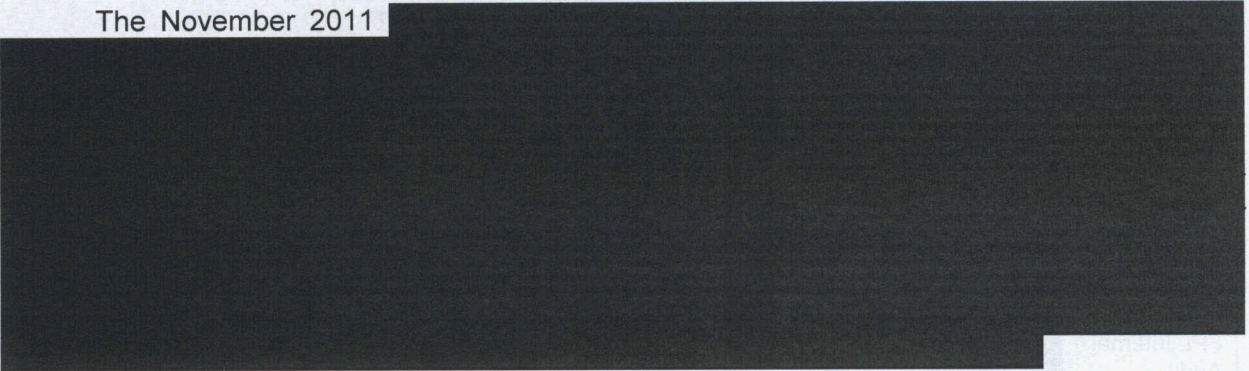
Source: Document Request Response DR-1.15

The audit of 2010 EPU project expenditures was conducted by Experis Manpower Group (previously Jefferson Wells) under the direction of FPL Internal Audit and completed in May 2011. Sample transactions related to project expense reporting, invoices, and payroll processes were reviewed. The audit report [REDACTED]

The September 2011 [REDACTED] by FPL Internal Audit. [REDACTED]

FPL internal auditors [REDACTED]

The November 2011



In November 2011, a self audit report of Turkey Point outsource staffing used to augment project resources was completed by EPU staff. The audit was conducted in conjunction with a change of time keeping systems at the site, during the first week of July. The audit reviewed contractor hours logged at gate facilities against those submitted on timesheets. Some discrepancies were identified, but later reconciled by supervisors as proper entries. The audit concluded there were no findings of unauthorized contractor or supervisor time entries, and no timekeeping overcharges occurred.

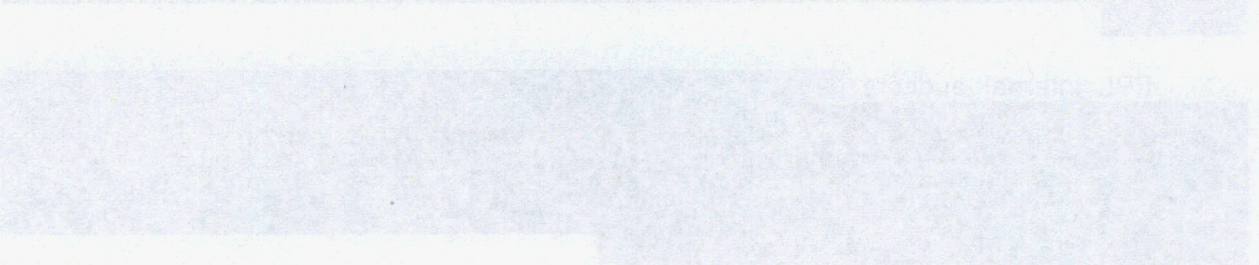
In December 2011, FPL Internal Audit completed a scheduled audit of the EPC vendor. The audit reviewed



Concentric Energy Advisors, Inc. completed a review of FPL's EPU project controls during 2011. According to testimony filed by FPL witness John J. Reed, this review was conducted by Concentric employees from December 2011 through February 2012. The review of EPU project controls covered the period January 2011 through December 2011. Mr. Reed concluded that FPL appropriately and prudently managed the EPU Project in 2011.

2012 AUDITS AND INVESTIGATIONS

In 2012, three audits and three investigations were conducted for the EPU project. The three scheduled audits were conducted by Experis and FPL Internal Audit. Experis completed the annual EPU expenditures audit (May), and the Bechtel contract audit (May). The Shaw/Siemens vendor audit was scheduled to be completed by FPL's internal audit department in third quarter 2012. **EXHIBIT 21** is a summary of the EPU audits and investigations scheduled to be conducted during 2012.



EPU INTERNAL/EXTERNAL AUDITS AND INVESTIGATIONS 2012				
Reviewer	Audit/ Investigation	Internal/ External	Completion	Subject
FPL Internal Audit	[REDACTED]	Internal	1Q	[REDACTED]
Experis	2011 annual audit of project expenditures	External	May 2012	Review of sample transactions related to project expense reporting, invoices, and payroll processes
Experis	EPC Contract Audit	External	2Q	Reviewing EPC contracts; expected to be complete 2Q 2012
FPL Internal Audit	[REDACTED]	Internal	2Q	Reviewed [REDACTED]
FPL Internal Audit	EPU Vendor Audit 2012	Internal	3Q	[REDACTED]
FPL Internal Audit	PSL Per Diem investigation	Internal	3Q	[REDACTED]

EXHIBIT 2.1

Source: Document Request Response DR-1.15

[REDACTED]

[REDACTED] FPL internal auditors reviewed [REDACTED]

[REDACTED] However, FPL internal audit determined [REDACTED]

[REDACTED] FPL Internal Audit determined [REDACTED]

The audit of 2011 EPU project expenditures, under the direction of FPL Internal Audit, was completed by Experis Manpower Group in May 2012. The Experis audit reviewed [REDACTED]

Experis was also conducting an audit of EPC contracts at Turkey Point and St. Lucie sites during 2012. The report was expected to be complete in the 2Q 2012. Staff will review the FPL Internal Audit report and findings upon completion and will discuss any significant findings in the 2013 FPSC staff audit report.

[REDACTED] FPL Internal Audit [REDACTED] The audit was not completed by the data cutoff date for this year's report. Staff will review the FPL Internal Audit

report and findings upon completion and will discuss any significant findings in the 2013 FPSC staff audit report.

FPL Internal Audit scheduled an additional vendor audit for one of two other major EPU contractors during 2012. This audit will be similar to the EPC vendor audit completed in December 2011. The report is expected to be issued in the 3Q quarter 2012. Staff will review the FPL Internal Audit report and findings upon completion and will discuss any significant findings in the 2013 FPSC staff audit report.

[REDACTED] is scheduled for completion by FPL Internal Audit in 3Q 2012. Begun in late 2011, [REDACTED]
[REDACTED] FPSC Staff will follow up on this investigation in the 2013 staff audit report.

3.2.4 QUALITY ASSURANCE

FPL's Quality Assurance group provides oversight of all safety-related EPU work and major non-safety projects valued greater than \$100,000. Quality Assurance staff assigned to each site conducts quality surveillances and work inspections, provide daily quality summaries, and prepare safety-related nuclear oversight reports. Other Quality Assurance staff members are responsible for completing off-site vendor oversight, including reviews of specifications, manufacturing processes, and delivery of safety-related equipment.

FPSC audit staff reviewed the FPL QA Daily Quality Summaries for the period January 2011 through March 2012. Forty eight of 149 (32 percent) St. Lucie EPU Quality Assurance summaries and 24 of 88 (27 percent) Turkey Point summaries contained unsatisfactory issues. During 2011, FPL QA reported weaknesses in some vendor quality procedures, controls, and vendor supervision of manufacturing processes.

For example, a Daily Quality Summary for Turkey Point identified an issue with the Moisture Separator Reheater Tubing Fabrication having inadequate manufacturing practices and packaging resulting in foreign material entering the tubes. This required further FPL QA action and oversight with the manufacturer to remedy the condition. Condition Report 1680716 and two vendor findings were written to document the issues identified.

A Daily Quality Summary for St. Lucie identified housekeeping deficiencies existed in the Bechtel workshop used for prefabrication of EPU project components. The report stated that deficiencies were brought to the attention of the Bechtel General Foreman and FPL supervision, and prompt actions were taken to correct the inadequate condition. Condition Report 1659268 was issued to document the condition identified.

FPL QA states that it has addressed these safety-related issues through additional oversight and corrective vendor cooperation. According to FPL Quality Assurance, there were no unresolved major safety-related quality assurance issues impacting the projects during 2011.

3.3 CONTRACT OVERSIGHT AND MANAGEMENT

Contract oversight and management responsibilities are shared between the EPU Contracts Group, Project Controls, site technical representatives, and the Integrated Supply Chain (ISC). ISC also provides long-lead procurement, contract management, and administrative support. Periodic evaluations of major contractors are completed to document overall performance. Nuclear Business Operations also provides project assistance with capital versus O&M and "separate-and-apart" accounting decisions, as well as scope changes greater than \$250,000, invoice coding, accrual reporting, and budget variance reporting.

3.3.1 BECHTEL PERFORMANCE EVALUATION

FPSC staff reported that in 2010 FPL completed two vendor evaluations for Bechtel with [REDACTED] at Turkey Point and [REDACTED] at the St. Lucie site. In 2011, FPL conducted one new Bechtel performance evaluation. The evaluation was a progress report on the EPC vendor's performance at Turkey Point. The results were [REDACTED] at Turkey Point [REDACTED]. Results were measured in six categories with between two and six evaluation factors as shown below:

- ◆ Quality of Work (six)
- ◆ Schedule Compliance (two)
- ◆ Organization and Management (three)
- ◆ Responsiveness and Cooperation (two)
- ◆ Safety (four)
- ◆ ALARA (three)

The twenty factors were each rated between one and five, one being the lowest and five being the highest possible score for each evaluation factor. Bechtel had five ratings [REDACTED], and two ratings of [REDACTED] performance. Of the seven, two were in Quality of Work, two were in Schedule Compliance, one was in Organization and Management, one was in Responsiveness and Cooperation, and one was in Safety.

Comments regarding Bechtel performance included:³⁶

- ◆ [REDACTED]
- ◆ [REDACTED]
- ◆ [REDACTED]
- ◆ [REDACTED]
- ◆ [REDACTED]
- [REDACTED]

³⁶ All comments from Contractor Evaluation Report, December 2011, page 2 of 3.

◆ [REDACTED]

FPL states that while there have not been specific corrective actions taken as a result of the contractor evaluation, there have been corrective actions taken as a result of events described in the contractor evaluation. FPL says that the company continues to implement stand downs and work stoppages when Bechtel quality of work, schedule compliance, responsiveness and cooperation, and safety, are in question. FPL added that although some engineering milestones did not complete as planned, the overall engineering was completed in support of implementation outages and that overall project schedule objectives are being met.

FPSC audit staff believes the comments in the Turkey Point Bechtel vendor evaluation indicate [REDACTED] Staff is concerned that FPL comments that the EPC vendor [REDACTED], that [REDACTED], that [REDACTED], indicate the potential for further project delays and continued increased costs.

3.3.2 SINGLE/SOLE SOURCE JUSTIFICATIONS

FPSC audit staff reviewed 39 single/sole source justifications completed in 2011 for the St. Lucie site and 22 for the Turkey Point site. An additional ten justifications were reviewed for 2012. The justifications comply with FPL procedural requirements for a third party to understand the rationale for single sourcing the work, rather than using competitive bidding. The overall volume and quality of information supplied in FPL single/sole sourcing justifications showed improvement during 2011.

3.3.3 CONTRACTS GREATER THAN \$1 MILLION

In 2011, FPL reported 158 EPU contracts with values \$250,000 or greater. During the year, nine contracts closed and 18 were inactive. Fifty-seven contracts were newly signed in 2011 and valued at \$100.6 million. Nineteen were valued at greater than a million dollars. Contracts greater than a million dollars totaled \$81.8 million and represent 81.3 percent of the total new contract dollars in 2011. Twelve contracts were single sourced, three were original equipment manufacturer, and three were competitive. One replaced a prior existing contract with the same vendor. See **EXHIBIT 22** for more details on contracts greater than one million dollars.

EPU CONTRACTS GREATER THAN \$1 MILLION EXECUTED IN 2011		
Vendor	Amount	Type
Siemens Energy		Single Source
Holtec		Single Source
Siemens		Single Source
Enercon		Single Source
Flowserve		Replacement
Thermal Engineering		Single Source
Zachry Nuclear		Single Source
Siemens Energy		Single Source
PSI Energy Services		Single Source
WeldTech Services		Single Source
Sargent & Lundy		Single Source
Enercon		Competitive
Siemens		OEM
Sulzer Pumps		OEM
Ames Group LLC		Single Source
WeldTech Services		Single Source
Marmon Wire		OEM
Enertech		Competitive
Master Lee Energy		Competitive
TOTAL	\$81,772,846	

EXHIBIT 22

Source: Schedule T-7A, Witness Jones, May 2012

3.3.4 INVOICE SAMPLING

FPSC staff auditors completed a review of EPU contract invoices. The sample invoices were submitted during the period January through December 2011. Invoices for the four major contractors, long lead material, and implementation support functions were selected. Staff reviewed the highest invoice month in each quarter.

These invoices represented \$153.3 million (46.2 percent) of the \$332.2 million invoiced for St. Lucie and \$145.5 million (41.4 percent) of the \$351.4 million invoiced for Turkey Point.

The results of FPSC staff's invoice review showed that FPL's handling of EPU contract invoices for the project followed established project practices and procedures. Proper approval signatures were present for invoices reviewed, invoice amounts were reconciled, data was challenged where necessary, and questionable amounts were held for payment until researched. Invoice support documentation sufficiently evidenced the amounts invoiced, and any amounts under question. Supporting memos documented communications between FPL and the contractor invoicing agent regarding questionable submissions and information.

3.3.5 CONTRACT MANAGEMENT AND OVERSIGHT

Contract management responsibilities and processes were essentially unchanged during 2011. Contract management and oversight are shared responsibilities of the EPU Project Site Manager and Technical Representatives/Contract Coordinators who administer site services.

At the completion of authorized work, the Technical Representative/Contract Coordinator is responsible for verifying that the contractor met all obligations and determines if any outstanding contract deliverables exist. These representatives determine whether billed work is completed satisfactorily, make sure the level of approval necessary for invoice payment is present, and close out the contract when all work is completed. If contract work has not been completed as specified in the contract, the vendor invoice is denied and the work must be completed before payment is made.

Bechtel interfaces with both EPU Project and site management to provide contract oversight during the project for its subcontractors. As the EPC contractor, Bechtel coordinates the work of contractors toward the completion of the construction and testing portion of the EPU project. Bechtel is also responsible for providing nuclear work procedures, performance indicators, and monitoring on-site subcontractors. FPL reviews these procedures to ensure they conform to FPL procedures and requires Bechtel to update them when necessary.

3.3.6 EPC CONTRACT OVERSIGHT

FPL and Bechtel both are responsible for managing the Engineering, Procurement, and Construction (EPC) contract for the duration of the St. Lucie and Turkey Point Upstate Projects. This means that FPL and Bechtel Project Director/Managers resolve any matters relating to EPC contracts. The Contract Change Control Process for documenting contract scope, schedule, and cost changes is documented in each site's EPC contract.

Any changes to the EPC contract scope are handled through project scope change requests or negotiated contract revisions. Change requests are submitted to the FPL Site Project Managers by Bechtel. These change requests are reviewed and vetted by the site managers and the Site Director for approval or denial. Approved project scope change requests become part of the increased scope documents for the contract. Contract revisions also revise major project scope, contract provisions, and revised conditions for the project.

Bechtel EPC contracts for the St. Lucie and Turkey Point uprates are valued at approximately [REDACTED]. These two contracts represent [REDACTED] percent of the [REDACTED] total value of EPU project contracts. The combined EPC contract expenditures in 2011 were [REDACTED] million. A portion of the increased EPC contract costs reflect increased project scope identified through more refined engineering of design modifications, regulatory changes and delays to licensing, and the increase in construction being implemented.

FPL states, and monthly performance reports confirm, that Bechtel has been slow to meet scheduled engineering work timeframes associated with outage modifications, which only exacerbates the issue of increased costs. Bechtel's inability to meet project dates has impacted outage scope, length, and schedule. FPL required Bechtel to add additional contractor resources in 2011 to improve the quality and timeliness of outage engineering modification packages. Bechtel's estimated end of contract costs for the project showed that considerable additional costs are forecast for the EPU project. FPL continues to negotiate with Bechtel to reduce those estimated costs.

NRC LARs have impacted EPC project costs through creating delays in outage schedule timing and length. Regulatory changes impact the EPC contractor by adding project scope to meet NRC license requirements and LAR approval schedules. Additional modifications to the uprate scope require more engineering and construction resources and further increase EPC time and resource costs.

4.0 CONCLUSIONS

4.1 NEW CONSTRUCTION, TURKEY POINT 6&7

FPL states that it remains committed to pursuing the option to build two new AP1000 nuclear reactors, Turkey Point Units 6&7, and continues to use a deliberate and incremental project management approach focused on licensing. Licensing remains the critical path. Achieving COLA approval is FPL's primary near term focus.

The new nuclear project timeline endpoints remain unchanged from a year ago. An NRC review of FPL's COLA milestone schedule added 11 months to the FSER completion date and 16 months to the FEIS completion date. The same study, however, targeted completion of the COLA process five months earlier than FPL's current project schedule. Due to the shifts in the FSER and FEIS completion dates, FPL reevaluated possible downstream schedule turbulence. FPL believes further delay is possible, but that the completion of Unit 6 in 2021 and Unit 7 in 2022 remains achievable. Start-up for each unit follows a year later, in 2022 and 2023 respectively.

The Turkey Point 6&7 project cost estimate range remains unchanged from last year. The low end of the range is \$12.85 billion and the high is \$18.75 billion. FPL states that its feasibility analysis shows the project is solidly cost-effective in five of seven scenarios, one fewer than last year's feasibility study.

Total pre-construction expenditures for 2011 totaled \$23.2 million, \$14.8 million below estimates. The variance stems from lower than anticipated costs and shifting some tasks to later project phases.

The Turkey Point 6&7 COLA was submitted to the Nuclear Regulatory Commission (NRC) in June 2009 and continues to move through the review and approval process. The current FPL project timeline predicts approval by June 2014.

At the federal level during 2011, FPL continued to respond to NRC requests for additional information (RAI) and updated their COLA with Revision 3. The NRC approval review is underway but in mid-May 2012, the NRC identified two significant issues impacting its ability to complete the COLA safety and environmental reviews. The agency disputed FPL analyses for (1) geology, seismology, and geotechnical engineering and (2) the alternative sites. The first disputed area impacts the COLA safety review and the second affects the environmental review. The NRC cited the analyses as unclear, incomplete, or unsupported by the references provided. The NRC will continue its COLA evaluation in all other areas, but review of these two segments is halted until satisfactory revisions are submitted. The NRC will then publish a new COLA review schedule. The NRC also requested that FPL conduct an internal audit of quality assurance, informing the NRC of any findings and corrective actions. Turkey Point 6&7 project schedule and cost impacts are unknown at this point.

At the state level, Site Certification Application (SCA) received a declaration of completeness and is currently moving through the review process. Local permitting is taking longer than expected. Uncertainty over when regulatory approvals will be received exists and staff believes some additional schedule shift may occur.

Based on the current project schedule, FPL believes that a comprehensive construction contract will be awarded no later than November 2014. Whether it will be an Engineering, Procurement, and Construction contract with a single vendor, or the Engineering and Procurement portion with one vendor and the Construction portion of the contract with a separate vendor is undecided. FPL has not engaged in any preliminary discussions and no talks are currently scheduled. Staff believes the window of opportunity is still relatively distant but should be executed by November 2014 to avoid negatively impacting project schedule.

During 2011 and into 2012, FPL extended its long lead forging agreement with Westinghouse. As each expiration date approached, the companies agreed upon a new extension with terms and conditions unchanged. The current extension expires in October 2012 and FPL states that it intends to seek another extension. Forfeiture by FPL could cost the company up to \$10.8 million in lost reservation fees. Staff believes that FPL should negotiate a binding agreement no later than 2015 to avoid in-service date slippage.

The bulk of project execution, construction, and expenditures lie beyond 2014. The overall project schedule remains unchanged, with the Turkey Point 6&7 in-service dates still targeted for 2022 and 2023, respectively.

FPL states that to date there has been no regulatory impact from the Fukushima accident that will affect the pace or schedule of the Turkey Point 6&7 COLA. However, the company states that it is reasonable to anticipate that additional regulatory and/or safety requirements may result from lessons learned from Fukushima. Subject matter and potential impacts on new nuclear schedule or costs cannot be predicted.

Staff believes that FPL employs internal controls, risk evaluation, management oversight, and regular reporting requirements that adequately address project schedule, budget, costs, vendor performance, and risks. FPL controls will need to evolve as project requirements change.

4.2 EXTENDED POWER UPRATES

In 2011, the EPU project team continued to prepare License Amendment Requests (LARs), and complete engineering modifications. EPU project scope also increased, due to the completion of more refined engineering design packages and design evolution. Detailed engineering provided greater certainty to work scope and costs. As project scope was modified, cost and schedule changes were adjusted.

FPL experienced additional LAR license engineering and support costs, from changing NRC requirements and the project design modifications required by them. Construction and implementation costs also increased, as final designs were implemented and outages were completed.

According to FPL, EPU project management began evaluating whether to reschedule the remaining outages in March 2011, and finalized a revised schedule by June. FPSC Audit Staff's July 2011 report expressed concern about potential schedule shift and delays caused by longer and more complex second outages and added LAR engineering costs. Shortly after publication of staff's 2011 report, FPL adjusted the remaining outage dates and durations. Due

to the adjustments, the uprate project completion was rescheduled from late January to March 2013.

In May 2012, FPL again revised their non-binding cost estimate upward. According to FPL, the revision was based on more refined data from Bechtel, detailed design engineering, first outage experience, and greater project certainty. FPL now believes the final EPU cost will be in a range from \$2.95 billion and \$3.15 billion. This is an increase of \$632 million (27 percent) over the low end and \$671 million (27 percent) over the high end of the 2011 estimate range.

Compared to the initial Need Determination estimate of \$1.8 billion, the high end of the new estimate range is approximately \$1.35 billion greater (75 percent). With engineering modification packages now nearly complete, FPL believes far greater cost certainty exists and further increases are less likely.

FPL asserts that although project scope increased, design engineering remained behind schedule, estimated project completion costs increased, and NRC licensing delays occurred, five of eight outages have been completed to-date and approximately 53 MWe of the total 490 MWe estimated increase has been achieved. The uprate project currently remains on schedule for completion in 1Q 2013.

FPL's annual feasibility study shows the project is viable in six of seven scenarios. The seventh scenario assumes that either environmental compliance costs, or both environmental compliance and natural gas costs, remain low for at least 30 years.

During 2011, FPL also experienced a work stoppage event that created project delays and increased costs. Staff believes that the February 2011 work stoppage at St. Lucie Unit 2 was caused by known and knowable risks that were not recognized or mitigated by the vendor or FPL. Staff believes FPL's cost of approximately \$3.5 million was avoidable and the result of control failures, specifically ineffective tool accountability, lack of oversight, and inadequate training. Audit staff recommends that the Commission disallow FPL cost recovery of \$3.5 million.

With the serious exception of the work stoppage at St. Lucie 2, staff believes FPL has in place and employs an adequate system of EPU project controls, risk evaluation, and management oversight.

to the project. The update project completion was rescheduled from late January to March 2013.

In May 2012, FPL again revised their non-binding cost estimate upward. According to FPL, the revision was based on more refined data from the detailed design and engineering phase. FPL now believes the final EPU cost will be in a range from \$2.95 billion and \$3.15 billion. This is an increase of \$0.12 million (2.7 percent) over the low end and \$0.1 million (2.1 percent) over the high end of the 2011 estimate range.

Compared to the initial Need Determination estimate of \$1.8 billion, the high end of the new estimate range is approximately \$1.35 billion greater (75 percent). With engineering modification packages now nearly complete, FPL believes far greater cost certainty exists and further increases are less likely.

FPL asserts that although project scope increased, design engineering remained behind schedule, estimated project completion costs increased, and 1150 working days occurred five of eight outages have been completed to date and approximately 55 MW of the total 480 MW estimated increase has been achieved. The update project currently remains on schedule for completion in 2013.

FPL's annual feasibility study shows the project is viable in six of seven scenarios. The seventh scenario assumes that certain environmental compliance costs, in both environmental compliance and natural gas cost, remain low for at least 30 years.

During 2011, FPL also experienced a work stoppage event that created project delays and increased costs. Staff believe that the February 2011 work stoppage at St. Lucie Unit 2 was caused by known and knowable risks that were not recognized or mitigated by the vendor or FPL. Staff believe FPL's cost of approximately \$8.5 million was avoidable and the result of control failures, specifically ineffective root-cause analysis, lack of oversight, and inadequate testing. Audit staff recommends that the Commission disallow FPL cost recovery of \$3.5 million.

With the serious exception of the work stoppage at St. Lucie 2, staff believe FPL has in place and employs an adequate system of EPU project controls, risk evaluation, and management oversight.