

**BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**

**DOCKET NO. 130009-EI  
FLORIDA POWER & LIGHT COMPANY**

**MAY 1, 2013**

**IN RE: NUCLEAR POWER PLANT COST RECOVERY  
FOR THE YEAR ENDING  
DECEMBER 2014**

**TESTIMONY & EXHIBITS OF:**

**TERRY O. JONES**

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1                   **BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**

2                   **FLORIDA POWER & LIGHT COMPANY**

3                   **DIRECT TESTIMONY OF TERRY O. JONES**

4                   **DOCKET NO. 130009-EI**

5                   **May 1, 2013**

6  
7           **Q.    Please state your name and business address.**

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

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

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

13          **Q.    Have you previously filed testimony in this docket?**

14          A.    Yes. I filed testimony on March 1, 2013, discussing the Extended Power  
15          Uprate (EPU or Uprate) project activities and costs in 2012. The purpose of  
16          this testimony is to provide information on FPL's EPU project activities and  
17          costs in 2013. There will be no EPU costs in 2014.

18          **Q.    What is the current status of the EPU project?**

19          A.    The status of the EPU project can be summarized as follows:

- 20                   • The uprates of the reactors are complete;
- 21                   • The project is in the close-out phase; and
- 22                   • The project met its goal of providing about 400 megawatts (MWe) of  
23                   fuel diverse generation for FPL's customers by 2012, and is exceeding

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the goal by providing a total of at least 512 MWe in 2013. This is shown on Exhibit TOJ-14.

**Q. Has the EPU project been recognized for its performance?**

**A.** Yes. On March 21, 2013, the Nuclear Energy Institute (NEI) notified NextEra Energy, Inc. that the Nuclear Fleet EPU Project Team will receive a 2013 Top Industry Practice (TIP) Award. This is a considerable honor for the thousands of people who have worked hard on the project here in Florida, because the TIP Awards Program recognizes the very best and most innovative work in the nuclear industry. Project aspects evaluated for the TIP award include nuclear safety, cost saving impact, innovation, productivity, and transferability of these various processes to other projects.

The NEI is the policy organization of the nuclear energy and technologies industry. The NEI fosters and encourages the continued safe utilization and development of nuclear energy to meet the nation's energy, environmental, and economic goals and supports the nuclear energy industry in both national and global policy-making processes. NextEra Energy, Inc. is one of 350 members in 15 countries.

1 **PROJECT OVERVIEW**

2

3 **Q. How is the EPU project benefiting customers?**

4 A. The EPU project substantially improves FPL's electric system fuel diversity,  
5 electric reliability and environmental footprint, while saving billions of dollars  
6 in fossil fuel costs. The EPU project:

- 7
- 8 • Provides estimated fossil fuel cost savings for FPL's customers of  
9 more than \$100 million in the first full year of operation;
  - 10 • Provides estimated fossil fuel cost savings for FPL's customers of  
11 about \$3.4 billion over the life of the plants;
  - 12 • Increases FPL's nuclear generating capacity by about 17%;
  - 13 • Reduces FPL's reliance on natural gas by more than 4% beginning in  
14 the first full year of operation, providing an important hedge against  
15 volatile natural gas prices;
  - 16 • Adds to Florida's energy security because it does not depend on fuel  
17 delivery through Florida's only two natural gas pipelines;
  - 18 • Provides a total amount of energy that is equivalent to the usage of  
19 approximately 326,000 residential customer households each year;
  - 20 • Reduces annual fossil fuel usage by the equivalent of almost 7 million  
21 barrels of oil or 43 million mmBTU of natural gas annually;
  - 22 • Reduces CO<sub>2</sub> emissions generated in making electricity to serve FPL's  
customers by 33 million tons over the life of the plants; and

- 1                   • Enhances grid stability and electric service reliability by making more  
2                   electricity close to where more electricity is used – in Southeast  
3                   Florida.

4                   The quantifications of these benefits are set forth in FPL Witness Dr. Sim’s  
5                   testimony and Exhibit SRS-9. These benefits are also presented in my Exhibit  
6                   TOJ-16.

7                   **Q. Please expand on the final benefit you listed, the enhancement of grid  
8                   stability and electric service reliability.**

9                   A. The EPU project will contribute to grid stability by producing power where it  
10                  is consumed. Growth in electrical load in the Southeast area within FPL’s  
11                  service area means that FPL must either add new generation to that area or  
12                  rely on transmission lines to import the needed energy. All else equal, adding  
13                  locally-sited generation contributes to grid stability and is more reliable than  
14                  relying on transmission lines that cover long distances and are susceptible to  
15                  interferences from storms or other issues beyond FPL’s control that could  
16                  result in outages. When generation is sited closer to where it is consumed,  
17                  fewer people will be affected when storms take out transmission lines.  
18                  Additionally, increasing generation at the Turkey Point site reduces system  
19                  transmission line losses, meaning more power is available for customers to  
20                  use. The EPU project’s impact on the Southeastern area is presented in  
21                  Exhibit TOJ-17.

22                 **Q. Are there additional benefits being provided by the EPU project?**

1       A.     Yes. FPL's long-term investment in the EPU project has been implemented  
2             by employing thousands of people at a time when jobs matter a great deal. As  
3             summarized in Exhibit TOJ-18, EPU project staffing ramped up beginning in  
4             2008 and reached a peak in 2012. Project staffing is now ramping down  
5             through 2013 and project completion. This extensive workforce included  
6             thousands of professional, technical, and administrative workers, of which  
7             approximately 50% were Floridians. Employment of these workers  
8             represented a large portion of FPL's total actual investment in 2012 and 2013.

9       **Q.     How is the EPU project delivering economic value for FPL's customers?**

10       A.     The EPU project provides customers with exceptional value. Even at this  
11             time of historically low natural gas and environmental cost forecasts our  
12             current economic snapshot shows the EPU project is expected to save  
13             customers billions of dollars in fuel costs over decades. If natural gas and  
14             environmental costs increase more than projected over the next 20 years,  
15             customers would save even more money due to the EPU project. The EPU  
16             project provides a valuable hedge against future natural gas and environmental  
17             cost increases as part of FPL's overall portfolio of resources used to provide  
18             economical and reliable electricity for customers.

19  
20             The EPU project's benefits have been achieved consistent with the Florida  
21             Legislature's intentions in encouraging investment in additional nuclear  
22             power, pursuant to the Nuclear Cost Recovery law passed in 2006. In fact, all  
23             these benefits would not have been possible without the Nuclear Cost

1 Recovery law and rule. Exhibit TOJ-19 shows the policy considerations that  
2 drove the Nuclear Cost Recovery law and the delivery of the EPU nuclear  
3 MWe, consistent with those policy considerations, just six years later.

4 **Q. Please describe the level of effort that the EPU project required.**

5 A. The EPU project and the effort that it required were enormous. FPL and its  
6 contractors employed thousands of qualified people to complete the largest  
7 U.S. nuclear project since new plants were constructed decades ago. Including  
8 the engineering design process, the EPU work required an augmented staff of  
9 approximately 4,000 additional people at its peak and over 58,000  
10 individually planned, scheduled, and monitored activities supporting  
11 approximately 10,600 work packages. The EPU project also required more  
12 than 15,500 pipe welds, 38,000 feet of electric wiring conduit, 288,500 feet of  
13 electrical cable, and 34,500 electrical terminations.

14 **Q. Did FPL encounter challenges on the project?**

15 A. Yes. The EPU project posed extraordinary managerial and technical  
16 challenges. FPL's EPU project represents one of the largest and most  
17 complex nuclear design, engineering, and construction projects undertaken in  
18 the nuclear industry since the construction of the previous generation of U.S.  
19 nuclear plants. All of the EPU work was conducted on four operating nuclear  
20 units with live steam, electrical, and nuclear fuel equipment and systems. FPL  
21 efficiently managed all of this work in a way that maximized the benefits of  
22 the EPU project for FPL's customers and in a manner that maintained nuclear  
23 and industrial safety.

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Each of the four major EPU outages completed successfully in 2012 and 2013 experienced engineering design scope growth and construction complexities, mainly due to the fact that many of the activities performed were first time implementation evolutions. Examples of the scope growth and complexities encountered were detailed in my Exhibit TOJ-7, attached to my March 1, 2013 testimony. However, the experience and knowledge gained from the St. Lucie Unit 1 EPU outage was applied to the St. Lucie Unit 2 EPU outage, which resulted in the Unit 2 outage being completed 25% faster and at an 18% lower cost than the Unit 1 outage. Similarly, the experience and knowledge gained from the Turkey Point Unit 3 EPU outage was applied to the Turkey Point Unit 4 EPU outage which resulted in the Unit 4 outage being completed 15% faster and at a 21% lower cost than the Unit 3 outage. Such reductions in time and money, which were achieved at both FPL nuclear plants during the EPU project, are clear demonstrations of FPL's ability to capture and implement opportunities for improvement, an ability which is also considered by energy and construction industry professionals to be a hallmark of strong project management.

**Q. Please describe the nuclear and industrial safety performance of the EPU project.**

A. Nuclear and industrial safety is central to everything we have done on the EPU project. Nuclear safety was successfully ensured at every step. With the project now in its wrap-up phase, FPL is able to provide overall project safety



1 information, which is shown in Exhibit TOJ-20. FPL, its workers and  
2 contractors do not take for granted that FPL's safety record on the EPU  
3 project each year and in total was far better than both the 2011 utility industry  
4 average and the 2011 construction industry average (the most recent year for  
5 which this industry data is available). Excellent project safety is another  
6 factor considered by utility and construction industry professionals to be a  
7 hallmark of strong project management.

### 8 9 **2013 PROJECT ACTIVITIES**

10  
11 **Q. Please discuss the completion of the Turkey Point Unit 4 EPU outage in**  
12 **2013.**

13 A. The final EPU outage at Turkey Point Unit 4 was successfully completed in  
14 April, 2013 with an increased capacity of approximately 116 MWe of  
15 additional nuclear power for FPL's customers. In total, the Turkey Point Unit  
16 4 outage required the following:

- 17 • Augmented staff of 2,854 at its peak;
- 18 • Approximately 15,000 individually planned, scheduled, and monitored  
19 activities supporting 3,400 work packages; and
- 20 • Over 3 million man-hours of work.

21 A diagram of this outage work is attached as Exhibit TOJ-21.

22 **Q. Are EPU systems going into service in 2013?**

1 A. Yes. Exhibit TOJ-22 lists the EPU project systems and components that have  
2 been or will be placed into service in 2013.

3 **Q. What types of activities remain in 2013?**

4 A. During the remainder of 2013:

- 5 • Final adjustments to components and systems will be completed.  
6 These activities include but are not limited to adjustments to process  
7 instrumentation loops to optimize performance, enhancements to the  
8 spent fuel pool handling machines, and ensuring necessary spare parts  
9 are available for the newly installed EPU components;
- 10 • Engineering design documents will be updated in accordance with  
11 regulatory requirements and modification packages will be closed;
- 12 • EPU will remove project support structures and facilities and restore  
13 site conditions. This includes the removal from the site of temporary  
14 structures used by the EPU project, restoration of permanent structures  
15 modified for EPU project use, and removal of fabrication workshops  
16 used for the EPU project;
- 17 • Salvage recovery will be completed;
- 18 • Vendors will be demobilized;
- 19 • EPU project contracts will be closed; and
- 20 • The project will be de-staffed in accordance with the project close-out  
21 plans.

22 Exhibit TOJ-23 is a list of EPU project work activities.

1       **Q.    Please describe the cost recovery process with respect to FPL's 2013 EPU**  
2       **project costs.**

3       A.    FPL expects its total 2013 EPU costs to be about \$243 million.  This  
4       investment will be recovered through base rates over the decades that the  
5       Uprate project will provide service.  In comparison, consistent with the  
6       Nuclear Cost Recovery statute and rule, FPL is requesting only the recovery  
7       of 2013 carrying charges, O&M expenses, and partial-year revenue  
8       requirements of approximately \$11 million for the EPU project through the  
9       Nuclear Cost Recovery Clause (NCRC) in 2014.

10      **Q.    How do FPL's 2013 EPU costs contribute to FPL's NCRC request for**  
11      **2013?**

12      A.    The total Company request of approximately \$28 million in 2014 includes  
13      both EPU cost recovery and Turkey Point 6 & 7 cost recovery, as described  
14      by FPL Witness Powers.  This equates to a residential customer monthly bill  
15      impact of \$0.30 per 1,000 kWh.  This is a reduction of more than 80% of  
16      FPL's currently authorized nuclear cost recovery amount, and lower by \$1.35  
17      per 1,000 kWh.  Exhibit TOJ-24 shows FPL's total investment versus the  
18      clause recovery amount and Exhibit TOJ-25 shows how small the NCRC  
19      component is of a typical residential customer's overall bill.

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1 A. The process to revise FPL's non-binding cost estimate began with an  
2 accounting of actual project costs as of the end of February 2013. Then, a  
3 forecast of costs needed to complete the Turkey Point Unit 4 EPU outage and  
4 2013 close-out activities was developed in March and April 2013. These  
5 forecasted close-out costs were based on the experience already gained  
6 through St. Lucie close-out activities that are ongoing.

7 **Q. Does the revised non-binding cost estimate reflect any concessions from**  
8 **vendors?**

9 A. Yes. The 2012 price reductions and concessions from FPL's major EPU  
10 vendors amounted to \$63 million, and were discussed in my March 1, 2013  
11 testimony. The price reductions and concessions from the project's major  
12 suppliers provided additional offsets as work scope increased in 2012 and  
13 2013, for a total reduction of approximately \$77 million.

14 **Q. Why is the EPU non-binding cost estimate higher than last year's non-**  
15 **binding cost estimate?**

16 A. This estimate reflects the increased scope that was necessary to support NRC  
17 regulatory requirements, design evolution, construction, and implementation  
18 logistics which were required in 2012 and discussed in detail in my March 1,  
19 2013 testimony and Exhibit TOJ-7. Additionally, the estimate reflects some  
20 variances to FPL's projected 2013 costs for which FPL is providing  
21 actual/estimated information at this time. FPL's projected 2013 costs were  
22 developed in early 2012, and accordingly, did not reflect the vast amount of  
23 information and lessons learned in the execution of the uprate work during

1 2012. Ultimately it is the human effort required to complete the project and  
2 the number of people that are required to be employed for that effort that  
3 drives the project cost. The EPU project required many more activities, which  
4 required more people, and a larger organization to manage all the work.

5  
6 **PROJECT MANAGEMENT INTERNAL CONTROLS**

7  
8 **Q. Please describe the project management internal controls that FPL has in**  
9 **place to ensure that the project is effectively managed.**

10 A. As described in detail in my March 1, 2013 testimony, FPL has robust project  
11 planning, management, and execution processes in place. FPL utilizes a  
12 variety of mutually reinforcing schedules and cost controls, and draws upon  
13 the expertise provided by employees within the project team, employees  
14 within the separate Nuclear Business Operations group, and executive  
15 management. Those controls continue to be utilized in 2013.

16  
17 One of the key project management tools utilized by the EPU team is the  
18 project Risk Register. Risk matrices, such as EPU's Risk Register, are a  
19 common project management tool. The Risk Register allows for identified  
20 risks – including potential increases to scope – to be logged and assessed in  
21 terms of cost and probability. Resolutions are also tracked in the Risk  
22 Register, which may include avoidance or mitigation of the identified risk, or  
23 incorporation of the particular item within the project scope. Periodic

1 presentations are made to executive management where risks, costs, and  
2 schedules are discussed.

3 **Q. Have there been any changes in the project management system FPL is**  
4 **using to ensure that the 2013 actual/estimated costs are reasonable?**

5 A. Yes. The EPU project management processes are regularly adjusted to  
6 implement and use industry best practices through self-assessment, peer  
7 reviews, independent third party reviews, internal and external audits, and  
8 executive oversight and direction. Additionally, FPL uses change  
9 management plans to move the project into the project close-out. This change  
10 management plan provides the guidance and reporting requirements to close  
11 out the EPU project documents, contracts, asset management and appropriate  
12 turnover to station management.

13

14 **2013 ACTUAL/ESTIMATED CONSTRUCTION**  
15 **ACTIVITIES AND COSTS**

16

17 **Q. Please summarize the activities for which FPL is incurring costs in 2013.**

18 A. In 2013, FPL completed the second major EPU outage at Turkey Point Unit 4,  
19 adding approximately 116 MWe for a total EPU project electrical output  
20 increase of at least 512 MWe. During the remainder of 2013, FPL will be  
21 closing out the EPU project. These activities include ensuring equipment and  
22 systems are operating efficiently and as designed, updating the design  
23 calculations and documents and closing the engineering design packages,

1 stocking spare parts for the newly installed equipment, and completion of the  
2 salvage recovery portion of the project, and contract close-out.

3 **Q. Is FPL projecting any 2014 EPU costs?**

4 A. No. The EPU project will be complete in 2013.

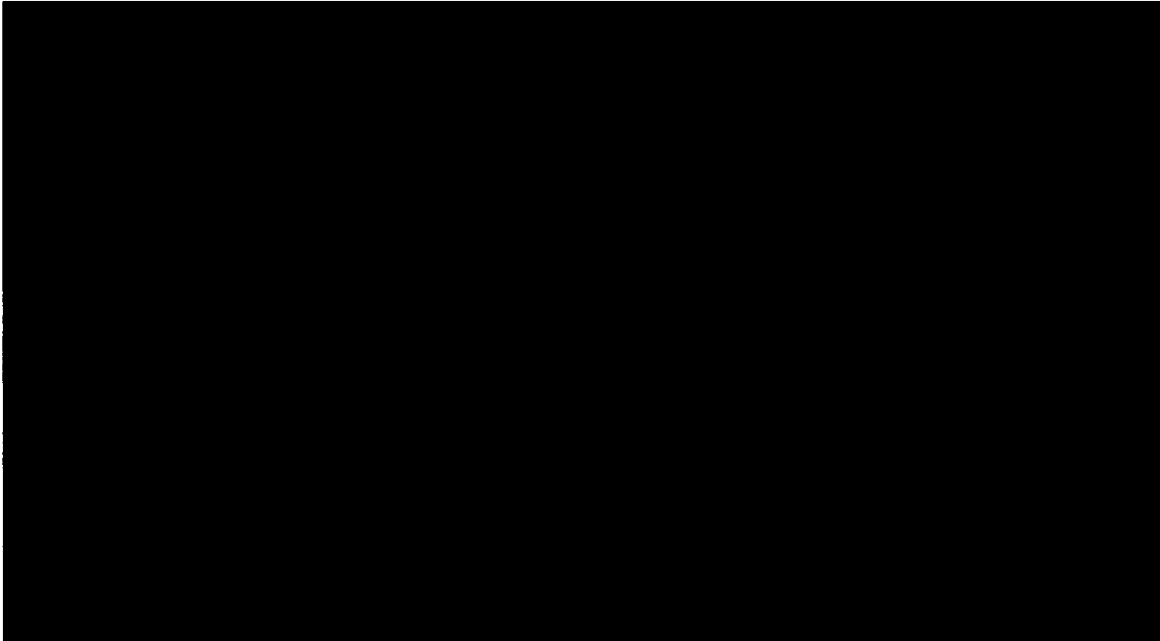
5 **Q. Please describe how FPL developed its 2013 actual/estimated costs.**

6 A. Actual 2013 costs come from a monthly download of project charges from the  
7 FPL accounting system. These charges are for materials and services from  
8 multiple vendors and are applied to the total project cost on an ongoing basis.  
9 Each charge is applied using a coding structure which defines which of the  
10 units the charges apply to. For project management purposes, the charges are  
11 subsequently broken down by major vendor or appropriate cost control  
12 grouping which ultimately supports project management analysis and  
13 forecasting.

14  
15 The estimated project costs were developed from Project Controls forecasts  
16 derived from the best available information for all known project activities in  
17 2013. Each major labor-related services vendor forecast is based upon the  
18 original awarded value and all approved changes. Added to this, where  
19 applicable, would be an estimate of any known pending changes to arrive at a  
20 best forecast at completion for each vendor. Owner engineering and project  
21 management support forecasts were derived from approved detailed staffing  
22 plans. Cash flows were developed for each approved position based on the  
23 expected assignment duration. The large construction related vendor forecasts



1 were based upon previous experience, known scope(s) of work, productivity  
2 factors, and prevailing pertinent wage rates. Cash flow projections for items  
3 identified in the Risk Register were based upon anticipated engineering,  
4 material procurement, and outage implementation time horizons.



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14 **Q. What types of costs does FPL plan to incur for the Uprate project in**  
15 **2013?**

16 A. As indicated in Exhibit TOJ-13, Schedules AE-4 and AE-6, and summarized  
17 in Exhibit TOJ-26, costs are being incurred in the following categories:  
18 Licensing; Engineering & Design; Project Management; Power Block  
19 Engineering, Procurement, Etc.; Non-Power Block Engineering, Procurement,  
20 Etc.; EPU Recoverable O&M; and Transmission Capital. There are no  
21 Permitting costs in 2013. Please note that the dollar values in my testimony  
22 are the estimated EPU resource requirements, and do not include certain

1 accounting adjustments made by FPL Witness Powers, unless noted  
2 otherwise.

3 **Q. Please describe the 2013 activities in the License Application category.**

4 A. For the period ending December 31, 2013, License Application costs are  
5 estimated to be (\$126,960), due to the partial reversal of an accrual posted in  
6 2012.

7 **Q. Please describe the 2013 activities in the Engineering and Design**  
8 **category.**

9 A. For the period ending December 31, 2013, Engineering and Design costs are  
10 estimated to be approximately \$10.6 million. This amount consists primarily  
11 of FPL's engineering and design work in support of review and approval of  
12 the engineered design modification packages prepared for the Turkey Point  
13 Unit 4 EPU outage by Bechtel and other vendors for the EPU Project. This is  
14 approximately \$4.6 million more than projected due to increased scope and  
15 design complexities.

16 **Q. Please describe the 2013 activities in the Project Management category**  
17 **and how those activities help ensure that the Uprate project will be**  
18 **completed on a reasonable schedule and at a reasonable cost.**

19 A. For the period ending December 31, 2013, Project Management costs are  
20 estimated to be approximately \$19.6 million. This category includes FPL and  
21 contractor management personnel at each of the sites and those in the Juno  
22 Beach Office. This work and the associated costs are required to ensure the  
23 Uprate project is managed in an efficient and cost-effective manner. This is

1 approximately \$3.8 million more than projected due to the increase in project  
2 management and oversight of the EPC and other vendors due to scope growth  
3 and the additional resources needed to complete the project.

4 **Q. Please describe the 2013 activities in the Power Block Engineering,**  
5 **Procurement, Etc. category.**

6 A. For the period ending December 31, 2013, Power Block Engineering and  
7 Procurement costs are estimated to be approximately \$202.3 million. This is  
8 approximately \$27.8 million more than projected. The primary drivers  
9 include completing long lead equipment payments that were deferred from  
10 2012 into 2013, increased contractor labor and management costs to complete  
11 the Turkey Point Unit 4 work and increased infrastructure, and close out  
12 activities anticipated for 2012 that continued into 2013. As discussed above,  
13 these EPU activities were much more complex and required more resources  
14 than were anticipated when 2013 costs were projected in early 2012.

15 **Q. Please describe the 2013 activities in the Non-Power Block Engineering,**  
16 **Procurement, Etc. category.**

17 A. For the period ending December 31, 2013, Non-Power Block Engineering  
18 costs are estimated to be \$350,646. This is \$350,646 more than projected due  
19 to simulator work planned for 2012 but completed in 2013, and the restoration  
20 of site conditions.

21 **Q. Please describe the 2013 actual/estimated recoverable O&M costs.**

22 A. Actual/estimated recoverable O&M costs for the EPU project in 2013 are  
23 approximately \$9.8 million. Recoverable O&M primarily consists of costs for

1 performing work activities that do not meet FPL's capitalization criteria and  
2 an estimate of obsolete materials that will be expensed as a result of  
3 modifications completed in 2013. This is approximately \$4.6 million more  
4 than projected due to non-capitalization of system and component inspections  
5 and modifications.

6 **Q. Please describe the 2013 activities in the Transmission category.**

7 A. For the period ending December 31, 2013, Transmission costs are estimated to  
8 be \$74,376. This amount is primarily related to costs associated with the  
9 upgrades to the main transformers and plant yard electrical components. This  
10 is \$175,624 less than projected due to better-than-planned equipment  
11 availability and clearances.

12 **Q. Are the 2013 actual/estimated costs presented in your testimony**  
13 **“separate and apart” from other nuclear plant expenditures?**

14 A. Yes, the 2013 actual/estimated costs presented are “separate and apart” from  
15 other nuclear plant expenditures. The construction costs and associated  
16 carrying charges and recoverable O&M expenses for which FPL is requesting  
17 recovery through this proceeding were caused only by activities necessary for  
18 the EPU, and would not have been incurred otherwise. As explained in my  
19 testimony submitted in this docket on March 1, 2013, through engineering  
20 analyses FPL identified the major components and systems that must be  
21 modified or replaced to safely uprate the units and only those modifications  
22 were included in the EPU project. FPL has continued to carefully follow all

1 of the safeguards in this respect, which the FPSC has previously reviewed and  
2 found to be reasonable and appropriate.

3 **Q. Are FPL's actual/estimated 2013 EPU costs reasonable?**

4 A. Yes. FPL's 2013 expenditures are for successfully completing the final EPU  
5 outage at Turkey Point Unit 4 and for EPU project close-out activities.  
6 Careful vendor oversight, continued use of sub-contracting and competitive  
7 bidding when appropriate, and the application of the robust internal schedule  
8 and cost controls and internal management processes all support a finding that  
9 FPL's actual/estimated 2013 expenditures are reasonable.

10 **Q. Please list the exhibits you are submitting with this testimony.**

11 A. I am sponsoring or co-sponsoring the following exhibits:

- 12 • Exhibit TOJ-13 consists of NFR Schedules, including 2013 AE Schedules,  
13 2014 Projection Schedules and TOR Schedules. These NFR Schedules  
14 contain a table of contents listing the schedules that are sponsored and co-  
15 sponsored by FPL Witness Powers and me, respectively.
- 16 • TOJ-14, EPU MWe
- 17 • TOJ-15, Top Industry Practice Award
- 18 • TOJ-16, 2013 EPU Project Benefits
- 19 • TOJ-17, Southeast Florida Reliability Impact
- 20 • TOJ-18, Workforce Summary
- 21 • TOJ-19, EPU Timeline
- 22 • TOJ-20, EPU Project Safety Performance
- 23 • TOJ-21, Turkey Point Unit 4 EPU Scope

- 1 • TOJ-22, EPU Equipment Placed in Service in 2013
- 2 • TOJ-23, EPU Project Work Activities List
- 3 • TOJ-24, FPL Investment versus Clause Recovery
- 4 • TOJ-25, Nuclear Cost Recovery Bill Impact
- 5 • TOJ-26, Summary of 2013 Extended Power Uprate Construction Costs

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

7 A. Yes.

8

9



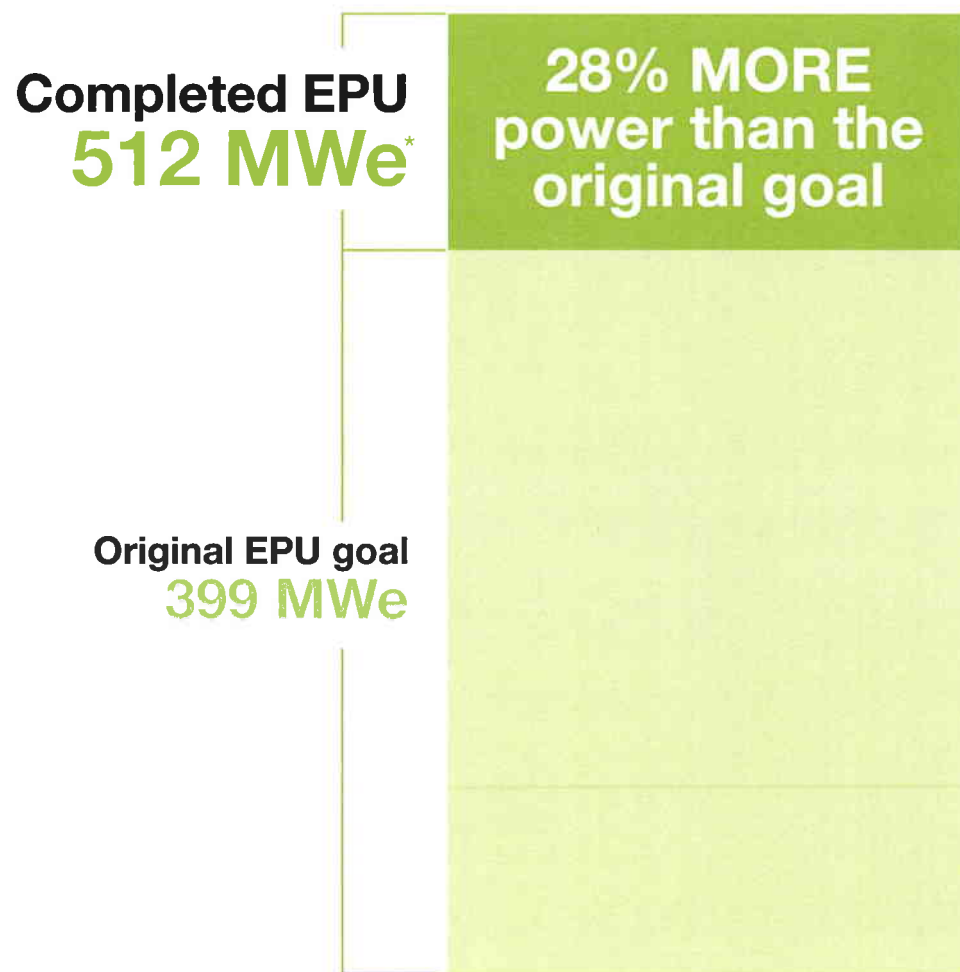
**TOJ-13 is in the Nuclear Filing Requirements Book**





## The Extended Power Uprate Project is Complete

FPL has completed the largest project of its kind in the nation



Enough power  
for an estimated  
**326,000**  
Florida households

\* At least 512 MWe, pending performance testing



## An Award-Winning Project

The Nuclear Energy Institute is awarding the EPU project team a 2013 Top Industry Practice Award



The Top Industry Practice (TIP) Awards Program recognizes the very best and most innovative work in the nuclear industry. Project aspects evaluated for the TIP awards include nuclear safety, cost saving impact, innovation and productivity.



## EPU Project Benefits at a Glance

Projected first year fossil fuel savings for customers

**\$102 million**

Projected lifetime fossil fuel savings for customers

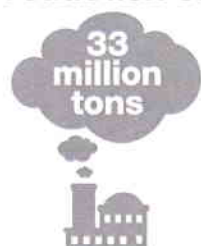
**\$3.4 billion**



Enough energy to power  
**326,000**  
customer homes  
without burning coal,  
natural gas or foreign oil

**Fewer greenhouse gas emissions**

CO<sub>2</sub> reduction of



U.S. EPA annual equivalent of removing more than



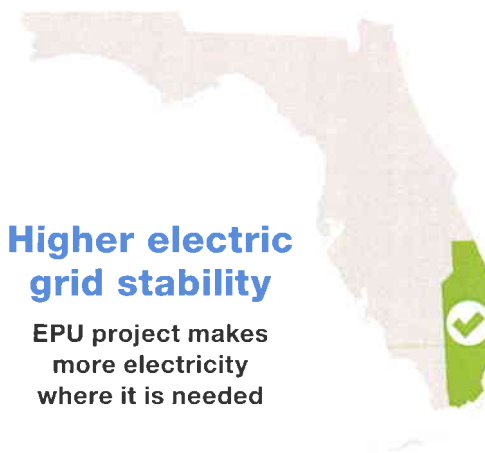
**Decreased reliance on natural gas and foreign oil**

Annual fossil fuel reduction of the equivalent of almost  
**7 million**  
barrels of oil  
or  
**43 million**  
mmBTU of  
natural gas annually

FPL's reliance on natural gas reduced by more than  
**4%**  
beginning in the first full year of operation, providing an important hedge against volatile natural gas prices

**Higher electric grid stability**

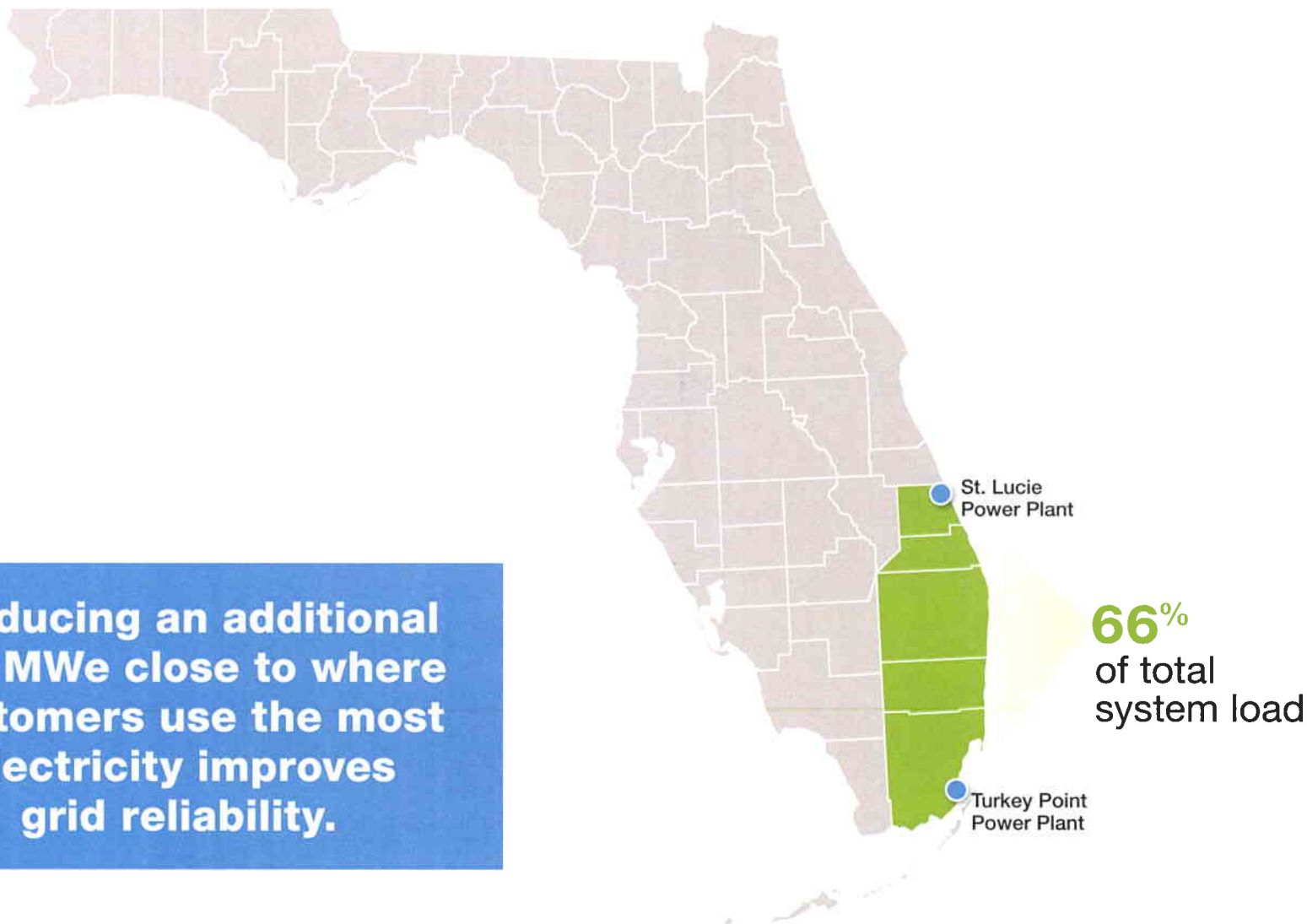
EPU project makes more electricity where it is needed





## The EPU Investment Improves Grid Reliability

Miami-Dade, Broward, Palm Beach, Martin and St. Lucie counties account for 66% of total FPL system load

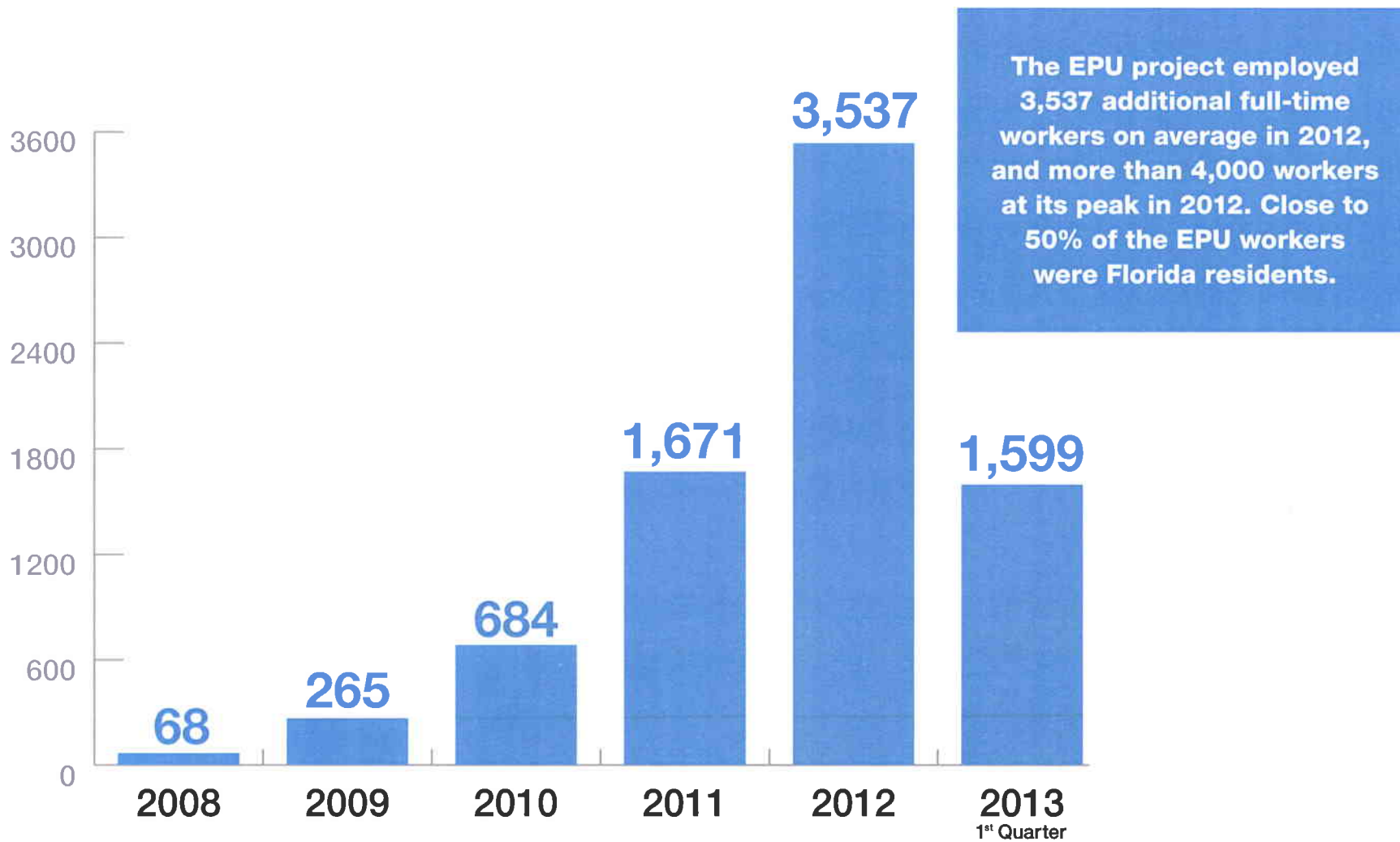


**Producing an additional 512 MWe close to where customers use the most electricity improves grid reliability.**





## EPU Investment Employed Thousands of People in Florida

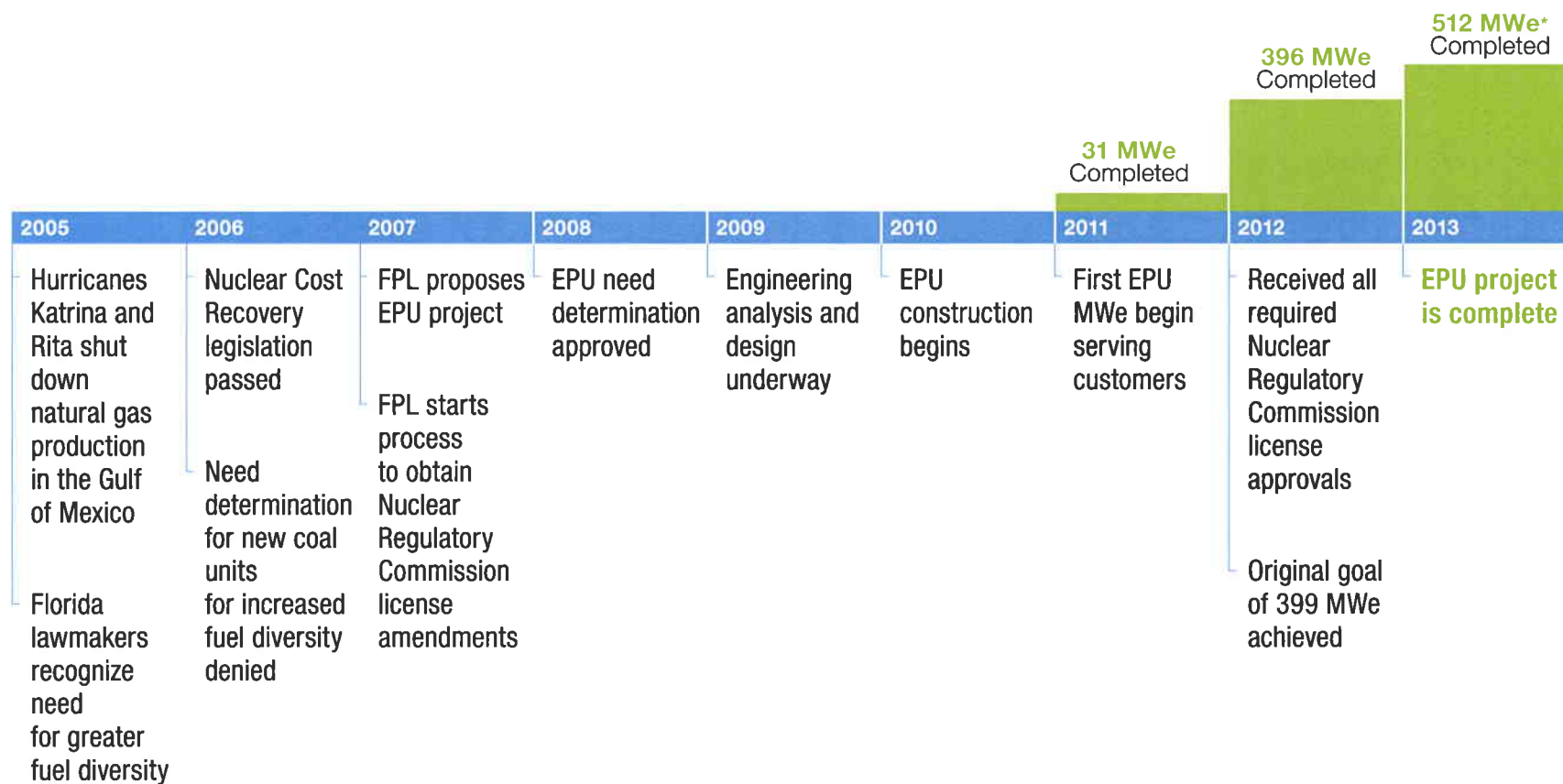


2008-2012 figures above represent average annual number of workers



## New Nuclear Energy – Delivered On Time

After legislation was passed in 2006, FPL worked to deliver on its commitment to increase fuel diverse nuclear generation in the state

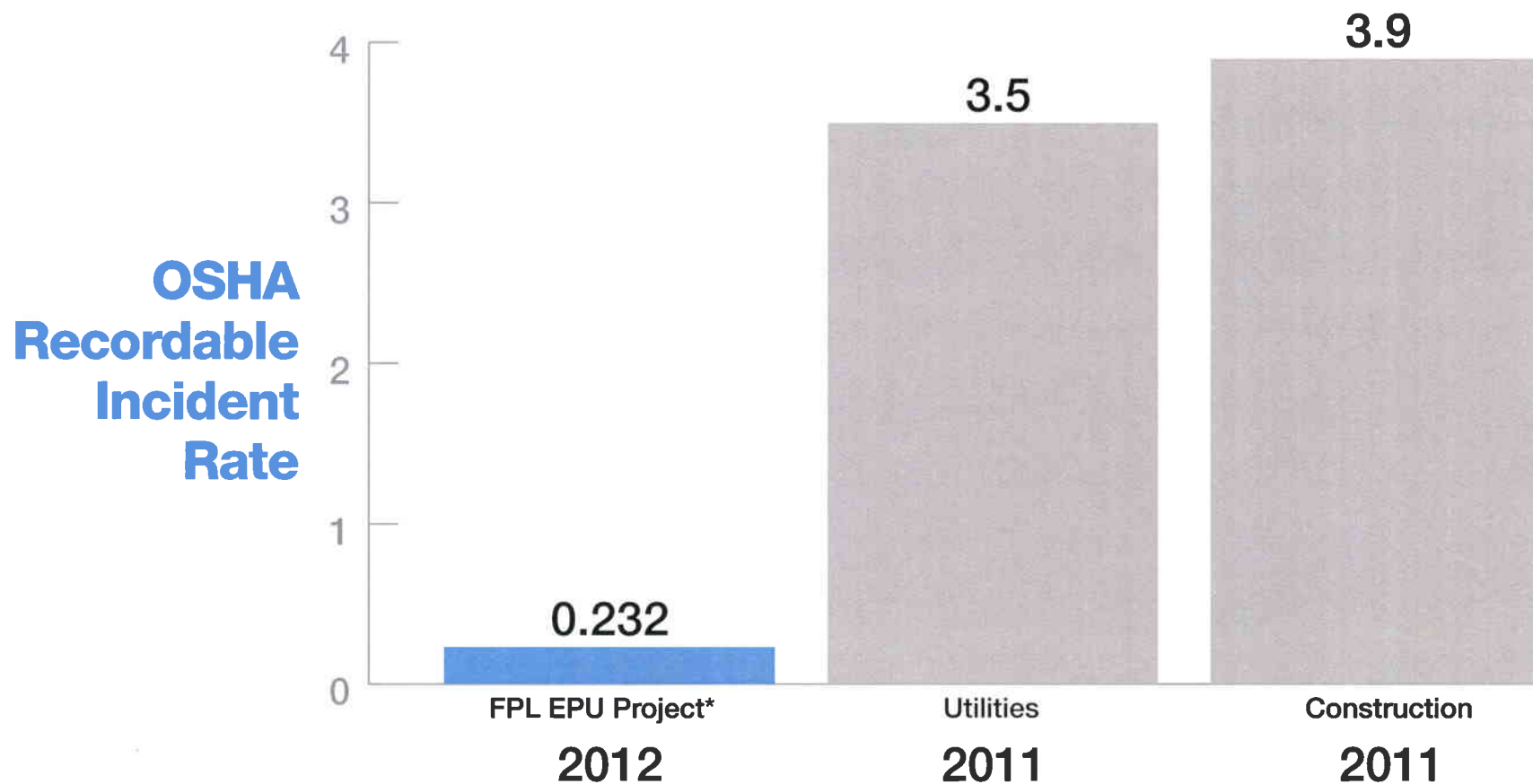


\* At least 512 MWe, pending performance testing



## Excellent EPU Project Safety Record

Excellent project safety is considered by utility and construction professionals to be a hallmark of strong project management



*Incident rate may be computed from the following formula: number of injuries and illnesses X 200,000 / employee hours worked = incident rate*

*Source: U.S. Bureau of Labor Statistics, U.S. Department of Labor, October 2012*

\* FPL EPU project numbers include contractors









**EQUIPMENT TO BE PLACED IN SERVICE IN 2013**

Item No.	Equipment Description	Estimated In Service Date
1	Transmission - Turkey Point Digital Fault Recorder Monitoring	January 2013
2	Transmission - Turkey Point Lightning Protection	January 2013
3	Transmission - Turkey Point String Bus Spacers	January 2013
4	Nuclear - St. Lucie Simulator Mod Phase 3	March 2013
5	Nuclear- Turkey Point Extended Power Uprate Unit 4 Cycle 27 <ul style="list-style-type: none"> <li>• High Pressure Turbine Rotor Replacement</li> <li>• Generator Upgrade - Rotor Replacement &amp; Stator Rewind</li> <li>• Generator Current Transformers and Bushings Replacement</li> <li>• Generator Hydrogen Coolers Upgrade</li> <li>• Generator Exciter Cooler Upgrade</li> <li>• Heater Drain Valve Replacement</li> <li>• Spent Fuel Cooling Heat Exchanger Replacement</li> <li>• Main Steam Isolation Valve Modification</li> <li>• Moisture Separator Reheater Replacement</li> <li>• Turbine Plant Cooling Water Heat Exchanger Replacement</li> <li>• Main Condenser Replacement</li> <li>• Normal Containment Cooling Modification</li> <li>• Condensate Pump and Motor Replacement</li> <li>• Feedwater Heater # 5 &amp; 6 Replacement</li> </ul>	April 2013
6	Nuclear - Turkey Point Unit 4 Cycle 27 Turbine Valve	April 2013
7	Nuclear - St. Lucie Fabric Building B Restoration	April 2013
8	Nuclear - St. Lucie Fabric Building F Restoration	April 2013
9	Nuclear - St. Lucie Unit 1 Spent Fuel Handling Machine	June 2013
10	Nuclear - St. Lucie Unit 2 Spent Fuel Handling Machine	June 2013
11	Nuclear - Turkey Point Spare Turbine Valve Removed from Unit 4-27	September 2013



### Extended Power Uprate (EPU) Project Work Activities

<b>Turkey Point Unit 4 2012/2013 Outage</b>	<b>Description</b>	<b>Final Contract</b>	<b>Scoping Document</b>
Sump pH Control, Install Sodium Tetraborate (NaTB) Baskets	Alternative Source Term (AST) method requires pH greater than 7.0. The current pH control system is not sufficient at uprate conditions	S&L PO-79551	AST LAR Engineering
Switchyard Modifications	Increased electrical output requires modification to switchyard equipment to support the uprate conditions	T & S	Generation Interconnection Service and Network Resource Interconnection Service System Impact Study. 11/25/08
Feedwater Heater Drains Digital Modifications	Instrumentation to provide control of the feedwater heater control and dump valves in the uprate conditions	Bechtel PO-117809	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant BOP EPU Scoping Study, March 2008
Turbine Digital Controls Modification	Enhanced controls for the new turbines. Current design is not sufficient for the new turbine configuration in the uprate conditions	Bechtel PO-117809	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant BOP EPU Scoping Study, March 2008
Leading Edge Flow Meter (LEFM) Digital (Instrumentation) Upgrade Tie In	Precision flow measurement instrument and instrumentation provides for increased certainty of operating parameters supporting uprate conditions	Bechtel PO-117809	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant BOP EPU Scoping Study, March 2008
BOP Instrumentation Modifications	Increased pressures and flows require modifications and adjustments to process instrumentation in the uprate conditions	Ames PO-2302164	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant BOP EPU Scoping Study, March 2008

### Extended Power Uprate (EPU) Project Work Activities

<b>Turkey Point Unit 4 2012/2013 Outage</b>	<b>Description</b>	<b>Final Contract</b>	<b>Scoping Document</b>
Fast Acting Feedwater Isolation Valves Addition	Increased feedwater flow and pressure requires modifications to support uprate conditions	Bechtel PO-117809	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant BOP EPU Scoping Study, March 2008
Feedwater Regulating Valves Trim Upgrade Modification	Larger actuators and valve internals are required to operate the feedwater regulating valves in the increased uprate conditions	Bechtel PO-117809	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant BOP EPU Scoping Study, March 2008
Heater Drain Valves Replacement (Remaining)	Larger valves are needed to control the condensate flow in the uprate conditions	Bechtel PO-117809	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant BOP EPU Scoping Study, March 2008
Feedwater Heater #5 Drain Piping Modification	Higher drain water flows require larger piping in the uprate conditions	Bechtel PO-117809	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant BOP EPU Scoping Study, March 2008
Main Steam Isolation Valve and Main Steam Control Valve Assemblies (MSIV/MSCV) Replacement	Satisfies new steam system pressures requirements at the HP turbine	Bechtel PO-117809	EPU LAR Engineering
Main Steam Safety Valve Setpoint Modifications	Increased temperature and pressure require set point changes in the uprate conditions	Ames PO-2302164	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant BOP EPU Scoping Study, March 2008
High Pressure Turbine Modification	Larger inlet throttle valves and Turbine redesign are required for increased steam flows in the uprate conditions	Siemens PO-116090	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant BOP EPU Scoping Study, March 2008
Main Generator Rotor Replacement	Larger generator and stator are needed to increase electrical output in the uprate conditions	Siemens PO-116090	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant BOP EPU Scoping Study, March 2008

### Extended Power Uprate (EPU) Project Work Activities

<b>Turkey Point Unit 4 2012/2013 Outage</b>	<b>Description</b>	<b>Final Contract</b>	<b>Scoping Document</b>
Main Generator Hydrogen Coolers	Increased main generator cooling is required in the uprate conditions	Siemens PO-116090	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant BOP EPU Scoping Study, March 2008
Turbine Electro-Hydraulic Controls	Enhanced controls for the new turbines. Current design is not sufficient for the new turbine configuration in the uprate conditions	Siemens PO-130272	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant BOP EPU Scoping Study, March 2008
Moisture Separator Reheater (MSR) Replacement	Larger capacity MSRs are required to heat and dry the steam flow in the uprate conditions	Bechtel PO-117809	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant BOP EPU Scoping Study, March 2008
Main Condenser replacement	Increased turbine exhaust steam to the main condenser requires replacement of the main condenser to support uprate conditions	Bechtel PO-117809	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant BOP EPU Scoping Study, March 2008
Condenser Tube Cleaning System Replacement (Amertap)	Replacement of the main condenser requires replacement of the condenser tube cleaning system to support the uprate conditions	Bechtel PO-117809	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant BOP EPU Scoping Study, March 2008
Normal Containment Cooling (NCC) Modifications	Increased power production from the primary system requires additional cooling of the containment in the uprate conditions	Shaw PO-2293489	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant BOP EPU Scoping Study, March 2008
Spent Fuel Pool Cooling Heat Exchanger Replacement	Increased power from the fuel requires additional cooling of the fuel when it is placed into the spent fuel pool	PCI PO-2309693	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant BOP EPU Scoping Study, March 2008

## Extended Power Uprate (EPU) Project Work Activities

<b>Turkey Point Unit 4 2012/2013 Outage</b>	<b>Description</b>	<b>Final Contract</b>	<b>Scoping Document</b>
Pressurizer Safety Valve Setpoint Change	A Pressurizer Safety Valve Setpoint change is required to meet the peak Reactor Coolant System pressure in the LOL/TT event	Ames PO-2302164	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant BOP EPU Scoping Study, March 2008
Emergency Containment Filter Removal	Remove containment filters from the containment to support the safety margin in the uprate conditions	Shaw PO-2293489 R7	FPL PTN Feasibility Study 2007
Condensate Pump and Motor Replacement	Larger condensate pumps are needed to pump the increased condensate flows in the uprate conditions	Bechtel PO-117809	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant BOP EPU Scoping Study, March 2008
Main Feed Pump Rotating Element Replacement	Rotating assemblies need redesign to pump the increased feedwater flow required in the uprate conditions	Bechtel PO-117809	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant BOP EPU Scoping Study, March 2008
Turbine Plant Cooling Water (TPCW) Heat Exchanger Replacement	Increased temperatures of components require additional cooling in the uprate conditions	Bechtel PO-117809	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant BOP EPU Scoping Study, March 2008
Feedwater Heaters (5A/B, 6A/B) Replacement	Larger feedwater heaters are needed to process the steam and feedwater flows in the uprate conditions	Bechtel PO-117809	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant BOP EPU Scoping Study, March 2008
Main Steam Pressure L/L Module Install and Eagle 21 Changes	Modifications for licensing, design basis, plant program changes, I&C scaling and setpoint changes identified to support EPU conditions	Ames PO-2302164	EPU LAR Engineering

### Extended Power Uprate (EPU) Project Work Activities

<b>Turkey Point Unit 4 2012/2013 Outage</b>	<b>Description</b>	<b>Final Contract</b>	<b>Scoping Document</b>
Pressurizer Setpoint / Control / Indication Changes	Changes to NSSS and BOP instrumentation are required to meet EPU conditions	Ames PO-2302164	EPU LAR Engineering
Main Steam Pipe Snubber and Supports Installation	Uprate conditions require additional piping supports and restraints	Shaw PO-2293489 R7	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant BOP EPU Scoping Study, March 2008
High Pressure Turbine Supply Spill Over Piping Replacement	Modifications needed for increased HP Turbine exhaust pressures and spillover	WeldTech PO-2304432	EPU LAR Engineering
Secondary Instrumentation Setpoint Changes	Changes to NSSS and BOP instrumentation are required to meet EPU conditions	Ames PO-2302164	EPU LAR Engineering
Containment Aluminum Reduction	EPU increases containment sump temperature which accelerates aluminum degradation	Shaw PO-2293489 R7	EPU LAR Engineering
Hot Leg Injection Alternate Flow Path	Evaluate/modify current design for alternate Hot Leg flow path which contains a single-failure deficiency for post-LOCA Hot Leg Recirculation	Shaw PO-2293489 R7	EPU LAR Engineering
Plant Doc Changes resulting from Westinghouse Setpoint and Scaling Changes	Documentation update and identification of setpoint / scaling changes to plant computer systems software for NSSS systems as a result of EPU	Ames PO-2302164	EPU LAR Engineering
Main Steam Flow Element Modifications	Satisfies new steam system pressures requirements at the HP turbine	Shaw PO-2293489 R7	EPU LAR Engineering



### Extended Power Uprate (EPU) Project Work Activities

<b>Turkey Point Unit 4 2012/2013 Outage</b>	<b>Description</b>	<b>Final Contract</b>	<b>Scoping Document</b>
Steam Generator Blowdown Flow Instrumentation	Modifications needed to improve measurement accuracy of Steam Generator blowdown	Bechtel PO-117809	EPU LAR Engineering
Closed Cooling Water (CCW) Pipe Support Modifications	CCW Pipe Supports need to be evaluated/modified to ensure design basis is met under EPU conditions	Shaw PO-2293489 R7	EPU LAR Engineering
Steam Jet Air Ejector (SJAE) Condenser Tube Bundle Replacement	Modification needed to SJAE condenser due to increased condensate system pressure resulting from uprate	WeldTech PO-2304432	EPU LAR Engineering
Heater Drain System Pressure Re-rate	Piping modifications required to meet EPU conditions	Bechtel PO-117809	EPU LAR Engineering
Control Rod Drive Mechanism Fan Motor and Cooling Coil Replacement	Fan motor modification needed because of increased containment temperatures caused by EPU conditions. Cooling coil material being changed to copper to reduce the amount of aluminum in containment to meet AST requirements	Shaw PO-2293489 R7	AST LAR Engineering
Emergency Containment Coolers (ECC) Restore Automatic Actuation of Third ECC to Reduce Containment Pressure	Auto actuation of the three Emergency Containment Cooling fans is required in the uprate conditions	Shaw PO-2293489 R7	EPU LAR Engineering

### Extended Power Uprate (EPU) Project Work Activities

<b>Turkey Point Unit 4 2012/2013 Outage</b>	<b>Description</b>	<b>Final Contract</b>	<b>Scoping Document</b>
EPU Piping Vibration Modification	Piping will be monitored for increased vibrations which may require additional modifications to piping constraints in the uprate condition	Shaw PO-2293489 R7	Operating Experience from uprates
Unit 4 Turbine Building & Feedwater Platform Structure	Provide additional structural support for heavier components	Bechtel PO-117809	Engineering Evaluation

### Extended Power Uprate (EPU) Project Work Activities

<b>Turkey Point 2013 On-Line Activities</b>	<b>Description</b>	<b>Final Contract</b>	<b>Scoping Document</b>
Post EPU Condenser Amertap Cleaning System Unit 4	Replacement of the main condenser requires replacement of the condenser tube cleaning system to support the Uprate conditions	Bechtel PO-117809	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant BOP EPU Scoping Study, March 2008
Add Valve Operator Extension Hand wheel to Safety Injection Valve 3-867 and 4-867	Modification makes motor operated valve accessible to allow manual isolation to accommodate EPU conditions	Shaw P.O. 2293489 R7	EPU LAR Engineering
Unit 4 Umbrella Modification LAR Document PCM # 1	Non-hardware modifications implementing configuration management of licensing, design basis and plant program changes as a result of EPU	Enercon PO-2285720	EPU LAR Engineering
Unit 4 Condensate Polishing	Condensate Polishing building modification to clean secondary water after major component replacements	Shaw P.O. 2293489 Release 007	Engineering evaluation and operating experience
Site Demobilization and Site Restoration	Restoration of temporary facilities, structures, parking, construction, return office areas to pre-EPU Project conditions	Various	Engineering Modifications and FPSC Nuclear Cost Recovery
Post -EPU Asset Disposal	Demolition and disposal of all construction debris, replaced vessels and components	Various	Engineering Modifications and FPSC Nuclear Cost Recovery
Post EPU Outage System Testing and Tuning	To align systems to optimal performance and re-establishes performance baselines for systems that were modified	Various	FPL PTN Feasibility Study 2007, Turkey Point Nuclear Plant BOP EPU Scoping Study, March 2008 and Engineering Modifications

**Extended Power Uprate (EPU) Project Work Activities**

<b>Turkey Point 2013 On-Line Activities</b>	<b>Description</b>	<b>Final Contract</b>	<b>Scoping Document</b>
Final Project Documentation and Close-out	Project document close-out activities which include calculation updates, Configuration Control Programs, Document Package Close-out and commercial close-out	Various	FPL Feasibility Study 2007, Turkey Point Nuclear Plant, BOP, EPU, Scoping Study, February 2008 and Engineering modifications
Cost Recovery Close-out	Provide support and documentation for final close-out of Cost Recovery process	Various	FPSC Nuclear Cost Recovery

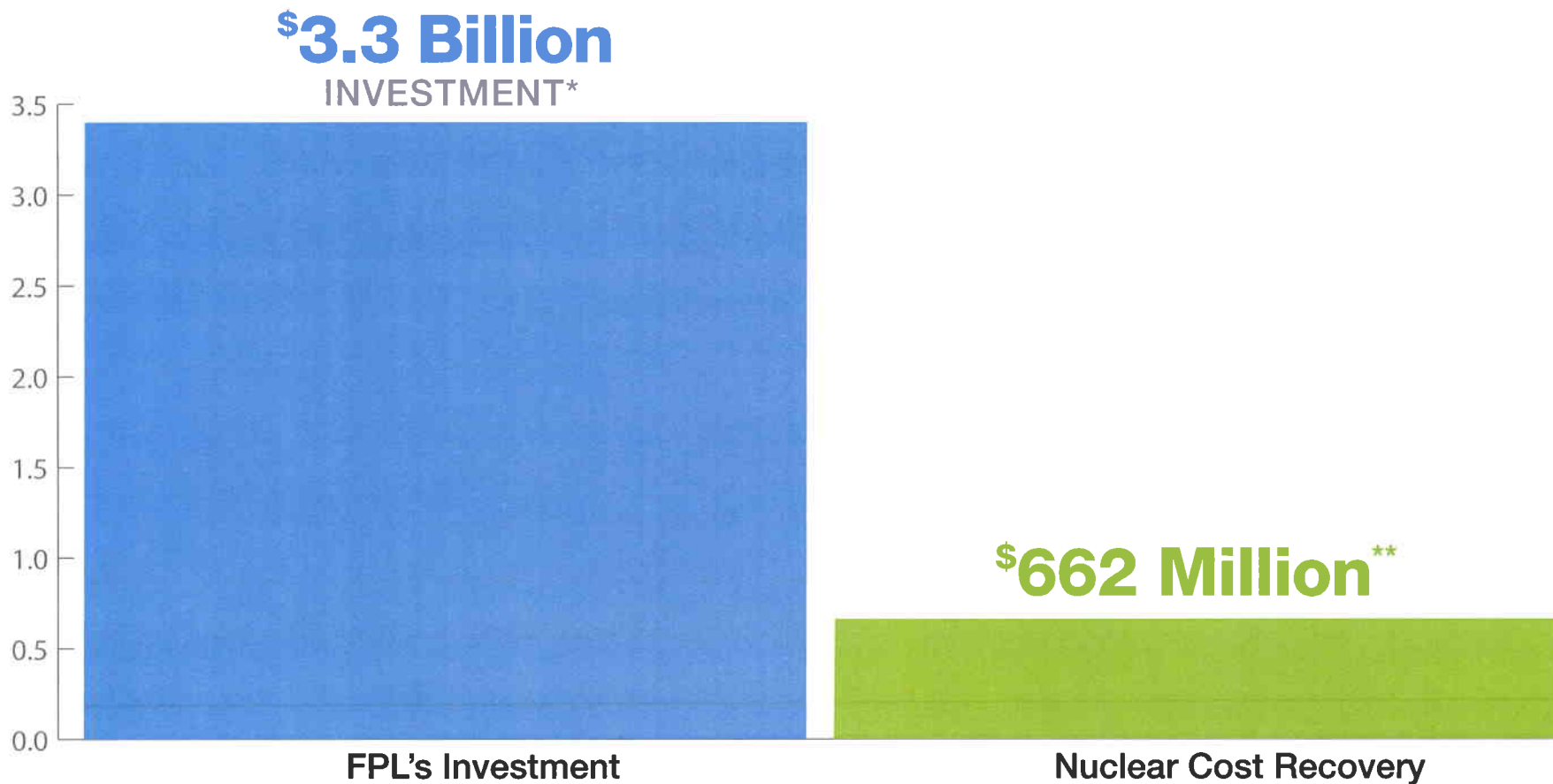
### Extended Power Uprate (EPU) Project Work Activities

<b>St. Lucie Plant 2013 On-Line Activities</b>	<b>Description</b>	<b>Final Contract</b>	<b>Scoping Document</b>
Site Demobilization and Site Restoration	Restoration of temporary facilities, structures, parking, construction, return office areas to pre-EPU Project conditions	Various	Engineering Modifications and FPSC Nuclear Cost Recovery
Post EPU Asset Disposal	Demolition and disposal of all construction debris, replaced vessels and components	Various	Engineering Modifications and FPSC Nuclear Cost Recovery
Post EPU Outage System Testing and Tuning	To align systems to optimal performance and re-establishes performance baselines for systems that were modified	Various	FPL PSL Feasibility Study 2007, St. Lucie Nuclear Plant BOP EPU Scoping Study, March 2008 and Engineering Modifications
Final Project Documentation Close-out	Project document close-out activities which include calculation updates, Configuration Control Programs, Document Package Close-out and commercial close-out	Various	FPL Feasibility Study 2007, St. Lucie Nuclear Plant, BOP, EPU, Scoping Study, February 2008 and Engineering modifications
Cost Recovery Close-out	Provide support and documentation for final close-out of Cost Recovery process	Various	FPSC Nuclear Cost Recovery
Spent Fuel Handling Machine Auxiliary Hoist, Unit 1 and 2	Add an auxiliary hoist to facilitate the movement and installation of Metamic inserts with EPU Fuel	Westinghouse PO-2301976	Engineering Modifications and FPSC Nuclear Cost Recovery



## FPL Investment Versus Clause Recovery

The nuclear cost recovery clause accounts for a small percentage of the overall investment for both the EPU and the Turkey Point 6 & 7 projects



Figures above represent total amounts since the beginning of the project through 2013

\* Represents FPL's total investment in the EPU project of approximately \$3.1 billion and in the Turkey Point 6 & 7 project of approximately \$200 million, both of which exclude carrying charges

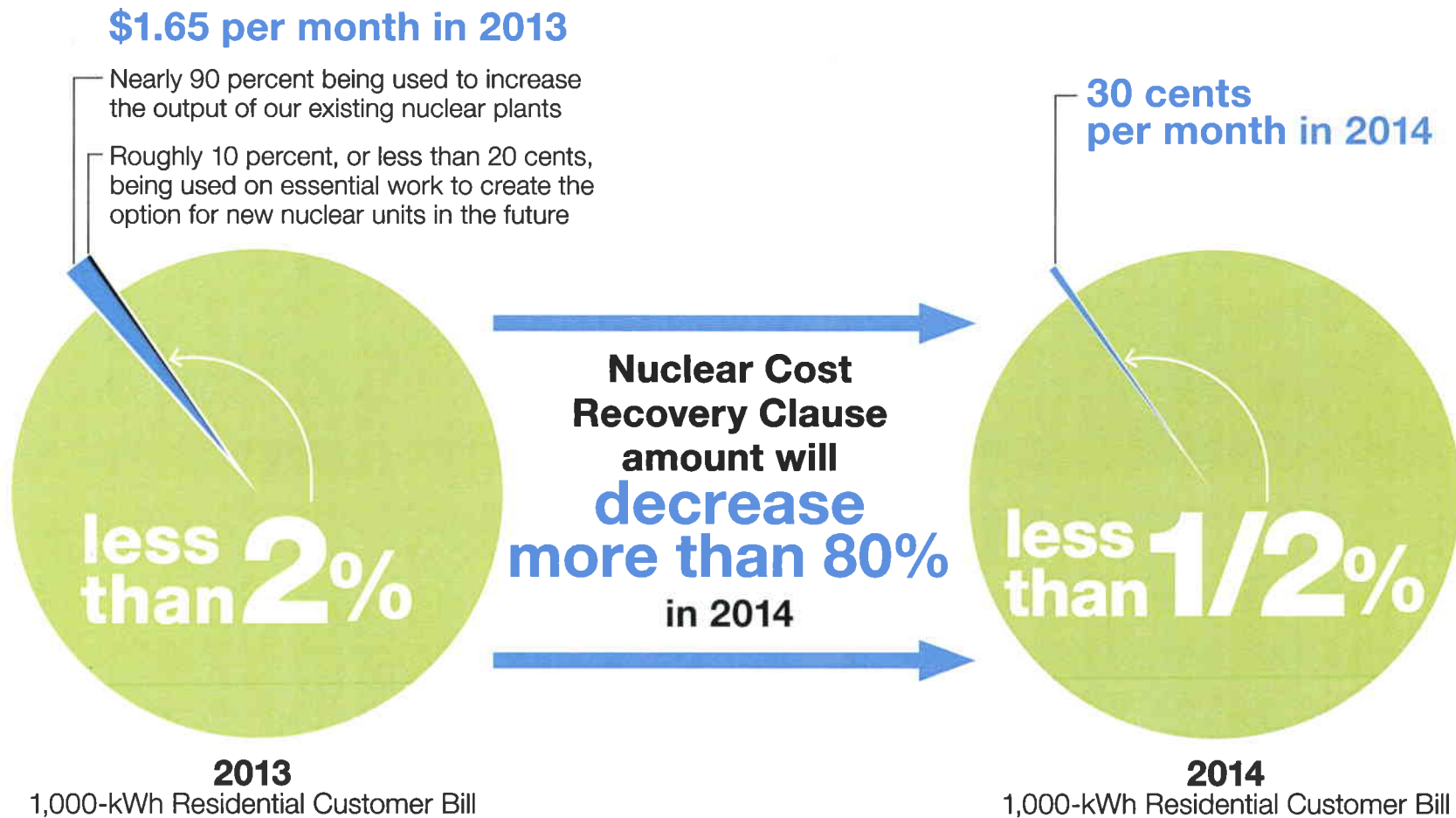
\*\* Represents FPL's total recovery of approximately \$451 million in EPU costs and approximately \$211 million in Turkey Point 6 & 7 costs





## Nuclear Cost Recovery Clause as Component of Overall Customer Bill

FPL's 1,000-kWh residential customer bill is the lowest of Florida's 55 electric utilities, and the Nuclear Cost Recovery Clause will account for less than one-half of one percent of the total bill in 2014





**Docket No. 130009-EI**  
**Summary of 2013 Extended Power Uprate Construction Costs**  
**Exhibit TOJ-26, Page 1 of 1**

**Summary of 2013 Extended Power Uprate Construction Costs**

<b>Category</b>	<b>2013 Actual Estimated</b>
Licensing	(\$126,960)
Engineering & Design	\$10,577,027
Permitting	\$0
Project Management	\$19,611,894
Power Block Engineering, Procurement, etc.	\$202,254,119
Non-Power Block Engineering, Procurement, etc.	\$350,646
<b>Total EPU Construction Costs</b>	<b>\$232,666,726</b>
EPU Recoverable O&M	\$9,791,738
Transmission Capital	\$74,376
<b>Total Construction Costs &amp; Transmission</b>	<b>\$242,532,840</b>

Note:

Table includes post in-service costs.

NFR Schedule AE-4, O&M and AE-6, Construction and Transmission costs amount to \$179,900,202, which excludes post in-service project costs.

