BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In Re: Nuclear Cost Power Plant Recovery Clause	Docket No. 120009-EI
	FILED: June 19, 2012

(PUBLIC VERSION)

DIRECT TESTIMONY

OF

WILLIAM R. JACOBS, JR., Ph.D.

ON BEHALF OF THE CITIZENS OF

THE STATE OF FLORIDA

REVIEW OF FLORIDA POWER AND LIGHT COMPANY'S

NUCLEAR COST RECOVERY RULE FILING

REDACTED

TABLE OF CONTENTS

I. INTRODUCTION 1

II. METHODOLOGY 7

III. SUMMARY OF TESTIMONY 8

IV. DEVELOPMENTS THAT OCCURRED IN THE LAST YEAR 10

V. TURKEY POINT UNITS 6 AND 7 23

EXHIBITS

Resume Of William R. Jacobs, Jr. ..... WRJ(FPL)-1

Resume OF James P. McGaughy, Jr. ..... WRJ(FPL)-2

Comparison of PTN EPU to PSL EPU scope of work ..... WRJ(FPL)-3

High Bridge Estimate of PTN cost ..... WRJ(FPL)-4

Turkey Point EPU Costs from 2008 to 2012 ..... WRJ(FPL)-5

DIRECT TESTIMONY

Of

WILLIAM R. JACOBS JR., Ph.D.

On Behalf of the Office of Public Counsel

Before the

Florida Public Service Commission

Docket No. 110009-EI

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, TITLE AND BUSINESS ADDRESS.

A. My name is William R. Jacobs, Jr., Ph.D. I am an Executive Consultant with GDS Associates, Inc. My business address is 1850 Parkway Place, Suite 800, Marietta, Georgia, 30067.

Q. DR. JACOBS, PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.

A. I received a Bachelor of Mechanical Engineering in 1968, a Master of Science in Nuclear Engineering in 1969 and a Ph.D. in Nuclear Engineering in 1971, all from the Georgia Institute of Technology. I am a registered professional engineer and a member of the American Nuclear Society. I have more than thirty years of experience in the electric power industry including more than twelve years of power plant construction and start-up experience. I have participated in the construction and start-up of seven power plants in this country and overseas in management positions including start-up manager and site manager. As a loaned employee at the Institute of Nuclear Power Operations ("INPO"), I participated in the Construction Project Evaluation Program, performed operating plant evaluations and assisted in the

development of the Outage Management Evaluation Program. Since joining GDS Associates, Inc. in 1986, I have participated in rate case and litigation support activities related to power plant construction, operation and decommissioning. I have evaluated nuclear power plant outages at numerous nuclear plants throughout the United States. I served on the management committee of Plum Point Unit 1, a 650 MWe coal fired power plant in operation near Osceola, Arkansas. As a member of the management committee, I assisted in providing oversight of the EPC contractor for this project. I am currently the Georgia Public Service Commission's (GPSC) Independent Construction Monitor for Georgia Power Vogtle 3 and 4 nuclear project. As the Independent Construction Monitor I assist the GPSC Commissioners and Staff in providing regulatory oversight of the project. My monitoring activities include regular meetings with project management personnel and regular visits to the Vogtle plant site to monitor construction activities and assess the project schedule and budget. My resume is included as Exhibit WRJ(FPL)-1.

Q. WERE YOU ASSISTED BY OTHER GDS PERSONNEL IN THIS EFFORT?

A. Yes, I was. In addition to myself, the GDS team involved in the review and evaluation of the requests for authorization to recover costs consisted of Mr. James P. McGaughy, Jr., a former nuclear utility executive with over 37 years of experience, and Mr. Brian Smith, an expert in production cost modeling and feasibility analyses. Mr. Smith is sponsoring testimony on an aspect of our review. His qualifications are contained in his prefiled testimony. The resume of Mr. McGaughy is attached to this testimony as Exhibit WRJ(FPL)-2. I have reviewed the work of Mr. McGaughy, and have incorporated and adopted it as my own in this testimony.

Q. WHAT IS THE NATURE OF YOUR BUSINESS?

A. GDS Associates, Inc. ("GDS") is an engineering and consulting firm with offices in Marietta, Georgia; Austin, Texas; Manchester, New Hampshire; Madison, Wisconsin; and Auburn, Alabama. GDS provides a variety of services to the electric utility industry including power supply planning, generation support services, rates and regulatory consulting, financial analysis, load forecasting and statistical services. Generation support services provided by GDS include fossil and nuclear plant monitoring, plant ownership feasibility studies, plant management audits, production cost modeling and expert testimony on matters relating to plant management, construction, licensing and performance issues in technical litigation and regulatory proceedings.

Q. WHOM ARE YOU REPRESENTING IN THIS PROCEEDING?

A. I am appearing on behalf of the Florida Office of Public Counsel (OPC), who represents the ratepayers of Florida Power & Light Company.

Q. WHAT WAS YOUR ASSIGNMENT IN THIS PROCEEDING?

A. I was asked to assist the OPC to conduct a review and evaluation of requests by Florida Power and Light Company (FPL) for authority to collect historical and projected costs associated with extended power uprate ("EPU") projects being pursued at the Turkey Point 3 and 4 and St. Lucie 1 and 2 nuclear plants, and historical and projected costs associated with FPL's Turkey Point 6 and 7 new nuclear project through the capacity cost recovery clause. I was asked to present my findings to assist the Florida Public Service Commission in making its determination

regarding FPL's requests in light of progress on the projects to date and new information that has been received.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?

A. Yes. I testified on behalf of the OPC in the previous NCRC proceedings in Docket Nos. 080009-EI, 090009-EI, 100009-EI and 110009-EI.

Q. PLEASE PROVIDE A BRIEF OVERVIEW OF THE NATURE AND STATUS OF FPL'S NUCLEAR PROJECTS.

A. FPL currently has two categories of major nuclear projects—"uprates" and proposed new nuclear units-- underway. The most active projects at this time are the projects to increase the existing generating capacities of Turkey Point 3 and 4 and St. Lucie 1 and 2 by a total of 490 megawatts. (The total output of the EPU projects has increased from the 414 megawatts estimated in December 2010.) FPL refers to the activities at existing Turkey Point and St. Lucie nuclear units as the extended power uprate or EPU project. The uprate activities are currently scheduled to be completed in 2013. As of December 2011, FPL had spent approximately $1.46 billion of an estimated total cost of $3.05 billion on the uprate activities at the Turkey Point and St. Lucie plants. Of the $1.59 billion "to go" costs, $0.45 billion is for the St. Lucie EPU and $1.14 billion is for the Turkey Point EPU. The other project is the development of Turkey Point 6 and 7, a new nuclear plant consisting of two Westinghouse AP1000 reactors. This project is in the development stage. FPL projects it will provide 2,200 megawatts of capacity with on line dates of 2022 and 2023.

Q. PLEASE SUMMARIZE OPC'S PAST PARTICIPATION IN THE PROCEEDINGS ON FPL'S NUCLEAR PROJECTS.

A. I will begin with the proposed new Turkey Point 6 and 7 units. I am informed that OPC's earliest involvement was when OPC objected to FPL's request for a declaratory statement concerning the classification of expenses that FPL was to incur prior to the date that site selection expenses were completed. FPL asked the Commission to confirm that such items would be treated as preconstruction expenses, and thus would qualify for recovery through the nuclear cost recovery clause. Because FPL's examples included expensive, "long lead" equipment, OPC asked for a hearing on FPL's petition to develop its impact on customers' bills. The Commission denied OPC's request for a hearing and granted FPL's petition.

In Docket No. 080009-EI, I criticized FPL's initial policy of contracting for the development of Turkey Point 6&7 on the basis of separate contracts rather than an overall EPC contract. More recently, because I generally approve of the minimalist approach that FPL is taking with respect to the development of its proposed new nuclear units in light of the downward trend in gas prices and uncertainty regarding future load growth, OPC has not taken exception to FPL's pursuit of licensing or the costs related to that effort.

Q. WHAT ABOUT FPL'S EPU ACTIVITIES AT TURKEY POINT AND ST. LUCIE?

A. OPC has opposed aspects of FPL's uprate activities frequently. In Docket No. 080009-EI, I testified that FPL's support for entering numerous "sole source contracts" and "single source contracts" rather than seeking competitive bids was inadequate. I recommended that the Commission disallow the return on equity

portion of the largest such unjustified contract, or, at a minimum, direct FPL to improve its procedures for determining when a departure from competitive bidding was acceptable. The Commission declined to adopt my recommendations. In Docket No. 090009-EI, I criticized the absence of a rigorous methodology for ensuring that only costs that are incremental in nature and attributable only to FPL's EPU activities are collected through the clause. I proposed a discrete "separate and apart" analytical methodology, which FPL opposed on the grounds the review it had in place was sufficient for the purpose. Ultimately the Commission rejected the methodology that I recommended for that purpose, and accepted FPL's presentation.

In Docket No. 100009-EI, during which FPL reported that its estimate of total EPU costs had increased by $576 million over the prior year, I challenged FPL's methodology for gauging the economic feasibility of its uprates, which involved excluding past expenditures from the study at the same time projected costs at completion increased significantly. I also recommended that the Commission direct FPL to develop a risk-sharing mechanism so that it would have "skin in the game." The Commission ruled it had no authority to impose a risk-sharing mechanism.

In Docket No. 110009-EI (which included issues from the prior year that, by stipulation, had been carried over), I testified that FPL failed to present the Commission with the most current estimate of the construction costs that it projected for its uprate project during the September 2009 hearing. Based on my testimony, in its brief OPC recommended that the Commission conclude that FPL had violated the rule governing the nuclear cost recovery proceedings and impose a fine on FPL at or near the maximum amount of $1,180,000. The Commission voted to deny OPC's recommendation.

In Docket No. 110009-EI, I also testified that it was imprudent for FPL to "fast track" the construction of the uprates when it had not begun detailed design work, and thus had no adequate grasp of either the scope or the cost of the project. As a decision on the matter had been "carried over," I also reiterated my criticism of the application of FPL's methodology for measuring economic feasibility of the uprate project, and recommended that the Commission require FPL to perform a breakeven analysis for the uprates similar to the breakeven analysis that FPL proposed, and the Commission endorsed, for FPL's proposed new nuclear units. I recommended that the Commission require FPL to prepare separate breakeven analyses for the St. Lucie and Turkey Point plants, to ensure that one less-than-cost-effective project was not being subsidized by the other project. The Commission rejected OPC's recommendation and ruled in favor of FPL.

Q. PLEASE SUMMARIZE FPL's REQUEST FOR COST RECOVERY IN THIS DOCKET UNDER THE NUCLEAR COST RECOVERY CLAUSE.

A. FPL is requesting authority to include $196,004,292 of nuclear cost items in the 2012 Capacity Cost Recovery factor.

II. METHODOLOGY

Q. PLEASE DESCRIBE THE METHODOLOGY THAT YOU USED TO REVIEW AND EVALUATE THE REQUESTS FOR AUTHORIZATION TO COLLECT COSTS SUBMITTED BY FPL UNDER THE NUCLEAR COST RECOVERY CLAUSE.

A. I first reviewed the Company's filings in this docket and assisted in the issuance of numerous interrogatories and requests for production of documents. To evaluate the

issues related to project schedule, cost and risk management, I reviewed many internal documents, status reports and correspondence with regulatory authorities. I reviewed responses to discovery requests and issued additional discovery requests as needed.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to bring to the Commission's attention the continuing dramatic increases in the estimated cost of the EPU projects, and to apprise the Commission of the extent to which the soaring, runaway costs of the Turkey Point EPU activities are the source of the overall increase. I will also identify significant changes in circumstances which should lead the Commission to revisit its decision to assess the Turkey Point and St. Lucie EPU activities on a consolidated, combined basis. Based on these significant and compelling changes of circumstances, the Commission should evaluate the Turkey Point uprate separately. With the assistance of my GDS colleague, Brian Smith, who is also sponsoring testimony, I will demonstrate that when that is done, and when FPL's own most recent estimate of "to go" costs is used, it is apparent that the Turkey Point uprate project already is sure to result in net costs, not benefits, to customers. I will urge the Commission to take measures necessary to protect customers from additional, future increases in the cost of the Turkey Point EPU project.

III. SUMMARY OF TESTIMONY

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. The following changes in circumstances since the last annual hearing cycle impact the Commission's treatment of FPL's EPU activities:

(1) FPL has again increased its estimate of the total costs of its EPU projects dramatically, this time by $682 million in 14 months. (2) Of the more than $682 million increase, the portion attributable to the Turkey Point EPU activities amounts to $555 million. (3) Information from Bechtel's report to FPL in 2011 demonstrates that the Commission should set aside its past acceptance of FPL's assertion that Turkey Point and St. Lucie should be aggregated and evaluated for economic feasibility on a composite basis. (4) Lastly, the consultant that FPL engaged specifically to advise it on projections of ultimate costs informed FPL in 2010 that the Turkey Point project costs would reach the order of magnitude that FPL is now, belatedly acknowledging. In his testimony, OPC witness Brian Smith demonstrates that, even if one includes only FPL's estimate of "to go" costs in the analysis and makes assumptions regarding savings that are conservative and generous to the Turkey Point project, at the level of FPL's current estimate the costs of the Turkey Point uprate project will exceed the savings associated with the project in FPL's "base case" scenario by approximately $200 million (net present value). In light of these significant changes in circumstances, and the strong indication that the Turkey Point EPU project is now "under water," the Commission should take action to protect customers in the event FPL fails to manage the balance of the Turkey Point uprate activities within its current estimate. Specifically, the Commission should place FPL on notice that it will disallow from recovery through the nuclear cost recovery mechanism any amounts associated with the Turkey Point EPU project that exceed FPL's recent $1.6 billion construction cost estimate for the Turkey Point uprate.

IV. DEVELOPMENTS THAT OCCURRED IN THE LAST YEAR

Q. PLEASE DESCRIBE THE PROGRESS OF FPL'S EXTENDED UPRATE ACTIVITIES SINCE THE LAST HEARING CYCLE.

A. In Docket No. 110009-EI, at the time that I reviewed the status of the engineering, design, and implementation of FPL's extended uprate activities, I predicted that FPL would continue to experience significant cost increases. Unfortunately for customers, after only a year from the time that I submitted my testimony, the costs and estimates of future costs that FPL is reporting now prove that I was correct in my assessment of the projects' likely future. The estimated costs for the EPU activities at St. Lucie and Turkey Point continue their dramatic ascent to levels that bring the economics of the projects further into question. Compared to the estimates of total cost that FPL presented a year ago, FPL has increased its estimate of total costs by $682 million. Incredibly, $555 million of that $682 million increase relate to the revised estimate for the Turkey Point uprate. FPL's revised estimate for Turkey Point uprate capacity translates to a total cost of $7,520 per kW, even when the increment of generating capacity above the original estimate of increased output is taken into account. One way to appreciate the magnitude of FPL's current Turkey Point estimate is to relate it to the cost of new nuclear capacity. Given that FPL's own estimate of the cost of *new* nuclear generating capacity is only a maximum of $5,190 per kW, FPL can no longer claim that EPU capacity costs less than the capacity of a new nuclear unit, at least insofar as its claim relates to the Turkey Point uprate. Finally, evidence shows that the enormous increase in Turkey Point costs was foreseen and quantified by a consultant whom FPL engaged specifically to advise it on the likely final cost of the Turkey Point uprate, but FPL chose to ignore or reject that analysis for some 18 months. The $555 million increase over last year's Turkey Point estimate constitutes

a significant change in circumstances that calls on the Commission to revisit its decision of a year ago to evaluate the extended uprate activities at St. Lucie and Turkey Point on a combined, composite basis. Further, FPL's decision to pursue the Turkey Point uprate activities without first fully confronting the extremely high estimate of final costs which it engaged its consultant to prepare was a poor management decision, and the impact of that action should be absorbed by FPL, not its customers. In the next sections of my testimony, I will develop the reasons why, in my opinion, the Commission should disallow from recovery the costs of extended uprate activities at Turkey Point that exceed FPL's recent construction cost estimate of $1.6 billion.

Q. PLEASE CONTINUE.

A. Each year, in his testimony FPL witness Jones explains the reasons for dramatic increases in estimated EPU costs by stating that the EPU project poses extraordinary managerial and technical challenges and that FPL's EPU project represents one of the largest and most complex nuclear design, engineering, and construction projects undertaken in the nuclear industry since the construction of the previous generation of U.S. nuclear plants. (See Jones, Page 5, lines 12 – 16) The net result of the enormous increases over time is that the current estimated cost of the EPU projects, measured in dollars per installed additional kilowatt of capacity, has soared beyond the corresponding cost of a new nuclear power plant. In addition, the EPU projects have significantly less time (remaining operating life) within which to overcome the hurdle of initially high capital costs through lower fuel costs. These facts simply cannot be ignored. This is particularly true in the instance of the Turkey Point EPU.

Q. AT ITS OUTSET, WHAT DID FPL ESTIMATE THE COST OF THE EPU PROJECTS TO BE?

A. The initial construction cost estimate for the EPU projects from 2007 was $1,401,000,000. This was made up of $651,000,000 for St. Lucie 1 and 2 and $750,000,000 for Turkey Point 3 and 4. (Figures from FPL000473, NCR-11).

Q. WHAT IS FPL'S CURRENT "NON-BINDING ESTIMATE" OF THE TOTAL EPU COST?

A. The current total construction cost estimate is $2,656,800,000. This includes $1,007,000,000 for St. Lucie and $1,649,800,000 for Turkey Point. Adding AFUDC and Transmission costs increases the total to $2,961,800,000. (Figures from FPL027442, 43, and 44, NCR-12). The estimate used by FPL Witness Dr. Sim in his 2012 feasibility analysis is $3,050,000,000. The cost estimate used in the need determination analysis was $1,798,000,000. (Exhibit TOJ-14, page 219) Thus, the estimated cost to complete the total EPU projects has increased 70% from the cost used in the need determination analysis. For construction costs, this represents an increase of 90%. When St. Lucie and Turkey Point are viewed separately, this amounts to a 120% increase for Turkey Point and a 55% increase for St. Lucie. In a little over a year, the Turkey Point EPU has gone up $555,000,000, while the St. Lucie project has gone up 'only' $128,000,000.

On a $/kW basis including AFUDC and transmission, this results in $7,520/kW for Turkey Point and $4,557 /kW for St. Lucie. For both plants taken together, this is $6,044/kW. These numbers are based on a total of 490 MWe as now claimed vs. 414 Mwe as put forward in December 2010. (FPL027444, NCR-12).

Q. IN YOUR OPINION, WHAT CAUSED THE TURKEY POINT ESTIMATES TO INCREASE BY 120% ABOVE THE ORIGINAL ESTIMATE?

A. As I discussed at some length in my testimony last year, FPL has performed this project on a fast track basis, which means FPL did not complete design work before commencing procurement of equipment and construction. As witness Mr. Jones admits in his April 27, 2012 testimony, only 36% of the engineering was complete when he filed testimony one year ago, but engineering now is at 90%. The total cost cannot be accurately estimated until FPL fully understands the full scope of the EPU project. The full scope cannot be known until the engineering is complete. FPL has mostly included in its estimates the scope of the project known at the time of the estimate and did not provide sufficient contingency for the unknown scope.

As I pointed out in my 2011 testimony, in a fast track project, this unknown risk can be accounted for by adding a large contingency to the cost estimates. FPL stated last year that it had included only 0 to 7% contingency, which I pointed out last year was inadequate. As we see now, the cost of the overall project has gone up about 30% in the past year alone

Q. WHAT WAS FPL'S ESTIMATE OF THE TOTAL COST OF THE EPU A YEAR AGO?

A. Mr. Jones put forward a range of estimates in his May 2, 2011 testimony of $2,324,000,000 to $2,479,000,000. Dr. Sim used $2.48 billion in his feasibility analysis. At the time, and in response to my assertion that the estimate was an "uneducated guess," Mr. Jones referred to this estimate as "highly informed."

Q. BY HOW MUCH HAS FPL'S ESTIMATE OF THE TOTAL COST OF THE COMBINED EPU ACTIVITIES INCREASED WITHIN THE PAST YEAR?

A. In his April 27, 2012 testimony, Mr. Jones stated a range of $2,950,000,000 to $3,150,000,000. This represents an increase of about $608,000,000 on the low end of the spread and about $671,000,000 on the high end—*in a single year*. It is interesting to note that the high/low range spread increased from $155,000,000 last year to $200,000,000 in this year's filing. This indicates to me an increase in his level of uncertainty regarding the total cost of the EPU activities.

Q. BASED ON YOUR FAMILIARITY WITH THE TIMING OF THE ENGINEERING AND THE PROGRESS OF THE PROJECT TO DATE, WHAT CONFIDENCE DO YOU HOLD THAT THE $682 MILLION INCREASE OVER LAST YEAR'S ESTIMATE IS THE LAST SUBSTANTIAL INCREASE THAT FPL WILL REPORT?

A. Unfortunately, neither FPL's track record nor the status of the project provides cause for optimism. To date, the rate of annual increases has been increasing every year, not decreasing. Mr. Jones points out that engineering is now 90% complete, which means that 10% still needs to be accomplished. Significantly, the increases arise—not only as design work is completed—but also as the resulting design is implemented. According to Dr. Sim's analysis, less than half of the revised estimate of costs has actually been spent, which means there is an enormous amount of work remaining to perform within the next 18 month period (and corresponding opportunity for costs to increase further). To date, none of FPL's EPU projects have been completed. Mr. Jones has increased his uncertainty spread as pointed out above, indicating more uncertainty. There will be an average of 3,400 workers doing FPL

EPU work in 2012 and about 2,000 in 2013. As far as I know, FPL still has not included a significant contingency in their estimates. Based on these facts, I expect significant additional cost increases before the EPU projects are complete.

Q. GIVEN THE INCREASE OF $682 MILLION IN THE SPACE OF ONE YEAR, WHAT DOES FPL SAY ABOUT THE CURRENT COST-EFFECTIVENESS OF THE EPU PROJECT?

A. FPL maintains that the project continues to be cost-effective when it applies its preferred (for its EPU) economic feasibility methodology.

Q. HOW DO THE CHANGES IN CIRCUMSTANCES THAT YOU HAVE IDENTIFIED BEAR ON YOUR RECOMMENDATION THAT THE COMMISSION REVIEW THE FEASIBILITY OF TURKEY POINT AND ST. LUCIE UPRATES SEPARATELY DURING THIS PROCEEDING?

A. First, I am aware that the Commission has indicated its ability to select the feasibility methodology that is most appropriate for the circumstances, and consider whether that methodology remains the most appropriate as circumstances change. Order No. PSC-09-0783-FOF-EI, at page 15. Last year, the Commission disagreed that the increases that had occurred as of that time constituted sufficient reason to cease applying FPL's consolidated methodology. I will point out that, at that time, FPL witness Terry Jones described the total estimate of $2.4 billion as "highly informed." Since the "highly informed" estimate was accepted for purposes of assessing economic feasibility, the estimate has increased by $682 million, of which $555 million relates to Turkey Point. It is now clear that the Turkey Point EPU project is

on a runaway course of its own, the extent of which is being buried in FPL's composite approach.

Q. CAN YOU ELABORATE ON WHY YOU ASSERT THE TURKEY POINT PROJECT IS "ON A COURSE OF ITS OWN" THAT WARRANTS INDIVIDUAL ANALYSIS?

A. Yes. I have prepared a graph to illustrate this point. It is attached to my testimony as Exhibit WRJ(FPL)-5.

Q. PLEASE EXPLAIN WHAT EXHIBIT NO. __WRJ(FPL)-5 DEPICTS.

A. The exhibit is a line graph that portrays the pattern of Turkey Point EPU-related expenditures over time. The extreme slope of the red line shows how the estimate of the total Turkey Point uprate costs began to increase radically as soon as FPL began work on the project, and the manner in which estimates of total cost soared "in step" with the rate of experienced costs (shown in blue). The exhibit also shows that, after several years of rapidly increasing expenditures, FPL's current estimate of *remaining* ("to go") Turkey Point uprate costs is actually greater than FPL's original estimate of *total* costs!

Absent the willingness of the Commission to take into account the new information that I have identified and impose a separate and independent "sanity check," there will be nothing to prevent the Turkey Point EPU from reaching cost levels that are devastating to customers, even as FPL reports its Turkey Point project is cost-effective as part of its consolidated methodology.

Q. BASED ON INFORMATION THAT FPL HAS PROVIDED TO OPC DURING THIS HEARING CYCLE, DO YOU SEE ANY EVIDENCE THAT IS HAPPENING?

A. Yes, I do. Specifically, the $555 million increase in the estimated total cost of the Turkey Point uprate project, the disparity between the cost of Turkey Point uprate capacity and FPL's own estimate of the cost to construct a new nuclear unit, and evidence that FPL was apprised in 2010 of the magnitude of the increases it should expect but proceeded to incur them anyway, provide reasons for departing from a rigid adherence to a composite feasibility test to protect customers from clearly egregious cost levels.

Q. PLEASE ELABORATE.

A. One claim that FPL has made for the EPU project is that it is a means of increasing nuclear generating capacity at a cost lower than the corresponding cost of a new nuclear unit. On page 1 of Mr. Jones April 27, 2012 testimony, he states :

> "The project provides the equivalent of half a new nuclear plant in about half the time and at significantly less than the estimated cost per kW installed of a new nuclear plant-a strong value proposition."

Q. WHY DO YOU QUOTE THIS PASSAGE FROM MR. JONES' TESTIMONY?

A. Because with respect to the Turkey Point EPU project Mr. Jones' statement, which underlies the basic rationale for the EPU project, is clearly incorrect. In his April 27, 2012 testimony at Exhibit SRS-6, Dr. Sim states that overnight costs for new nuclear units are $3,507 to $5,190/kw in 2012 dollars. "Overnight cost" measured in 2012 dollars is approximately the same measurement as the construction cost for the EPU projects. As I showed above, the construction cost for the Turkey Point EPU project

is $7,520/kW. Even if you eliminate AFUDC and transmission, it is $6,700/kW, considerably higher than what FPL says new nuclear units cost. (For the St. Lucie project the corresponding costs are $4,560/kW and $4,127/kW.)

Q. DIDN'T THE COMMISSION APPROVE FPL'S APPROACH OF COMBINING THE ST. LUCIE AND TURKEY POINT EPU PROJECTS FOR PURPOSES OF ITS FEASIBILITY ASSESSMENT?

A. Yes. However, information that came to light during the discovery phase of this year's hearing cycle that, in combination with the sheer magnitude of the increase to the Turkey Point estimate, should lead the Commission to revisit that decision for purposes of this proceeding.

Q. WHAT WAS THE RATIONALE THAT FPL ADVANCED AND THAT THE COMMISSION ACCEPTED WHEN IT REJECTED OPC'S POSITION THAT FPL SHOULD ANALYZE THE ECONOMIC FEASIBILITY OF THE ST. LUCIE AND TURKEY POINT EPU PROJECTS SEPARATELY?

A. In his rebuttal testimony of a year ago, FPL's Witness Jones identified three reasons for maintaining FPL's composite approach:

- Performing an EPU on all units simultaneously allows the project team to share resources and lessons learned from performing the numerous outages with similar work scopes, thereby increasing efficiency and reducing costs.
- Engineering and construction strategy for one unit can be used to support engineering and construction strategy for the other units.
- FPL can realize cost savings and leverage purchasing power by purchasing multiple pieces of the same equipment.

Q. PLEASE DESCRIBE THE INFORMATION GAINED FROM DISCOVERY THAT, IN YOUR OPINION, SHOULD LEAD THE COMMISSION TO MODIFY ITS DECISION REGARDING FPL'S COMPOSITE APPROACH.

A. Bechtel, FPL's EPU construction contractor, pointed out in its cost estimate for Turkey Point of November 15, 2011 that the craft labor for Turkey Point would be 3.1 times that required for St. Lucie. Also, Turkey Point requires 7.6 times the large pipe, 2.9 times the small pipe, 2.4 times the cable, and 25.4 times the large valves than the corresponding amounts required for St. Lucie. A comparison of the Turkey Point EPU scope of work to the St. Lucie scope of work is shown in Exhibit WRJ(FPL)-3. The fundamentally different nature of the projects demonstrated by Bechtel's document and Exhibit WRJ(FPL)-3 overwhelm FPL's assertions of "shared strategies" and "similar scopes" upon which the Commission relied, when it accepted FPL's composite feasibility analysis last year. (Of course, the differences are most vividly driven home by the disparity in the increases of "to go" costs over a year ago--$128 million for St. Lucie, and *more than four times that amount* for Turkey Point.)

Q. WAS THIS 2011 BECHTEL ESTIMATE THE FIRST TIME FPL WAS INFORMED ABOUT HOW HIGH THE ESTIMATED TURKEY POINT EPU PROJECT COSTS WOULD BE?

A. No. In 2010, FPL hired High Bridge Associates to independently review the Turkey Point EPU project costs. High Bridge issued a report on Turkey Point 3&4 EPU cost that estimated the final cost to be $1,428,541,326. Significantly, this estimate did not encompass all of the modifications involved in the full Turkey Point EPU activity. In other words, because High Bridge did not "price out" all necessary modifications associated with the Turkey Point uprate project, the High Bridge estimate necessarily

was lower than the indicated cost of the full project. The High Bridge estimate is shown in Exhibit WRJ(FPL)-4.

Q. DID FPL ADOPT THESE COST PROJECTIONS?

A. Even though its purpose in engaging High Bridge Associates was to provide an independent check on the information that FPL was receiving from Bechtel, FPL did not accept High Bridge's estimate until much later. In December, 2010, FPL was stating $1,148,900,000 as their expected cost and in December, 2011, FPL was estimating $1,252,500,000. It was not until February, 2012, that FPL acknowledged that the Turkey Point project cost would be as much as the amount that High Bridge reported to them one and a half years earlier. Had FPL incorporated an estimate for Turkey Point that was consistent with High Bridge's 2010 estimate during the 2011 proceeding, the magnitude of the increase necessarily would have led to a materially different feasibility calculation.

Q. IS THERE OTHER EVIDENCE THAT THE COSTS OF THE TURKEY POINT EPU PROJECT ARE INCREASING FAR BEYOND THE POINT AT WHICH THE PROJECT IS ECONOMIC?

A. Yes. Dr. Sim projects that "Breakeven Nuclear Capital Costs" are from $4,202 to $6,326/kW, while Turkey Point uprate costs at $7520/kW are considerably higher. Not only is the Turkey Point EPU much more expensive than the breakeven costs of a new nuclear unit, but its useful life would only be about 20 years (licenses expire in 2032 and 2033), while a new unit would last up to 60 years. Even more significant, however, is the analysis by Brian Smith of GDS that demonstrates the Turkey Point EPU project will result in net costs, not net benefits, to FPL's customers, even if

FPL's current estimate of to-go costs remains unchanged until the project has been completed.

Q. PLEASE DESCRIBE THE ANALYSIS TO WHICH YOU REFER.

A. The detailed explanation of the calculations is contained in Mr. Smith's testimony. I will summarize it here. Because the incremental capacities of the Turkey Point and St. Lucie uprates are approximately equal, and there are no material differences in heat rate or fuel costs of the units, one can assume the Turkey Point and St. Lucie plants contribute approximately equally to the "savings" (primarily fuel savings) side of the cost/benefit calculation that FPL sponsors. Once the total savings are apportioned to the two plants, it is possible to relate the savings attributable to each plant to the costs of that plant, and calculate whether the comparison of savings and costs for each plant yields net costs or net benefits. Mr. Smith performs such an analysis. His conclusion is that, using only FPL's recent estimate of "to go" costs as the cost that should be compared to savings, the Turkey Point EPU project will result in net costs to customers of $199.6 million, while the St. Lucie EPU project, measured on the same basis, will yield $495.6 million of net savings. I will add that, while the equal allocation of savings to the two plants is a simplifying assumption, there are conservative aspects to Mr. Smith's analysis that lead me to believe the degree to which he says the Turkey Point EPU is "under water" is understated.

Q. WHY DO YOU SAY MR. SMITH'S CALCULATION UNDERSTATES THE NET COSTS OF THE TURKEY POINT EPU?

A. First, it considers only the remaining or "to go" costs, in the same manner that FPL quantifies them. Next, Mr. Smith makes no adjustment to take into account the fact

that the St. Lucie EPU capacity will operate 14 unit-years longer than the Turkey Point unit. I believe these aspects—and particularly the differential in operating time frames between Turkey Point and St. Lucie that the comparison ignores—ensure the results for Turkey Point are conservative.

Q. WHY IS THE SHORT OPERATING LIFE (RELATIVE TO THAT OF A NEW NUCLEAR UNIT) SIGNIFICANT??

A. With any nuclear capacity, the fundamental question is whether fuel savings over the life of the unit will more than offset the very high initial capital costs of nuclear technology. As I mentioned, the St. Lucie plant will operate 14 unit-years longer than Turkey Point after the uprates have been completed. If this differential in operating lives were to be taken into account, I believe it is clear that substantially less than half the total (fuel and other) savings would be attributed to Turkey Point for the comparison with "to go" costs.

Q. WHAT USE SHOULD THE COMMISSION MAKE OF THIS INFORMATION?

A. To protect customers' interests, the Commission must reserve to itself the tools with which to gauge the reasonableness of costs that the utility wishes to pass through the cost recovery clause. It should not ignore either the $555 million increase in Turkey Point EPU costs, or the fact that the consultant that FPL hired to educate it on total project costs alerted FPL to the extreme cost of the project in 2010, only to have its work product effectively ignored by the client who had paid for the estimate, or the clear indication that the project is fast becoming uneconomic. The Commission should revisit the decision to permit FPL to continue to treat the economics of the

EPU projects on a consolidated basis and recognize, based on Mr. Smith's testimony and exhibit, that the Turkey Point EPU project is projected to result in net costs even at the level of FPL's projected "to go" costs.

Q. WHAT ARE YOU ASKING THE COMMISSION TO DO?

A. FPL proceeded with the Turkey Point uprate despite having received an analysis that predicted the extreme high costs of the project. As a result, the Commission should hold FPL to the "estimate at completion" that it is sponsoring in this docket. Through the end of 2011, FPL has spent $650,078,024 in construction costs on the Turkey Point EPU project. In this hearing cycle, FPL projects the Turkey Point EPU project will be completed in March of 2013 at a total construction cost of $1.6 billion. To protect customers, the Commission should place FPL on notice that, if it exceeds FPL's recent $1.6 billion construction cost estimate at completion for Turkey Point, the Commission will disallow the increment above that level from recovery through the nuclear cost recovery docket.

V. TURKEY POINT UNITS 6 AND 7

Q. HAVE YOU REVIEWED THE STATUS OF TURKEY POINT 6 AND 7 AND THE FPL'S MANAGEMENT OF THIS PROJECT?

A. Yes, I have. I am not taking issue with FPL's approach to the Turkey Point 6 and 7 project at this time.

Q. DOES THAT CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

CERTIFICATE OF SERVICE
Docket No. 120009-EI

I HEREBY CERTIFY that a true and correct copy of the foregoing has been furnished by U. S. Mail to the following parties on this 10th day of July, 2012.

Bryan J. Anderson/Jessica Cano/ M. Ross
Florida Power and Light Company
700 Universe Blvd
Juno Beach, FL 33418

Robert Scheffel Wright
John T. LaVia
c/o Gardner Law Firm
1300 Thomaswood Drive
Tallahassee, FL 32308

Keino Young/Michael Lawson
Florida Public Service Commission
2540 Shumard Oak Blvd.
Tallahassee, FL 32399-0850

Mr. Paul Lewis, Jr.
Progress Energy Florida, Inc.
106 East College Ave, Suite 800
Tallahassee, FL 32301-7740

Vicki G. Kaufman/Jon C. Moyle, Jr.
Florida Industrial Power Users Group
118 North Gadsden Street
Tallahassee, FL 32301

Kenneth Hoffman
Florida Power & Light Company
215 South Monroe St., Suite 810
Tallahassee, FL 32301-1859

Matthew R. Bernier
Carlton Fields Law Firm
215 South Monroe St., Suite 500
Tallahassee, FL 32301-1866

J. Michael Walls/Blaise N. Gamba
Carlton Fields Law Firm
P.O. Box 3239
Tampa, FL 33601-3239

James W. Brew/F. Alvin Taylor
1025 Thomas Jefferson St. NW, 8th Flo, West Tower
Washington, DC 20007

Captain Samuel Miller
c/o USAF/AFLOA/JACL/ULFSC
139 Barnes Drive, Suite 1
Tyndall AFB, FL 32043-5319

John T. Burnett /Alexander Glenn
Dianne M/ Triplett
Progress Energy Service Company, LLC
P.O. Box 14042
St. Petersburg, FL 33733-4042

Gary A. Davis/ James S. Whitlock
Southern Alliance for Clean Energy
Gary A. Davis & Associates
P.O. Box 649
Hot Springs, NC 28743

Randy B. Miller
White Springs Agricultural Chemicals, Inc.
Post Office Box 300
White Springs, FL 32096

Joseph A. McGlothlin
Associate Public Counsel

EDUCATION: Ph.D., Nuclear Engineering, Georgia Tech 1971
MS, Nuclear Engineering, Georgia Tech 1969
BS, Mechanical Engineering, Georgia Tech 1968

ENGINEERING REGISTRATION: Registered Professional Engineer

PROFESSIONAL MEMBERSHIP: American Nuclear Society

EXPERIENCE:

Dr. Jacobs has over thirty-five years of experience in a wide range of activities in the electric power generation industry. He has extensive experience in the construction, startup and operation of nuclear power plants. While at the Institute of Nuclear Power Operation (INPO), Dr. Jacobs assisted in development of INPO's outage management evaluation group. He has provided expert testimony related to nuclear plant operation and outages in Texas, Louisiana, South Carolina, Florida, Wisconsin, Indiana, Georgia and Arizona. He currently provides nuclear plant operational monitoring services for GDS clients. Dr. Jacobs was a witness in nuclear plant certification hearings in Georgia for the Plant Vogtle 3 and 4 project on behalf of the Georgia Public Service Commission and in South Carolina for the V.C. Summer 2 and 3 projects on behalf of the South Carolina Office of Regulatory Staff. His areas of expertise include evaluation of reactor technology, EPC contracting, risk management and mitigation, project cost and schedule. He is assisting the Florida Office of Public Counsel in monitoring the development of four new nuclear units in the State of Florida, Levy County Units 1 and 2 and Turkey Point Units 6 and 7. He has been selected by the Georgia Public Service Commission as the Independent Construction Monitor for Georgia Power Company's new AP1000 nuclear power plants, Plant Vogtle Units 3 and 4. He has assisted the Georgia Public Service Commission staff in development of energy policy issues related to supply-side resources and in evaluation of applications for certification of power generation projects and assists the staff in monitoring the construction of these projects. He has also assisted in providing regulatory oversight related to an electric utility's evaluation of responses to an RFP for a supply-side resource and subsequent negotiations with short-listed bidders. He has provided technical litigation support and expert testimony support in several complex law suits involving power generation facilities. He monitors power plant operations for GDS clients and has provided testimony on power plant operations and decommissioning in several jurisdictions. Dr. Jacobs represents a GDS client on the management committee of a large coal-fired power plant currently under construction. Dr. Jacobs has provided testimony before the Georgia Public Service Commission, the Public Utility Commission of Texas, the North Carolina Utilities Commission, the South Carolina Public Service Commission, the Iowa State Utilities Board, the Louisiana Public Service Commission, the Florida Public Service Commission, the Indiana Regulatory Commission, the Wisconsin Public Service Commission, the Arizona Corporation Commission and the FERC.

A list of Dr. Jacobs' testimony is available upon request.

GDS Associates, Inc., 1850 Parkway Place, Suite 800, Marietta, GA 30067
(770) 425-8100
(770) 426-0303 – Fax
Bill.Jacobs@gdsassociates.com

1986-Present GDS Associates, Inc.

As Executive Consultant, Dr. Jacobs assists clients in evaluation of management and technical issues related to power plant construction, operation and design. He has evaluated and testified on combustion turbine projects in certification hearings and has assisted the Georgia PSC in monitoring the construction of the combustion turbine projects. Dr. Jacobs has evaluated nuclear plant operations and provided testimony in the areas of nuclear plant operation, construction prudence and decommissioning in nine states. He has provided litigation support in complex law suits concerning the construction of nuclear power facilities. Dr. Jacobs is the Georgia PSC's Independent Construction Monitor for the Plant Vogtle 3 and 4 nuclear project.

1985-1986 Institute of Nuclear Power Operations (INPO)

Dr. Jacobs performed evaluations of operating nuclear power plants and nuclear power plant construction projects. He developed INPO Performance Objectives and Criteria for the INPO Outage Management Department. Dr. Jacobs performed Outage Management Evaluations at the following nuclear power plants:

- Connecticut Yankee - Connecticut Yankee Atomic Power Co.
- Callaway Unit I - Union Electric Co.
- Surry Unit I - Virginia Power Co.
- Ft. Calhoun - Omaha Public Power District
- Beaver Valley Unit 1 - Duquesne Light Co.

During these outage evaluations, he provided recommendations to senior utility management on techniques to improve outage performance and outage management effectiveness.

1979-1985 Westinghouse Electric Corporation

As site manager at Philippine Nuclear Power Plant Unit No. 1, a 655 MWe PWR located in Bataan, Philippines, Dr. Jacobs was responsible for all site activities during completion phase of the project. He had overall management responsibility for startup, site engineering, and plant completion departments. He managed workforce of approximately 50 expatriates and 1700 subcontractor personnel. Dr. Jacobs provided day-to-day direction of all site activities to ensure establishment of correct work priorities, prompt resolution of technical problems and on schedule plant completion.

Prior to being site manager, Dr. Jacobs was startup manager responsible for all startup activities including test procedure preparation, test performance and

review and acceptance of test results. He established the system turnover program, resulting in a timely turnover of systems for startup testing.

As startup manager at the KRSKO Nuclear Power Plant, a 632 MWE PWR near Krsko, Yugoslavia, Dr. Jacobs' duties included development and review of startup test procedures, planning and coordination of all startup test activities, evaluation of test results and customer assistance with regulatory questions. He had overall responsibility for all startup testing from Hot Functional Testing through full power operation.

1973 - 1979 NUS Corporation

As Startup and Operations and Maintenance Advisor to Korea Electric Company during startup and commercial operation of Ko-Ri Unit 1, a 595 MWE PWR near Pusan, South Korea, Dr. Jacobs advised KECO on all phases of startup testing and plant operations and maintenance through the first year of commercial operation. He assisted in establishment of administrative procedures for plant operation.
As Shift Test Director at Crystal River Unit 3, an 825 MWE PWR, Dr. Jacobs directed and performed many systems and integrated plant tests during startup of Crystal River Unit 3. He acted as data analysis engineer and shift test director during core loading, low power physics testing and power escalation program.

As Startup engineer at Kewaunee Nuclear Power Plant and Beaver Valley, Unit 1, Dr. Jacobs developed and performed preoperational tests and surveillance test procedures.

1971 - 1973 Southern Nuclear Engineering, Inc.

Dr. Jacobs performed engineering studies including analysis of the emergency core cooling system for an early PWR, analysis of pressure drop through a redesigned reactor core support structure and developed a computer model to determine tritium build up throughout the operating life of a large PWR.

SIGNIFICANT CONSULTING ASSIGNMENTS:

Georgia Public Service Commission – Selected as the Independent Construction Monitor to assist the GPSC staff in monitoring all aspects of the design, licensing and construction of Plant Vogtle Units 3 and 4, two AP1000 nuclear power plants.

Georgia Public Service Commission – Assisted the Georgia Public Service Commission Staff and provided testimony related to the evaluation of Georgia Power Company's request for certification to construct two AP1000 nuclear power plants at the Plant Vogtle site.

South Carolina Office of Regulatory Staff – Assisted the South Carolina Office of Regulatory Staff in evaluation of South Carolina Electric and Gas' request for certification of two AP1000 nuclear power plants at the V.C. Summer site.

Florida Office of Public Counsel – Assists the Florida Office of Public Counsel in monitoring the development of four new nuclear power plants in Florida including providing testimony on the prudence of expenditures.

East Texas Electric Cooperative – Represents ETEC on the management committee of the Plum Point Unit 1 a 650 Mw coal-fired plant under construction in Osceola, Arkansas and represents ETEC on the management committee of the Harrison County Power Project, a 525 Mw combined cycle power plant located near Marshall, Texas.

Arizona Corporation Commission – Evaluated operation of the Palo Verde Nuclear Generating Station during the year 2005. Included evaluation of 11 outages and providing written and oral testimony before the Arizona Corporation Commission.

Citizens Utility Board of Wisconsin – Evaluated Spring 2005 outage at the Kewaunee Nuclear Power Plant and provided direct and surrebuttal testimony before the Wisconsin Public Service Commission.

Georgia Public Service Commission - Assisted the Georgia PSC staff in evaluation of Integrated Resource Plans presented by two investor owned utilities. Review included analysis of purchase power agreements, analysis of supply-side resource mix and review of a proposed green power program.

State of Hawaii, Department of Business, Economic Development and Tourism – Assisted the State of Hawaii in development and analysis of a Renewable Portfolio Standard to increase the amount of renewable energy resources developed to meet growing electricity demand. Presented the results of this work in testimony before the State of Hawaii, House of Representatives.

Georgia Public Service Commission - Assisted the Georgia PSC staff in providing oversight to the bid evaluation process concerning an electric utility's evaluation of responses to a Request for Proposals for supply-side resources. Projects evaluated include simple cycle combustion turbine projects, combined cycle combustion turbine projects and co-generation projects.

Millstone 3 Nuclear Plant Non-operating Owners – Evaluated the lengthy outage at Millstone 3 and provided analysis of outage schedule and cost on behalf of the non-operating owners of Millstone 3. Direct testimony provided an analysis of additional post-outage O&M costs that would result due to the outage. Rebuttal testimony dealt with analysis of the outage schedule.

H.C. Price Company – Evaluated project management of the Healy Clean Coal Project on behalf of the General Contractor, H.C. Price Company. The Healy Clean Coal Project is a 50 megawatt coal burning power plant funded in part by the DOE to demonstrate advanced clean coal

technologies. This project involved analysis of the project schedule and evaluation of the impact of the owner's project management performance on costs incurred by our client.

Steel Dynamics, Inc. – Evaluated a lengthy outage at the D.C. Cook nuclear plant and presented testimony to the Indiana Utility Regulatory Commission in a fuel factor adjustment case Docket No. 38702-FAC40-S1.

Florida Office of Public Counsel - Evaluated lengthy outage at Crystal River Unit 3 Nuclear Plant. Submitted expert testimony to the Florida Public Service Commission in Docket No. 970261-EI.

United States Trade and Development Agency - Assisted the government of the Republic of Mauritius in development of a Request for Proposal for a 30 MW power plant to be built on a Build, Own, Operate (BOO) basis and assisted in evaluation of Bids.

Louisiana Public Service Commission Staff - Evaluated management and operation of the River Bend Nuclear Plant. Submitted expert testimony before the LPSC in Docket No. U-19904.

U.S. Department of Justice - Provided expert testimony concerning the in-service date of the Harris Nuclear Plant on behalf of the Department of Justice U.S. District Court.

City of Houston - Conducted evaluation of a lengthy NRC required shutdown of the South Texas Project Nuclear Generating Station.

Georgia Public Service Commission Staff - Evaluated and provided testimony on Georgia Power Company's application for certification of the Intercession City Combustion Turbine Project - Docket No. 4895-U.

Seminole Electric Cooperative, Inc. - Evaluated and provided testimony on nuclear decommissioning and fossil plant dismantlement costs - FERC Docket Nos. ER93-465-000, et al.

Georgia Public Service Commission Staff - Evaluated and prepared testimony on application for certification of the Robins Combustion Turbine Project by Georgia Power Company - Docket No. 4311-U.

North Carolina Electric Membership Corporation - Conducted a detailed evaluation of Duke Power Company's plans and cost estimate for replacement of the Catawba Unit 1 Steam Generators.

Georgia Public Service Commission Staff - Evaluated and prepared testimony on application for certification of the McIntosh Combustion Turbine Project by Georgia Power Company and Savannah Electric Power Company - Docket No. 4133-U and 4136-U.

New Jersey Rate Counsel - Review of Public Service Electric & Gas Company nuclear and fossil capital additions in PSE&G general rate case.

Corn Belt Electric Cooperative/Central Iowa Power Electric Cooperative - Directs an operational monitoring program of the Duane Arnold Energy Center (565 Mwe BWR) on behalf of the non-operating owners.

Cities of Calvert and Kosse - Evaluated and submitted testimony of outages of the River Bend Nuclear Station - PUCT Docket No. 10894.

Iowa Office of Consumer Advocate - Evaluated and submitted testimony on the estimated decommissioning costs for the Cooper Nuclear Station - IUB Docket No. RPU-92-2.

Georgia Public Service Commission/Hicks, Maloof & Campbell - Prepared testimony related to Vogtle and Hatch plant decommissioning costs in 1991 Georgia Power rate case - Docket No. 4007-U.

City of El Paso - Testified before the Public Utility Commission of Texas regarding Palo Verde Unit 3 construction prudence - Docket No. 9945.

City of Houston - Testified before Texas Public Utility Commission regarding South Texas Project nuclear plant outages - Docket No. 9850.

NUCOR Steel Company - Evaluated and submitted testimony on outages of Carolina Power and Light nuclear power facilities - SCPSC Docket No. 90-4-E.

Georgia Public Service Commission/Hicks, Maloof & Campbell - Assisted Georgia Public Service Commission staff and attorneys in many aspects of Georgia Power Company's 1989 rate case including nuclear operation and maintenance costs, nuclear performance incentive plan for Georgia and provided expert testimony on construction prudence of Vogtle Unit 2 and decommissioning costs of Vogtle and Hatch nuclear units - Docket No. 3840-U.

Swidler & Berlin/Niagara Mohawk - Provided technical litigation support to Swidler & Berlin in law suit concerning construction mismanagement of the Nine Mile 2 Nuclear Plant.

Long Island Lighting Company/Shea & Gould - Assisted in preparation of expert testimony on nuclear plant construction.

North Carolina Electric Membership Corporation - Prepared testimony concerning prudence of construction of Carolina Power & Light Company's Shearon Harris Station - NCUC Docket No. E-2, Sub537.

City of Austin, Texas - Prepared estimates of the final cost and schedule of the South Texas Project in support of litigation.

Tex-La Electric Cooperative/Brazos Electric Cooperative - Participated in performance of a construction and operational monitoring program for minority owners of Comanche Peak Nuclear Station.

Tex-La Electric Cooperative/Brazos Electric Cooperative/Texas Municipal Power Authority (Attorneys - Burchette & Associates, Spiegel & McDiarmid, and Fulbright & Jaworski) - Assisted GDS personnel as consulting experts and litigation managers in all aspects of the lawsuit brought by Texas Utilities against the minority owners of Comanche Peak Nuclear Station.

GDS Associates, Inc., 1850 Parkway Place, Suite 800, Marietta, GA 30067
(770) 425-8100
(770) 426-0303 – Fax
Bill.Jacobs@gdsassociates.com

EDUCATION: M.S., Mechanical Engineering, Stanford University, 1969
U.S. Navy Nuclear Power Training Program, 1964-65
B.S., Electrical Engineering, MIT, 1964

ENGINEERING REGISTRATION: Registered Professional Engineer

PROFESSIONAL MEMBERSHIP: American Nuclear Society
Institute of Electrical and Electronic Engineers

EXPERIENCE:

Mr. McGaughy directs the power generation services function at GDS Associates, Inc. He has more than 40 years experience in the power generation field in the areas of licensing, design, construction, start-up, operation, and maintenance of nuclear and fossil-fired power plants. Mr. McGaughy has worked with top utility management to solve problems on a wide range of power generation issues. He has successfully managed extremely large and complex generation projects, both nuclear and fossil, which required the rigorous maintenance of project schedules and quality. He has performed studies concerning cogeneration projects involving unit dispatch and FERC operating and efficiency standards. Mr. McGaughy has provided testimony before the Texas Public Utility Commission, Public Utility Commission of Ohio, South Carolina Public Service Commission, Georgia Public Service Commission, Hawaii Public Utility Commission, New Jersey Board of Regulatory Commissioners, Michigan Public Utility Commission, Wisconsin Public Service Commission and FERC. He has performed work concerning over 30 nuclear units and 24 fossil-fired steam units as well as numerous combustion turbine and combined cycle units.

Specific Experience Includes:

1986-Present **GDS Associates, Inc.**

As Vice President and Secretary, Mr. McGaughy serves as head of the Generation Services Department of GDS. GDS has provided construction and operations monitoring program at five nuclear units and six coal-fired units for minority owners. GDS has provided expert witness and litigation support in lawsuits involving six nuclear units. Mr. McGaughy also has been responsible for prudence, construction monitoring and litigation support efforts at numerous other nuclear units and for development of a nuclear performance standard program for the Georgia Public Service Commission. He has testified on combustion turbine construction projects in certification proceedings and has testified on dispatch, reliability, avoided cost and other issues concerning cogeneration projects.

1984-1986 **Southern Engineering Company**

As Director of Generation Services, Mr. McGaughy conducted construction and operations monitoring for clients at power plants throughout the United States. In addition, Mr. McGaughy prepared testimony for various rate cases on generation matters at FERC and state commissions. He provided assistance to clients in all generation matters including contract administration and litigation support.

1980-1984 **Mississippi Power and Light Company**

Mr. McGaughy served as Vice President, Nuclear (1983-84) and Assistant Vice President, Nuclear Production (1980-82). He was responsible for all aspects of construction and operation of a multi-billion dollar power generation facility. In this capacity he hired and trained the nuclear power plant staff of over 500 people, including 29 licensed operators and numerous experienced utility managers. Mr. McGaughy also established a unique design engineering group which grew to over 125 people and had overall responsibility for interface with the Nuclear Regulatory Commission and all contractors on the project. During this tenure, cost and schedule performance was better than at any other similar plant (G.E. Boiling Water Reactor, BWR-6 design).

1973-1980 **Mississippi Power and Light Company**

Mr. McGaughy served as Director of Power Production (1978-80). In this capacity he was responsible for all power production related activities including construction, operation, engineering, maintenance, licensing, nuclear safety, staffing, and training. He prepared and administered annual personnel and operating budgets for 600 people and more than $50 million, and an annual capital budget of $280 million. He also established a formal screening program for hiring craft personnel, established a formal preventive maintenance program, and reorganized his department based on job performance. He served as project manager for 2-unit, 1,600 MW coal project.

Mississippi Power and Light Company

Mr. McGaughy served as Nuclear Project Manager (1976-78) and Assistant Project Manager (1973-75). He was responsible for forming and managing an organization to control the prime contractor on a $4 billion construction project. He began the formation of plant staff organization. He was also responsible for relations with the Nuclear Regulatory Commission and the prime contractor (Bechtel). The construction permit was awarded in record time.

1971-1973 **Middle South Services, Inc.**

Mr. McGaughy served as a nuclear engineer on the holding company staff responsible for economic and engineering studies including the feasibility evaluation for Grand Gulf

Nuclear Station. He performed nuclear fuel and uranium buying functions. He also performed generation-mix studies.

1969 - 1971 **Arkansas Power and Light Company**

Mr. McGaughy was responsible for nuclear fuel procurement and performed the licensing work including the preparation of the Safety Analysis Report for Arkansas Nuclear One, Unit 2.

SIGNIFICANT CONSULTING ASSIGNMENTS:

North Carolina Electric Membership Cooperative – Performed due diligence review of management for a 3-site, 1,200 MW, peaking project. Reviewed management site selection, fuel, equipment selection, environmental, contracting and other aspects.

VECO Alaska, Inc. – Served as construction project management expert witness for EPC contractor in lawsuit concerning construction overruns in a turnkey cogeneration project in Alaska. Served as witness in successful mediation.

H.C. Price Construction Company – Provided detailed analysis and mediation presentations concerning construction project management in case involving construction contractor and owner (State of Alaska) of a coal-fired plant in Alaska.

Rusk County, Texas Rural Electric Cooperative/Richard Balough – Testified before the Texas Public Utility Commission concerning coal-fired plant station electric service in territorial dispute with Texas Utilities.

Sam Rayburn G&T – Ongoing operational monitoring program concerning client's interest in Nelson 6 Coal Station operated by Gulf States Utilities.

Kamo Electric Cooperative – Operational monitoring program for client's minority interest in GRDA Unit 2 Coal Fired Station.

Northeast Texas Electric Cooperative – Ongoing construction monitoring and operational monitoring program concerning NTEC's interest in Pirkey Coal Station operated by Southwestern Electric Power Company and Dolet Hills Station operated by Central Louisiana Electric Company.

Sawnee and Coweta/Fayette Electric Membership Cooperatives – Served as Owner's project monitor on Sewell Creek Combustion Turbine Plant, Doyle Combustion Turbine Project, Chattahoochee Combined Cycle Project and Talbot County Combustion Turbine Project.

Northeast Texas Electric Cooperative – Served as Owner's representative on Project Management Committee for design, construction and operation of 500Mw combined cycle plant.

U.S. Department of Justice – Served as expert witness in two tax cases involving investment tax credits for nuclear fuel.

Pacific Gas & Electric Company – Performed technical analyses of two different cogeneration plants to determine if projects had met FERC and state efficiency and operating standards.

Steel Dynamics, Inc. – Analysis of imprudence and replacement power costs at D.C. Cook Plant.

Corn Belt Power Cooperative – Performed review of available options for board of directors with recommendations for future plan of action.

Niagara Mohawk Power Corporation/Swidler & Berlin – Prepared extensive technical analysis for filing in federal court and at FERC concerning efficiency and operating standards of cogeneration facility in support of motion to revoke QF certification.

Niagara Mohawk Power Corporation/Swidler & Berlin – Assisting in FERC proceeding to set new rates for disqualified former QF.

East Texas Electric Cooperative – Assisted cooperative in negotiating steam and electric service contract with industrial customer.

Georgia Public Service Commission Staff – Testified before the Georgia Public Service Commission recommending that a nuclear performance standard be implemented in the State of Georgia. The Commission implemented the recommended standard.

City of El Paso – Testified before the Public Utility Commission of Texas regarding Palo Verde operations and maintenance expenses.

City of El Paso – Testified before the Public Utility Commission of Texas regarding valuation of Palo Verde power plant and other merger issues.

City of Homestead, Florida/Spiegel & McDiarmid – Assisted City in lawsuit regarding DeLaval Diesel-Generators. Prepared expert testimony and gave major deposition on subject before favorable settlement.

El Paso Community College/Law offices of Jim Boyle – Prepared testimony concerning level of Palo Verde Nuclear Station operation and maintenance costs requested by El Paso Electric. Analysis was performed on bases of comparative studies and on specific analysis of cost filed by El Paso Electric.

Old Dominion Electric Cooperative – Prepared testimony filed at FERC concerning prudent levels of coal inventory for inclusion Virginia Power working capital.

Long Island Lighting Company/Shea & Gould – Prepared expert testimony on nuclear plant construction.

Ohio Public Service Commission – Prepared testimony related to decommissioning costs of Toledo Edison's Davis-Besse Nuclear Station.

Georgia Public Service Commission/Hicks, Maloof & Campbell – Assisted Georgia Public Service Commission staff and attorneys in many aspects of Georgia Power Company's 1989 rate case including analysis of service company charges, construction prudence of Vogtle Unit 2, decommissioning costs of Vogtle and Hatch nuclear units, prepared expert testimony on operation and maintenance costs for Hatch and Vogtle nuclear units, prepared expert testimony on Performance Incentive Plan for Georgia Power nuclear units.

Georgia Public Service Commission/Hicks, Maloof & Campbell – Prepared testimony related to Vogtle and Hatch plant operations and maintenance costs in 1991 Georgia Power rate case.

Georgia Public Service Commission Staff – Prepared testimony concerning certification of McIntosh Units, Warner Robins Units, Intercession City Unit and Florida Power Corporation Power Purchase (three separate dockets)

City of Houston – Testified before Texas Public Utility Commission regarding South Texas Project operation and maintenance expenses.

Sam Rayburn G&T – Prepared testimony before Texas Public Utility Commission concerning certificate of convenience and necessity for co-op purchase of 38 mw interest in an existing coal-fired plant.

Aetna Insurance Company/Dickson, Carlson & Campillo – Assisted attorneys in analysis of Southern California Edison claims of property damage and replacement power costs. Prepared written analyses used in achieving favorable settlements for clients.

East Texas Electric Cooperative – Performed economic and technical feasibility analyses on hydro and thermal generation alternatives.

Allegheny Electric Power Cooperative – Assisted co-op in review of various financial and technical issues of Susquehanna Nuclear Station.

Saluda River Electric Cooperative – Assisted co-op in review of technical issues including decommissioning and minimum net dependable capability ratings for the co-op's minority interest in Catawba Nuclear Station operated by Duke Power Company.

City of Midland, Michigan – Assisted city in tax assessment case concerning Midland Nuclear Plant with Consumer's Power Company.

City of Wallingford, Connecticut – Reviewed decommissioning costs of Millstone Nuclear Units 1, 2, and 3 in CP&L rate case at FERC.

Nucor Steel/Ritts, Brickfield & Kaufman – Prepared testimony concerning prudence of construction of Carolina Power & Light Company's Sheron Harris Station.

City of Austin, Texas – Review of cost and schedule of South Texas Nuclear Plant.

Sam Rayburn Municipal Power Authority – Performed operational monitoring program relative to the client's minority interest in Nelson 6 Coal Station operated by Gulf States Utilities.

Tex-La Electric Cooperative/Brazos Electric Cooperative – Conducted construction and operational monitoring program for minority owners of Comanche Peak Nuclear Station.

Tex-La Electric Cooperative/Brazos Electric Cooperative/Texas Municipal Power Authority (Attorneys - Burchette & Associates, Spiegel & McDiarmid, and Fulbright & Jaworski) – Assisted attorneys as consulting experts and litigation managers in all aspects of the lawsuit brought by Texas Utilities against the minority owners of Comanche Peak Nuclear Station.

Attorney General, State of Michigan – Prepared analysis and testimony concerning power plant availability and system dispatch in Consumer Power fuel plan case.

Attorney General, State of Michigan – Prepared analysis and testimony concerning purchased power costs in Consumer Power fuel reconciliation case.

Attorney General, State of Michigan – Prepared analysis and testimony concerning avoided costs, PURPA rates, reserve margins, plant availability and dispatchability in MCV settlement case
U-10127.

Attorney General, State of Michigan – Analysis and testimony concerning Consumers' application of requirements of order in Case No. U-10127.

New Jersey Rate Counsel – Review of Public Service Electric & Gas Company nuclear and fossil O&M costs and capital additions in PSE&G general rate case.

CONFIDENTIAL

Florida Power & Light Company

EPU PROJECT
TURKEY POINT NUCLEAR PLANT – UNITS 3 & 4

ESTIMATE AT COMPLETION

11/15/11

Bechtel Power Corporation
Job No 25489

CONFIDENTIAL

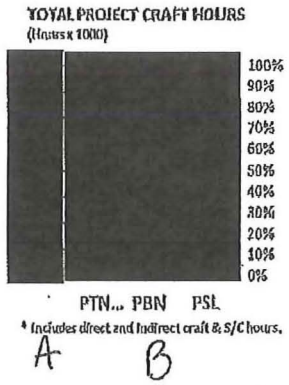
FPL EPU PROJECT - TURKEY POINT NUCLEAR PLANT
ESTIMATE AT COMPLETION

COMPARATIVE DATA
Quantities
For quantitative and comparative purposes, the chart at the right demonstrates the differences between PTN and St Lucie (PSL). Excluded are demolition, remove and replace quantities.

QUANTITY COMPARISON

	COMMODITY	UOM	PSL	PTN	MULTIPLE
1	LARGE PIPE	LF	2,146	16,210	7.6
2	SMALL PIPE	LF	3,095	9,103	2.9
3	PIPE SUPPORTS	EA	565	2,736	4.8
4	LARGE VALVES	EA	22	559	25.4
5	SMALL VALVES	EA	499	1,683	3.4
6	TUBING	LF	1,600	9,453	5.9
7	~~TRAY~~	~~LF~~	~~-~~	~~2,679~~	~~-~~
8	CONDUIT	LF	15,918	37,632	2.4
9	CABLE	LF	110,710	266,443	2.4

Total Project Craft Hours
Project craft hours for direct and indirect labor total [redacted] including support to Siemens, which is roughly 2.6 times Point Beach and 3.1 times PSL project hours. This is driven by over three times the quantities and approximately 28% higher unit rates.



The major craft hour scope differences between PTN and Point Beach and St Lucie are:

- Condenser
- CREVs
- Turbine Digital Controls
- MSR Replacement
- EHC Upgrade
- Normal Containment Cooling

The PTN Craft Ramp (shown at the top of the next page) is a gradual build up of staff to support the start of the outage based on processing approximately 50 to 75 craft per week. Also shown is the ramp down after the outage prior to the start of 4R27.

Docket No. 120009-EI
High Bridge Estimate of PTN Cost
Exhibit No. WRJ(FPL)-4
Page 1 of 2

Florida Power & Light
Turkey Point Nuclear Plant
Extended Power Uprate Project (EPU)

Project Baseline Cost Estimate

Volume I

GL – Rev 4 changes

Prepared by

High Bridge Associates, Inc.
3260 Pointe Parkway
Suite 200
Norcross, GA 30092

Construction Equipment			$11,451,566
Subtotal			**$434,197,582**
Other			
Stranded Inventory			$9,218,755
Sunk Costs			$163,428,501
Escalation			$42,638,431
Contingency			$104,997,797
High Bridge Mgmt Reserve			$125,094,400
FPL Mgmt Reserve			$112,445,912
Subtotal			**$557,823,796**
Total Preliminary EPU Cost			**$1,428,541,326**

I THOUGHT WE WERE CONSERVATIVE

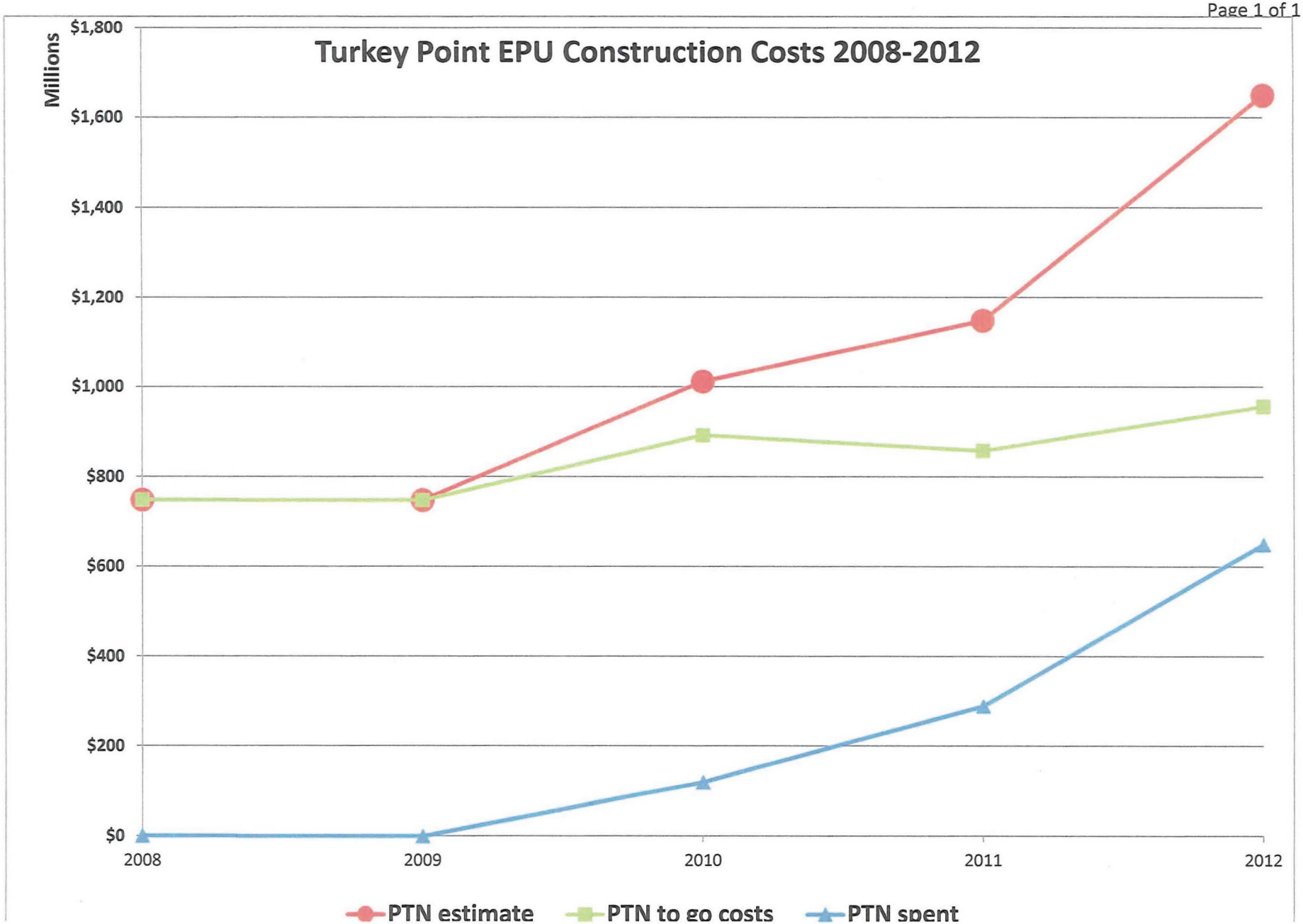
Exhibit I.1 EPU Project Baseline Cost Summary

Due to the continuing design and scope evolution of the EPU project and the conceptual nature of many of the project estimates, the total estimated cost will change. Therefore, in order to provide a higher confidence in these budgetary values, High Bridge followed generally accepted industry practice in its evaluation of uncertainty and risks. Uncertainty and risk were segregated into two major groups for analytical purposes, 1) Schedule and Estimate Uncertainty (Contingency) and 2) Discrete Risk Events (Management Reserve).

High Bridge performed 49 Monte Carlo analyses to calculate contingency. The Monte Carlo analyses included a calculation for each of the 44 EPU Project PCMs, one calculation each for estimated FP&L non-manual labor cost, Bechtel non-manual labor cost, indirect and distributable costs, engineering labor cost and construction equipment cost for a total of 49 analyses. High Bridge has included a total contingency value of $104,997,797 which corresponds to an 85% confidence level as seen in **Exhibit I.2.**

High Bridge performed 2 Monte Carlo analyses to calculate management reserve. The analyses were performed on the FP&L Risk Register and the High Bridge Risk Register. Discrete risk simulations were run to calculate management reserve and High Bridge has included two values $125,094,400 (High Bridge) and $112,445,912 (FP&L) which correspond to the 85% confidence level as seen in **Exhibit I.2.** A more detailed explanation of risk is included in Section XII.

Risk Values at 85% Confidence	
Implementation Contingency	$ 50,820,450
Engineering Contingency	$ 7,400,190
FPL Non Manual Contingency	$ 13,423,992
Bechtel Non Manual Contingency	$ 18,366,287
Indirects Contingency	$ 13,784,716
Construction Equip Contingency	$ 1,202,162
Total Contingency	**$ 104,997,797**


Turkey Point EPU Construction Costs 2008-2012
Millions
$1,800
$1,600
$1,400
$1,200
$1,000
$800
$600
$400
$200
$0
2008
2009
2010
2011
2012
PTN estimate
PTN to go costs
PTN spent