

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

**DOCKET NO. 100009-EI
FLORIDA POWER & LIGHT COMPANY**

**IN RE: NUCLEAR POWER PLANT COST RECOVERY AMOUNT
TO BE RECOVERED DURING THE PERIOD
JANUARY - DECEMBER 2011**

REBUTTAL TESTIMONY OF:

JOHN J. REED

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5 **AUGUST 3, 2010**

6 **SECTION I: INTRODUCTION**

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

8 A. My name is John J. Reed. My business address is 293 Boston Post Road West,
9 Marlborough, Massachusetts 01752.

10 **Q. Have you previously filed direct testimony in this proceeding?**

11 A. Yes, I have.

12 **Q. Are you sponsoring any exhibits along with this testimony?**

13 A. Yes I am. The following exhibit is attached to my rebuttal testimony in this proceeding:

14 Exhibit JJR_9 – The Contract Price/Owner Contingency Dynamic

15 **Q. Please state the purpose of your rebuttal testimony.**

16 A. I have been asked by Florida Power & Light Company (“FPL” or the “Company”) to
17 respond to the direct testimony of Dr. William Jacobs, submitted on behalf of the Florida
18 Office of the Public Counsel (“OPC”), and the direct testimony of Arnold Gunderson and
19 Dr. Mark Cooper, both of whom are testifying on behalf of the Southern Alliance for Clean
20 Energy (“SACE”). Specifically, FPL has asked me to assess OPC Witness Jacobs’ criticism
21 of the EPU cost estimate, his critique of the Company’s use of “to-go” costs in its feasibility

1 analysis, and his recommendation that the PSC require FPL to work with the interveners and
2 staff to develop a risk sharing mechanism for the EPU Project. FPL has also asked me to
3 respond to the pre-filed direct testimonies of SACE Witnesses Cooper and Gundersen. In
4 response, my rebuttal testimony addresses FPL's approach to managing the PTN 6 & 7
5 project and how this management approach is consistent with the approach advocated by
6 SACE Witness Cooper and discusses certain fundamental deficiencies contained with the
7 analyses of SACE Witnesses Cooper and Gundersen. Finally, FPL has asked me to
8 comment on two items contained within the direct testimony of Florida PSC Staff Witnesses
9 David Rich and Lynn Fisher.

10 **Q. Please describe how the remainder of your testimony is organized.**

11 A. My testimony is divided into eight sections. Section II summarizes my conclusions. Section
12 III of my testimony includes my assessment to OPC Witness Jacobs' concerns regarding the
13 EPU cost estimates and the treatment of sunk costs. Section IV of my testimony discusses
14 the FPL project management approach to the PTN 6 & 7 Project and responds to the SACE
15 Witnesses incorrect contentions that FPL should cease developing the option to deploy
16 nuclear power. Sections V and VI respond to the procedural, technological, and economic
17 challenges asserted by SACE Witnesses Gundersen and Cooper. Finally, Section VII
18 responds to two items contained within the direct testimony of Florida PSC Staff Witnesses
19 Fisher and Rich, and Section VIII presents my conclusions.

1 **SECTION II: SUMMARY OF CONCLUSIONS**

2 **Q. Please summarize your conclusions regarding the direct testimony of OPC Witness**
3 **Jacobs.**

4 A. OPC Witness Jacobs has raised concerns related to FPL's cost estimate for the EPU Project
5 and the Company's treatment of sunk costs in its feasibility analysis for the Project. I believe
6 that OPC Witness Jacobs' concerns are poorly founded because he failed to consider the
7 most recent EPU cost estimate in the context of either the Project's evolution or its
8 expanded scope. I also believe that the current treatment of sunk costs is appropriate and
9 consistent with regulatory policy around the country. Finally, I disagree with OPC Witness
10 Jacobs' recommendation that the Commission require FPL to work with OPC, the Florida
11 PSC Staff and the other interveners in this Docket to develop a risk sharing mechanism for
12 the EPU Project.

13 **Q. Please summarize your conclusions regarding the direct testimony of SACE**
14 **Witnesses Gundersen and Cooper in this proceeding.**

15 A. I believe that SACE Witnesses Gundersen and Cooper have failed to bring to light any
16 unanticipated project risks. Moreover, they fundamentally misunderstand the intent and
17 scope of the PTN 6 & 7 Project. The SACE Witnesses are further misguided in their belief
18 in the benefits that may be derived (and opportunities foregone) by the cessation of all new
19 nuclear activities. As support for their opinion, SACE Witnesses Gundersen and Cooper
20 cite a number of flawed analyses and draw the flawed conclusion that utilities today should
21 limit their flexibility in light of uncertainty about the future. In short, the SACE Witnesses'
22 methods, interpretations, and conclusions are unsound and decidedly selective and should be
23 rejected.

1 **Q. Please provide a summary of your conclusions related to the direct testimony of**
2 **Florida PSC Staff Witnesses Fisher and Rich.**

3 A. Florida PSC Staff Witnesses Rich and Fisher have performed a thorough review of the FPL
4 EPU Project and the PTN 6 & 7 Project. Nonetheless, there are two items which are
5 worthy of additional clarification and response. First, with regard to the need to continue to
6 conduct annual audits of Bechtel's COLA subcontractor billings, Concentric believes the
7 need for our recommendation has been greatly diminished by a structural change in the
8 Bechtel COLA contract. Second, Concentric, in performing two separate, but
9 complimentary reviews of the EPU Project, has found no evidence of imprudently incurred
10 costs. As a result, Concentric believes the costs incurred by the EPU Project are the result
11 of prudent decision making processes, and Commission action on the costs which are the
12 subject of the current case should not be deferred to a later date.

13 **SECTION III: OPC WITNESS JACOBS' EPU COST ESTIMATE CONCERNS**

14 **Q. Have you reviewed the direct testimony filed by OPC Witness Jacobs?**

15 A. Yes I have.

16 **Q. Did OPC Witness Jacobs express any concerns related to the prudence of the**
17 **decision making processes that lead to any of FPL's previously incurred costs?**

18 A. No. OPC Witness Jacobs' only stated concern is related to FPL's cost estimate for the EPU
19 Project. His concern and recommendations do not question the prudence of FPL's prior
20 management decisions.

1 **Q. Please briefly describe OPC Witness Jacobs' concern and recommendations related**
2 **to the EPU cost estimate.**

3 A. OPC Witness Jacobs notes that (1) the high end of the current cost estimate range is \$500
4 million higher than the need determination estimate, (2) FPL's EPU Project, in OPC
5 Witness Jacobs' opinion, is projected to be "expensive capacity" as compared to Progress
6 Energy Florida's ("PEF's") EPU project, and (3) excluding sunk costs from FPL's feasibility
7 analysis could mask any projected cost increases. As a result, OPC Witness Jacobs
8 recommends the Commission should require FPL to include sunk costs in future feasibility
9 analyses, perform a breakeven cost analysis similar to the analysis which is currently
10 performed by the Company for the PTN 6 & 7 Project and direct FPL to work with OPC,
11 the FL PSC Staff and the other interveners in this docket to develop a risk sharing
12 mechanism for the EPU Project.

13 **Q. Please describe OPC Witness Jacobs' concern related to the increase in the cost**
14 **estimate for the EPU Projects.**

15 A. In his pre-filed direct testimony, OPC Witness Jacobs correctly notes that for 2010, FPL has
16 updated its cost estimate to include a range that is approximately \$250 to \$500 million
17 greater than the single point estimate utilized by FPL in prior proceedings. Similarly, FPL
18 has updated the amount of additional capacity FPL expects to receive from the EPU
19 Projects. FPL currently estimates the capacity of the EPU Projects to be between 399 and
20 463 MW. OPC Witness Jacobs then notes that on a per unit basis, FPL's uprate project is
21 more costly than the uprate project being pursued by PEF. To do so, OPC Witness Jacobs
22 relies on the top end of FPL's cost estimate range and the low end of FPL's estimate of the
23 capacity gain, which inflates the differences in FPL's and PEF's cost estimates.

1 **Q. Is comparing the estimated EPU project costs of FPL and PEF a sound basis from**
2 **which to judge the EPU Project?**

3 A. Absolutely not. Judging the cost effectiveness of FPL's EPU Project by comparing it with
4 PEF's EPU Project is inappropriate. Such a comparison does not take into account the
5 differences in scope and plant design between the two projects. These differences in scope
6 and plant designed are discussed in rebuttal testimony of FPL Witness Jones. OPC Witness
7 Jacobs' comparison is akin to comparing the costs of remodeling two houses of different
8 size, in different neighborhoods, and with different materials.

9 **Q. Given your statements above, is there a sound basis for determining the cost**
10 **effectiveness of the EPU Project?**

11 A. Yes. FPL is required to annually review the EPU Project to assess its feasibility. This
12 analysis is presented to the Commission as one part of FPL's NCRC filing in May of each
13 year, and reflects the engineering progress and what is currently known regarding project
14 scope, cost, and schedule, and the cost and viability of alternative generation technologies.
15 The analyses presented by the Company in 2010 demonstrated that the EPU Project
16 continued to present an economic advantage in all of the fuel, environmental compliance
17 cost, and cost of capital scenarios. Additionally, because the annual feasibility analysis takes
18 into account conditions unique to FPL's EPU Project, it is the most sound means of
19 determining the overall cost effectiveness of the project.

1 **Q. Did OPC Witness Jacobs take into account any of the EPU Project's developments**
2 **or scope changes when presenting his concern with the higher cost estimate?**

3 A. No. OPC Witness Jacobs appears to have simply compared his version of the top-line
4 estimates of the FPL and PEF EPU projects. Indeed, because additional engineering
5 analyses were completed over the past year to prepare for LAR filings, the cost certainty is
6 greater than at this time last year. The issue of scope growth and cost certainty was
7 addressed in the May 3rd direct testimony of FPL Witness Terry Jones who stated that "in
8 the Engineering Design Modification Phase the detailed modification packages are
9 prepared....These activities provide the basis for preparing detailed estimates of the
10 implementation costs."¹ When providing updates to the project status, FPL Witness Jones
11 was careful to note that "the EPU project [was] in the early stages of the Engineering Design
12 Modification Phase with approximately 40% of the design modifications initiated and 2% of
13 the design modifications issued."² In his May testimony, FPL Witness Jones held that the
14 Engineering Design Modification Phase had reached "approximately 10% completion."³

15 Additionally, OPC Witness Jacobs' comparison is only done using the top of FPL's cost
16 estimate range and the low end of the capacity range. This has the effect of inflating the
17 differences between these two projects.

18 **Q. Please describe OPC Witness Jacobs recommendation related to the use of "To-Go"**
19 **costs in the Company's 2010 feasibility analysis.**

20 A. OPC Witness Jacobs suggests that the costs that have already been expended on the EPU
21 Project, sunk costs, are relevant to the prudence of a decision on moving forward with the
22 remaining work to complete the Project.

1 **Q. Please review the concept of “to-go” and sunk costs.**

2 A. It is useful to consider these terms in the context of an example. When building a new
3 house, it is necessary to spend time on planning for construction, including deciding what
4 location is best suited for the home, making detailed architectural plans, ordering supplies,
5 etc. If, after all of these steps have been completed, the homeowner decides to reconsider a
6 different size home on a different plot, the homeowner must realize that much or all of the
7 time, effort and expense that has been spent on planning the original building cannot be
8 recovered: those are sunk costs. Similarly, since the project is already planned and the site is
9 prepared for construction, the cost to the homeowner of completing the original project—
10 the to-go cost— is lower than would be the cost of starting over from scratch on a new
11 home design at a different site. Consequently, the homeowner’s decision concerning
12 whether to proceed with the project underway is made by comparing the remaining cost of
13 completing the home that has been planned with the cost of initiating and completing an
14 entirely new home with different features.

15 As I stated in my May 3 direct testimony in this proceeding, the “to-go” cost of a project is
16 simply the remaining cost of a project that is underway. It is the incremental cost from a
17 given point in time that will be required in order to complete the project. Sunk costs, on the
18 other hand, are essentially the opposite. They are retrospective costs that have already been
19 incurred up to a given point in a project. It is important to note that sunk costs represent
20 work that has been accomplished to date and cannot be refunded.

21 **Q. How are to-go and sunk costs relevant to the FPL EPU Projects?**

22 A. Large construction projects, including the EPU Projects, often take years to complete. Costs
23 are incurred throughout the development process, during planning, procurement and

1 engineering stages as well as during construction itself. As the project proceeds through
2 initial engineering and construction toward completion, to-go costs gradually fall until the
3 point at which the project enters service. As I mentioned above, the to-go cost of the EPU
4 Projects is the total project cost less sunk costs.

5 **Q. Do you and OPC Witness Jacobs agree on this point?**

6 A. No. Sunk and to-go costs are well-founded principles of prudent economic decision-making
7 that apply to any kind of investment, not just electric infrastructure construction. The
8 Florida PSC recognized this fact when it required FPL to provide an economic analysis that
9 accounts for sunk costs in Order No. PSC-08-0237-FOF-EI:

10 “FPL shall provide a long-term feasibility analysis as part of its annual cost
11 recovery process which, in this case, shall also include updated fuel forecasts,
12 environmental forecasts, break-even costs, and capital cost estimates. In
13 addition, FPL should account for sunk costs. Providing this information on
14 an annual basis will allow us to monitor the feasibility regarding the
15 continued construction of Turkey Point 6 and 7.”⁴

16 While this passage specifically pertains to the new nuclear projects, it would be inappropriate
17 to treat PTN 6 & 7 and the EPU Projects inconsistently in this regard.

18 As I stated in my May 3 testimony, it is my experience that this kind of reasoning is applied
19 almost universally by regulators in consideration of large capital investment projects.
20 Furthermore, evaluating costs that have been incurred in the past is tantamount to a
21 hindsight review of decisions that have already been deemed prudent. Conditions, events,
22 and charges in the past are only peripherally relevant to FPL’s analysis of whether or not to
23 proceed with the project on a going-forward basis. Revisiting past decisions that the
24 Commission has already determined to be prudent would place an inappropriate burden on
25 the Company, and would be inconsistent with Florida Administrative Rule 25-6.0423 (the

1 “Nuclear Cost Recovery Rule”), which requires the PSC to determine whether expenditures
2 were prudently incurred based on information available at the time decisions are made.

3 In order to determine the prudent path forward, the Company and the Commission need to
4 evaluate the best information available in the present. Using this information and forecasts
5 that represent appropriately calibrated expectations, FPL must determine the wisdom of
6 proceeding with the EPU Project. Costs that have been incurred to date simply do not apply
7 to this analysis. In evaluating whether or not to proceed with construction, firms conducting
8 ongoing, capital-intensive projects must determine whether the benefits to be gained from
9 additional investment will exceed the total costs that remain. That alone is the basis upon
10 which sound decisions can be made.

11 **Q. Does OPC Witness Jacobs also recommend the Commission consider adopting a**
12 **risk sharing mechanism for the EPU Projects?**

13 A. Yes he does. On Page 11, of his pre-filed, direct testimony, OPC Witness Jacobs states:

14 “I further recommend that the Commission require the Office of Public
15 Counsel, the Commission Staff, other interested parties, and FPL to work
16 together to develop a risk sharing mechanism that allocates risk and cost
17 between the Company and ratepayers in the event the final cost of the EPU
18 project is greater than the final estimate provided by the Company. A risk
19 sharing mechanism would result in the Company having some ‘skin in the
20 game’ and provide [the] motivation to control costs that is now lacking.”⁵

21 **Q. Does OPC Witness Jacobs’ recommendation have any regulatory policy**
22 **implications?**

23 A. Yes it does. As it currently stands, FPL is entitled to recover *all* of its prudently incurred
24 costs. This is consistent with the prudence standard originally espoused by Supreme Court
25 Justice Brandeis in 1923.

1 “There should not be excluded from the finding of the base, investments
2 which, under ordinary circumstances, would be deemed reasonable. The
3 term is applied for the purpose of excluding what might be found to be
4 dishonest or obviously wasteful or imprudent expenditures. Every
5 investment may be assumed to have been made in the exercise of reasonable
6 judgment, unless the contrary is shown...adoption of the amount prudently
7 invested as the rate base and the amount of the capital charge as the measure
8 of the rate of return...[would provide] a basis for decision which is certain
9 and stable. The rate base would be ascertained as a fact, not determined as a
10 matter of opinion.”⁶

11 OPC Witness Jacobs’ recommendations could prevent the Company from recovering all of
12 its prudently incurred costs simply because the final cost of the project exceeded the existing
13 cost estimate. Whether the project remains a cost effective and prudent investment does not
14 seem to factor into OPC Witness Jacobs recommendation. Similarly, by introducing a risk
15 sharing mechanism, FPL’s customers could be burdened with higher rates if the final cost of
16 the project was less than the existing cost estimate because a risk sharing mechanism would
17 allow the Company to retain a portion of the savings. Such a situation is clearly not in the
18 best interest of FPL’s customers.

19 Finally, the prudence standard cited above, clearly establishes a rebuttable presumption of
20 prudence on the part of utility decision makers by stating “[e]very investment may be
21 assumed to have been made in the exercise of reasonable judgment, unless the contrary is
22 shown.” By adopting OPC Witness Jacobs’ risk sharing proposal today, the Commission
23 would essentially nullify this presumption of prudent behavior.

24 **Q. Is a risk-sharing mechanism consistent with the Florida’s Legislature’s directive to**
25 **the Commission regarding nuclear generation?**

26 A. No, it is not. The Florida Legislature has explicitly recognized the value of new nuclear
27 generation as a capacity resource that emits no greenhouse gas (GHG). In addition, the

1 Florida Legislature has recognized the specific licensing, permitting and construction of new
2 nuclear capacity, and, as a result, has “directed the Commission to establish new rules to
3 provide for early cost recovery mechanisms for costs related to the siting, design, licensing
4 and construction of new nuclear power plants in Florida.”⁷ This policy is clearly beneficial
5 to the State of Florida because it requires the Commission to consider the benefits of nuclear
6 power when considering the need for a new nuclear power plant. These benefits include not
7 only reduced emissions, but also increased fuel diversity and fuel savings. Additionally, new
8 nuclear is the only emissions free capacity resource that is capable of providing significant
9 quantities of baseload power. In fact, the Florida Statute 403.519(4)(a)(3), clearly requires
10 only a “nonbinding estimate of the cost of the nuclear or integrated gasification combined
11 cycle power plant...” For all of these reasons, the Commission has enacted the Nuclear
12 Cost Recovery Rule.

13 **Q. Is a risk sharing mechanism consistent with the Commission’s Nuclear Cost**
14 **Recovery Rule?**

15 A. No it is not. Section (1) of Commission Rule 25-6.0423 states:

16 “Purpose. The purpose of this rule is to establish alternative cost recovery of
17 costs incurred in the siting, design, and construction of nuclear or integrated
18 gasification combined cycle power plants in order to promote electric utility
19 investment in nuclear or integrated gasification combined cycle power plants
20 and allow for the recovery in rates of *all* such prudently incurred costs”⁸
21 *Emphasis added*

22 The word “cost” is later defined as:

23 “‘Cost’ includes, but is not limited to, *all* capital investments including rate
24 of return, any applicable taxes and all expenses, including operation and
25 maintenance expenses, related to or resulting from the siting, licensing,
26 design, construction, or operation of the nuclear or integrated gasification

1 combined cycle power plant as defined by Section 366.93(1)(a), F.S.”⁹
2 *Emphasis added*

3 Clearly, the Commission’s rule in this matter is intended to provide for the recovery of all,
4 and not just some of, of the Company’s prudently incurred costs and does not provide for
5 the risk sharing mechanism proposed by OPC Witness Jacobs.

6 **Q. If the total cost of the EPU Projects exceed the Company’s current cost estimates,**
7 **should the Commission consider those costs to be imprudently incurred by the**
8 **Company?**

9 A. No. The mere fact that the final cost of a project exceeded a cost estimate is not, on its
10 own, evidence of imprudent decision making. In order to determine if the Company’s costs
11 are the result of prudent decision making, the Commission should first define a range of
12 reasonable outcomes, based upon the information that was available at the time of each
13 Company decision, that define prudent behavior. Only then can the Commission make a
14 determination as to whether the Company’s costs are the result of imprudent decision
15 making.

16 **Q. Are there other aspects of risk sharing mechanisms which should be considered by**
17 **the Commission?**

18 A. Yes, requiring the Company to adopt a risk sharing mechanism for the EPU Project is very
19 similar to the allocation of risk in a construction contract. Exhibit JJR-9 includes a figure I
20 presented in Docket No. 090009-EI. This figure is derived from an October 2008 Standard
21 & Poor’s article and depicts the inherent trade-offs between risk and project cost.¹⁰ As
22 shown by this figure, FPL would need to develop a cost estimate that includes a sufficient
23 contingency to substantially limit the probability of a cost overrun. By doing so, the Florida

1 PSC would likely bind FPL's customers to a higher price for the EPU Projects since a risk
2 sharing mechanism would allow the Company to retain a portion of the savings.

3 Additionally, OPC Witness Jacobs' risk-sharing proposal is inconsistent with appropriate
4 principles of project management. His proposal would require the Company to file a
5 binding cost estimate with the Commission in spring 2011, well before the detailed design of
6 all of the modifications is completed. Thus, it would be difficult, at best, for the Company
7 to develop a "final" binding cost estimate at that time.

8 **Q. Does the Commission have any other tools available to ensure that the costs incurred**
9 **by FPL are the result of prudent decision making?**

10 A. Yes. The Commission has an extremely powerful tool to ensure FPL's costs are the result of
11 prudent decision making processes – the ability to disallow imprudently incurred costs. This
12 is a very powerful motivation for the Company to both prudently incur and control costs on
13 the EPU Project. Thus, it is entirely unnecessary for the Commission to develop an
14 additional tool to address the potential for imprudently incurred costs.

15 **SECTION IV: THE PTN 6 & 7 PROJECT MANAGEMENT STRATEGY**

16 **Q. Did you review the pre-filed, direct testimonies of SACE Witnesses Cooper and**
17 **Gundersen?**

18 A Yes I did.

1 **Q. Does SACE Witness Cooper raise any new arguments related to the long term**
2 **feasibility of the PTN 6 & 7 Project?**

3 A. No. SACE Witness Cooper argues that all nuclear development should immediately stop as
4 it would be imprudent to move forward. This argument, and the support for it, are almost
5 entirely identical to the arguments he presented in 2009 in Docket 090009-EI. He deems
6 FPL's efforts to preserve the option of building new nuclear power in the future to be "line-
7 sitting," and that the costs the Company incurs in this regard should not be recoverable.
8 SACE Witness Cooper continues by questioning the economics of new nuclear
9 development, citing recent declining gas prices, declining estimates of carbon prices,
10 declining demand, increasing cost projections for industry projects and the high degree of
11 regulatory and economic uncertainty. As support for his assertion that all nuclear
12 development activities should cease, Cooper relies upon a number of flawed analyses and
13 makes the incorrect statement that utilities today should limit their future flexibility despite
14 enormous uncertainty. Finally, SACE Witness Cooper recommends that the Commission
15 should develop a template for evaluating the build/no-build decision, when, if ever, it is
16 presented by FPL. Putting aside the imprudence of establishing a single decision-point for
17 pursuing new nuclear generation, it is unclear how this framework differs from the
18 comprehensive evaluation the Commission already conducted when it issued an affirmative
19 Determination of Need for the PTN 6 & 7 Project in March 2008 and annually revisits in its
20 Nuclear Cost Recovery docket.

21 **Q. Please summarize the testimony of SACE Witness Gundersen.**

22 A. SACE Witness Gundersen accuses FPL of engaging in "site banking" and claims the
23 Company did not demonstrate the long-term feasibility of ever building new nuclear. SACE

1 Witness Gundersen's site banking appears to be similar to SACE Witness Cooper's line
2 sitting assertions. SACE Witness Gundersen goes on to claim that he accurately predicted
3 schedule delays and cost overruns in 2009. SACE Witness Gundersen argues that delaying
4 construction while continuing to attempt to license new reactors only increases costs for
5 customers with no end in sight and that all costs incurred to this end are unreasonable and
6 imprudent. Furthermore, he agrees with FPL that the licensing process itself is fraught with
7 uncertainty, but argues without any analytical support that the least cost option would be the
8 immediate cancellation of the units rather than what he refers to as the site banking
9 approach.

10 **Q. Are the concerns voiced by the SACE Witnesses valid?**

11 A. The concerns voiced by the SACE Witnesses are only valid in that there is a great deal of
12 uncertainty associated with the development of the PTN 6 & 7 Project. If completed, the
13 development period for PTN 6 & 7 will exceed a decade or more. During this time
14 electricity demand, fuel prices and environmental compliance costs will fluctuate
15 substantially as new policies are implemented and economic cycles ebb and flow. As has
16 been discussed previously, these fluctuations and new policies are sources of extraordinary
17 uncertainty for the PTN 6 & 7 Project. However, by accusing FPL of "line-sitting" and
18 "site-banking," SACE Witnesses Gundersen and Cooper reveal a fundamental
19 misunderstanding of the PTN 6 & 7 Project, the legislative intent behind the Florida Energy
20 Act of 2006 and the Nuclear Cost Recovery Rule that this legislation created.

21 **Q. Please provide a brief history of the PTN 6 & 7 Project.**

22 A. On April 3, 2006, FPL submitted a letter to the Nuclear Regulatory Commission ("NRC")
23 indicating FPL's intent to submit a Combined Construction and Operating License

1 Application (“COLA”). Given the high cost of new nuclear construction, more efficient
2 licensing could only be effective in promoting new nuclear development when coupled with
3 progressive regulation regarding cost recovery. Recognizing this, the Florida Legislature
4 passed Senate Bill 888 (known thereafter as the Florida Energy Act) in June 2006. This
5 Commission adopted Order No. PSC-07-0240-FOF-EI, the Nuclear Cost Recovery Rule, to
6 implement Section 366.93, F.S. (the Statute). The stated purpose of the Florida Energy Act
7 is to promote utility investment in nuclear power plants, and it directed the Commission to
8 establish alternative mechanisms for cost recovery and step-wise, periodic prudence
9 determinations with respect to costs incurred to build nuclear power plants. The Nuclear
10 Cost Recovery Rule provides the mechanism and the annual recovery of these costs through
11 the Capacity Cost Recovery Clause (CCRC).

12 **Q. Please describe the current approved scope and project management strategy of the**
13 **PTN 6 & 7 Project**

14 A. The current approved scope of work encompasses only those activities required for creating
15 the option, but not the obligation, to develop two new nuclear units. These activities include
16 obtaining a Determination of Need from the Florida PSC, site and technology selection, and
17 pursuit of the necessary permits and licenses necessary to construct and operate the
18 proposed units at the Turkey Point site in the future. The project scope also includes an
19 appropriate level of associated construction planning for future construction, testing and
20 commissioning of the new units.

21 FPL has been explicit about the intent and scope of the PTN 6 & 7 project since it formally
22 commenced its new nuclear effort. For instance, FPL’s “Project Plan for New Nuclear
23 Generation,” first published in September 2006, was careful to note that “no decision has

1 been made by FPL to build a nuclear plant; the approved scope is specific to development,
2 issuance, and review of a COLA only.”¹¹ In its most recent Project Plan, the Company
3 reiterated that “the currently identified scope of the project is to perform development and
4 licensing activities to create the option to build two nuclear facilities on the Turkey Point
5 Nuclear property.”¹²

6 **Q. Did the Company present this scope and project management strategy in prior**
7 **testimony to the Commission?**

8 A. Yes, the Commission has reviewed and approved the PTN 6 & 7 Project, including the
9 parameters described above. For instance, in FPL’s Determination of Need Filing¹³, FPL
10 Witness Scroggs described FPL’s approach to the PTN 6 & 7 Project as proceeding in a
11 “deliberate stepwise fashion, equivalent to purchasing a series of options for future nuclear
12 generation.”¹⁴ He added that the process for deploying new nuclear generation is unique,
13 and that it must incorporate a “transparent decision making process that seeks out and
14 incorporates new information allowing for adjustments to be made as the project unfolds.”¹⁵
15 Finally, Scroggs noted that “a determination of need...is not an irreversible commitment to
16 a project or a specific development path,” but rather “the first, crucial step in a process that
17 is economically equivalent to purchasing an option to maintain the possibility of new nuclear
18 capacity joining the FPL generating fleet by 2018.”¹⁶

19 Similarly, in Docket 080009-EI, I testified that the “PTN 6 & 7 project practices are...aimed
20 most directly at utilizing a thoroughly documented process that maintains the option to build
21 new nuclear capacity, but does not commit the Company to constructing a new nuclear
22 power facility if market conditions should change.”¹⁷ Clearly, FPL has never adopted the
23 “go/no-go” decision mentality discussed by SACE Witnesses Cooper and Gundersen. In

1 fact, it would be imprudent for the Company to do so given the cost and length of the
2 development period for nuclear development.

3 **Q. Did FPL also discuss the risk and uncertainties associated with nuclear construction**
4 **in the above-referenced proceedings?**

5 **A.** Yes. In Docket 080009, FPL Witness Scroggs testified that the pace of the Turkey Point 6
6 & 7 project was determined by the assessment of project risk. Based on regular assessments,
7 FPL would identify issues potentially affecting cost and schedule, and “if the magnitude of
8 the impact is such that the cost or schedule impact materially changes the feasibility of the
9 project or significantly increases risk, a decision could be made...to continue with modifying
10 budget and schedule as needed and taking available mitigation actions, or halt the project
11 temporarily while the impact of the issue is further assessed.” Thus, the progression of the
12 project can “be controlled based on the best information available,” and “the option of
13 slowing or halting the project in response to significant events...offers a high level of
14 exposure control to FPL customers.”¹⁸

15 **Q. Did the Commission concur with the Company in the above-referenced dockets?**

16 **A.** Yes, in the above-referenced dockets, the Commission approved an affirmative
17 Determination of Need for the PTN 6 & 7 project and approved the recovery of certain
18 actual and projected costs, respectively. In issuing its Determination of Need, the
19 Commission stated that “nuclear power plant construction is an essential component of
20 meeting the state’s long term electric reliability requirements,” and recognized “the high risk
21 nature of construction of a nuclear power plant” compelled FPL to seek “some measure of
22 certainty regarding the construction of its next nuclear power plant.”¹⁹ Regarding this

1 measure of certainty, the Commission concluded: “We believe it is reasonable for FPL to
2 seek assurances for the first nuclear power plant it has built in several decades.”²⁰

3 **Q. Has this approved scope or project management strategy changed since the PTN 6
4 & 7 project received a Determination of Need from this Commission?**

5 A. No. The PTN 6 & 7 Project has consistently been the development of the option, but not
6 the obligation, to deploy new nuclear generation at the Company’s PTN site. SACE
7 Witnesses Gundersen’s and Cooper’s assertions that FPL has changed its management
8 approach to this project are inaccurate and represent a disingenuous attempt to re-write the
9 history of the PTN 6 & 7.

10 **Q. You refer to the PTN 6 & 7 Project as an “option.” What do you mean by this term?**

11 A. Simply put, an option gives an owner the right, but not the obligation to invest in or divest
12 an asset for a fixed period of time. This allows the option owner to invest a small amount at
13 the present time to preserve the choice or “option” of making a decision at a future time. In
14 this case, the asset in which FPL can invest is a new nuclear power plant. Once the
15 Company has received a Combined Operating License (“COL”), FPL will have this ability
16 for a period of at least 20 years. However, the receipt of a COL does not bind the Company
17 to building the PTN 6 & 7 Project should economic, political or regulatory factors change in
18 a manner that is unfavorable to the PTN 6 & 7 Project. More precisely, the PTN 6 & 7
19 represents a “real option” as opposed to the financial options that are traded by investors.

20 **Q. Are there uncertainties for renewable energy and energy efficiency resources?**

21 A. Yes. It is often suggested that there could be significant changes in the cost, performance,
22 and reliability of renewable energy alternatives in response to greater demand. Some analysts

1 predict that new renewable generating technologies, such as ocean current/wave/thermal
2 resources, will be commercialized and provide a clean, affordable means of producing
3 electricity. The future availability, cost and performance parameters of these alternatives are
4 inherently uncertain, which adds to the challenges facing electric resource planners. Cost is
5 also not the only potential factor that could limit penetration of these resources; permitting
6 issues for such installations are frequently a major issue.

7 **Q. Why is it important for the Company and its customers to preserve all available**
8 **options in times of uncertainty?**

9 A It is widely understood that the flexibility which is represented by an option increases in
10 value during periods of uncertainty because it allows a company's management to quickly
11 respond to changing economic, financial, regulatory and political events. The article "Real
12 Options Primer: A Practical Synthesis of Concepts & Valuation Approaches," put this
13 concept quite simply by stating "In other words, there is a positive relationship between
14 uncertainty and option value because the option allows us to capture the upside while
15 eliminating the downside."²¹

16 Historically, FPL and the State of Florida have relied on new natural gas-fired, combined
17 cycle power plants to meet new generation needs. However, both the Company and Florida
18 are at risk of becoming overly dependent on natural gas generation. Specifically, FPL's
19 current generating fleet consists of approximately 47% natural gas-fired combined cycle
20 power plants while Florida receives approximately 56% of its electricity from natural gas-
21 fired generation. FPL's use of natural gas is projected to exceed 66.5% by the end of the
22 next decade as reported in FPL's 2010 Ten Year Site Plan. The vulnerability created by a
23 heavy reliance on natural gas was demonstrated during the period between 2005 and 2008.

1 During this period, natural gas prices were extremely volatile and at times supply was limited
2 by major hurricanes. Other natural gas price spikes were experienced in 2000 through 2001.

3 It is also important to note that the installed costs of all types of generation have increased
4 significantly since 2000. A recent industry article points out, that on average, the cost of new
5 generation has more than doubled since 2000 despite being flat or declining since 2008.²²

6 **Q. SACE Witness Cooper states that in periods of uncertainty, utilities should acquire
7 assets with short lead times that closely match demand rather than incurring large
8 capital costs. Is this true?**

9 A. All other things being equal, shorter lead times and less “lumpy” capacity additions are
10 favorable. However, SACE Witness Cooper fails to make one critical distinction. In times
11 of extreme uncertainty such as now, a prudent utility should make investment decisions that
12 enhance its overall flexibility. This includes preserving options which are inherently more
13 flexible than fixed assets. The flexibility to construct new nuclear power plants is one such
14 option. Because of the lead time associated with a new nuclear power plant, failing to take
15 steps at this time to pursue a new nuclear plant would effectively eliminate the role of
16 nuclear as an option for FPL and its customers for some time to come. Ironically, SACE
17 Witness Cooper forgets his own admonition about the importance of preserving flexibility
18 and the need for regular reviews of a utility’s resource decisions when he evaluates FPL’s
19 development of the nuclear option for PTN 6 & 7. Despite this, SACE Witness Cooper
20 does recognizes that new nuclear generation may be cost competitive by 2020.

21 SACE Witnesses Cooper’s and Gundersen’s advocacy of a single “go/no-go” decision that
22 would be made before costs are incurred is reminiscent of the worst examples of resource
23 planning from the 1980s, when utilities were locked into proceeding with nuclear projects,

1 without ongoing reviews, and billions of dollars were wasted on projects that were eventually
2 cancelled. I am in complete disagreement with SACE Witnesses Cooper and Gundersen on
3 this point. A step-by-step approach, with frequent re-examination and review, and prudent
4 expenditures to develop, evaluate and preserve this resource option, is unquestionably better
5 than the wasteful “go/no-go” approach and is absolutely critical to successful new nuclear
6 development. FPL has wisely chosen to learn from the experience of others and avoid if at
7 all possible an early “go/no-go” decision that would lock in a decision to build PTN 6 & 7.
8 Indeed, FPL is preserving the nuclear generation alternative for its customers through a
9 carefully conceived and well executed step-by-step approach.

10 **Q. Is FPL’s current development approach to the PTN 6 & 7 consistent with this view?**

11 A. Yes, as discussed earlier, FPL is pursuing a careful and well-executed stepwise process to
12 preserve the option to build two new nuclear power plants. It has sought to preserve
13 optionality at the lowest possible cost that permits the project to meet the need identified.
14 This strategy involves delaying upfront customer expenditures as long as practical to meet
15 the project’s development schedule and undergoing the Commission’s annual feasibility
16 review as part of the NCRC process. This process allows both FPL and the Commission to
17 evaluate new information on a timelier basis, but also allows the Commission to defer
18 judgment until more definite information is available. Further, this approach does not
19 prevent the Commission or FPL from simultaneously pursuing all other resource options,
20 including renewable energy and energy efficiency resources, which may become available
21 during the PTN 6 & 7 project’s useful life.

1 **Q. What are the implications of SACE Witnesses Cooper's and Gundersen's strategies if**
2 **they were pursued?**

3 A. The SACE Witnesses advocate that FPL plan to invest in short lead time power plants such
4 as natural gas power plants that can be developed on relatively little notice. Their position is
5 based on their belief that sufficient new renewable resources and energy efficiency will
6 undoubtedly become available to meet FPL's entire need for new resources. Such a strategy
7 represents a gamble on the development of these technologies. If that gamble does not
8 prove correct, however, FPL and its customers would be forced to build the natural gas
9 assets SACE Witnesses Cooper and Gundersen are advocating. These assets will further
10 subject FPL's customers to fluctuations in the price and availability of natural gas, which are
11 very substantial already. It would not be prudent for FPL to pursue such a speculative
12 resource development strategy in times as uncertain as these. In contrast to SACE Witness
13 Cooper's and Gundersen's strategies, FPL's strategy will still enable the utility to vigorously
14 pursue any viable energy efficiency and renewable energy resources which may become
15 available while preserving the option to construct PTN 6 & 7 in the future.

16 **Q. Based on your statements above, do you believe it is prudent for FPL to continue to**
17 **pursue a COLA for the PTN 6 & 7 Project?**

18 A. Yes. As I have stated above, the COLA creates the option, but not the obligation, to
19 construct the PTN 6 & 7 Project. This option provides additional flexibility during
20 uncertain times, but does not prevent the Company from pursuing other resource strategies
21 should these strategies prove favorable to FPL's customers.

22 Finally, it is important to note that the COLA represents a substantial amount of planning
23 and assessment, which could prove, at least partially, beneficial to other generating resources

1 constructed at the site. For example, SACE Witness Gundersen discusses two nuclear
2 power plants, Zimmer and Midland, that were cancelled during construction. However, he
3 fails to note that in both cases these plants were later converted to useful fossil-fueled power
4 plants that continue to produce power for customers today.

5 **SECTION V: SACE WITNESS GUNDERSEN'S PTN 6 & 7 SCHEDULE, LICENSING**
6 **AND FEASIBILITY CONCERNS**

7 **Q. Did SACE Witness Gundersen have specific concerns related to the PTN 6 & 7**
8 **Project?**

9 A. Yes. SACE Witness Gundersen raises several uncertainties related to the licensing and
10 permitting schedule for PTN 6 & 7.

11 **Q. Please summarize the uncertainties that SACE Witness Gundersen discusses in his**
12 **direct testimony.**

13 A. In his direct testimony, SACE Witness Gundersen addresses two “obstacles” to completing
14 the PTN 6 & 7 project. These obstacles included the following:

15 1. Because the 10 CFR Part 52 licensing process being applied to the AP1000 and the
16 PTN 6 & 7 Project has never been applied before, there is definite scheduling
17 uncertainty due to licensing delays.

18 2. Building nuclear power plants is a complicated construction process in which
19 scheduling delays, lengthy construction times and delayed operations are routine.

1 **Q. SACE Witness Gundersen discusses the new NRC licensing process promulgated in**
2 **10 CFR Part 52. Has anything changed in this process since the Commission issued**
3 **a determination of need in 2008?**

4 A. No, the new combined operating licensing process has remained the same since the
5 Commission issued its Determination of Need in March 2008. Since that time, a number of
6 new Combined Operating License Applications (“COLAs”) have been submitted to the
7 NRC including a COLA for the PTN 6 & 7 units. These COLAs have been docketed by the
8 NRC and are progressing through the NRC review processes. As was expected, the process
9 has included hundreds of requests for additional information (“RAIs”) submitted by the
10 NRC to applicants and several groups with varying interests have chosen to intervene in the
11 review process. This is similar to the prediction by Moody’s Investors Service which stated
12 the following in October 2007:

13 “Although we acknowledge the NRC licensing process is more enhanced
14 today than it was in the 1970s and 1980’s, we still believe that the regulatory
15 approval process associated with pursuing a new nuclear facility will emerge
16 as a potential constraint...However, this new regulatory approval process
17 remains untested and therefore deserves careful attention.”²³

18 **Q. Has the NRC stated that it has concerns with the COLA review process?**

19 A. Yes, the NRC has stated for some time that the COLA process is a challenging undertaking.
20 These challenges include the sheer number of applications the NRC has received and
21 training a relatively new review staff. In addition, the NRC is concurrently reviewing new or
22 amended design certifications for multiple reactor designs.

1 **Q. What is FPL doing to manage the challenges associated with the COLA review**
2 **process?**

3 A. First, it is important for the Commission to note that FPL is in a somewhat advantageous
4 position by having submitted its COLA subsequent to sixteen other applications. While
5 some of those projects have been suspended, others are proceeding. Thus FPL has and will
6 continue to have the opportunity to learn from the challenges faced by applicants which
7 submitted their applications earlier in the process. In this regard, FPL took note of the
8 challenges faced by other applicants and delayed its application submittal last year in order to
9 address concerns that were being raised in another applicant's COLA. FPL also has a
10 number of internal controls and processes in place to manage each of the challenges
11 associated with the NRC's review. These processes include regular meetings to discuss the
12 review process and issuing a process to its COLA contractor, Bechtel, to ensure that the
13 NRC's RAIs issued to other applicants are being monitored and evaluated for their impact
14 on the PTN 6 & 7 COLA. . FPL's current licensing efforts are discussed by FPL Witnesses
15 Jacobs and Diaz.

16 **Q. Has SACE Witness Gundersen identified any additional sources of delays for the**
17 **PTN 6 & 7 project?**

18 A. Yes, SACE Witness Gundersen identified certain geological concerns related to the PTN 6
19 & 7 Project. However, it is unclear to me why SACE Witness Gundersen believes these
20 concerns have changed since the Commission issued its Determination of Need, and why he
21 believes this uncertainty is not being addressed by FPL. The PTN 6 & 7 project has always
22 been sited at the Company's Turkey Point site. FPL considered SACE Witness Gundersen's
23 geological concerns while undertaking an extensive site selection study which was discussed

1 in Concentric's internal control review from April 2009 and was filed with the Commission
2 as Exhibit SDS-7 in Docket 090009-EL.

3 **Q. SACE Witness Gundersen states that any delays as a result of his schedule**
4 **uncertainties would result in increased costs to FPL's customers. Has FPL included**
5 **contingencies in its schedule and cost estimates?**

6 A. Yes, FPL has considered the need to include a contingency in its cost estimate. However,
7 development and construction of a new nuclear plant is an incredibly complex undertaking
8 and the potential does exist that the PTN 6 & 7 project will exceed these contingencies.
9 Nonetheless, FPL has followed industry guidelines and practices when calculating its PTN 6
10 & 7 contingency factors. This contingency factor was fully discussed in my direct testimony
11 in this proceeding.

12 **Q. Has SACE Witness Gundersen previously testified as to when he thought it was**
13 **reasonable to assume new nuclear power plants would enter service?**

14 A. Yes, he has. During the 2009 Nuclear Cost Recovery Proceeding, Witness Gundersen noted
15 in a deposition that he believed new nuclear power plants may enter service in 2020.²⁴ This
16 Commission also noted in its final order in that docket that Gundersen himself conceded
17 "the problems are eventually surmountable. There are no showstoppers."²⁵

1 **SECTION VI: SACE WITNESS COOPER'S SPECIFIC PTN 6 & 7 PROJECT**
2 **FEASIBILITY CONCERNS**

3 **Q. Please summarize SACE Witness Cooper's testimony as it relates to capital cost**
4 **estimates for new nuclear development.**

5 A. SACE Witness Cooper states that FPL's estimates of capital costs are below a reasonable
6 range of costs, and that the expected cost of developing PTN 6 & 7 is excessively optimistic.
7 As he did last year, SACE Witness Cooper has relied on a number of unreliable studies to
8 reach his conclusions. In addition, SACE Witness Cooper's assessment suffers from several
9 substantial weaknesses.

10 First, SACE Witness Cooper provides almost no analysis of current estimates from other
11 utilities and nuclear developers. There are many utilities currently exploring the option to
12 construct new nuclear reactors in the US. SACE Witness Cooper, however, has not
13 included in his evidence any of the public cost assessments provided by these developers
14 other than the two involved in this proceeding. The costs to build new reactors will
15 naturally be best known by those in the midst of planning efforts, and yet these projects are
16 not discussed by SACE Witness Cooper. Instead, he relies almost exclusively on high level
17 generic cost estimates that encompass a wide variety of technologies. This yields only
18 confusion and an erroneous sense of context because generic studies fail to account for the
19 significant engineering differences between reactor designs, and therefore the substantially
20 different costs to construct facilities using these divergent designs. Each unique reactor
21 design uses not only different components, but vastly different quantities of raw materials.
22 Westinghouse, for example, has stated that the AP1000, which FPL has selected, is expected
23 to use approximately 40% less concrete than a comparable four loop Westinghouse

1 pressurized water reactor from the last wave of construction. Generic cost estimates simply
2 represent an inaccurate average of a variety of technologies. SACE Witness Cooper relies on
3 a number of these generic cost estimates and estimates for other technologies that may not
4 be provided on comparable economic and financial terms as the basis for his cost estimate.

5 In order to make a reasonable comparison between PTN 6 & 7 and other new nuclear
6 projects, and to assess the reasonableness of FPL's cost estimates, it is crucial that a
7 consistent set of design elements be used in an analysis. Unfortunately, generic cost studies
8 fall far short in this regard. SACE Witness Cooper raised the same concerns in his
9 testimony in Docket No. 090009-EI and his testimony then, as it does now, suffers from
10 this same mistake.

11 Finally, the use of cost estimates that do not apply to FPL's project is unreliable and should
12 not be considered by the Commission. As he did last year, in his testimony SACE Witness
13 Cooper continues to rely on at least one figure in his analysis that is conceived purely as an
14 illustrative example, and does not reflect an actual cost estimate. In Exhibit MNC-13, SACE
15 Witness Cooper cites a 2008 Moody's Investors Service report for one of his cost estimates,
16 but he does not address the explanatory statement on page 6 of the report, which states that
17 the capital cost estimate "is for illustrative purposes only and does not represent a \$/kW
18 capacity figure."²⁶ In another particularly egregious example, SACE Witness Cooper cites a
19 2009 Draft Staff Report from the California Energy Commission that specifically notes that
20 the most current figures in the study do not apply to the AP1000 reactor design.²⁷

1 **Q. Are there quantitative estimates that provide a better context for understanding**
2 **FPL's expected PTN 6 & 7 development costs?**

3 A. Yes, there are. When comparing cost estimates, it is crucial to ensure that the cost estimates
4 are as directly comparable to the PTN 6 & 7 Project as possible. This way it will be possible
5 to determine whether there is any significant divergence in estimated cost between PTN 6 &
6 7 and similar projects.

7 An evaluation of available information pertaining to projects that use the same reactor
8 design, and that are under development in the same general region of the country, provide
9 much more appropriate context for the PTN 6 & 7 cost estimates. I provided a review of
10 these cost estimates in my May 3 direct testimony in Exhibit JJR-8.

11 **Q. Is FPL's capital cost estimate dramatically lower than other credible estimates and**
12 **therefore overly optimistic, as SACE Witness Cooper suggests?**

13 A. No. As a matter of fact, FPL's current cost estimate falls in the higher end of the range of
14 current capital cost estimates from comparable projects. This is clearly demonstrated in JJR-
15 8 and in the work-papers I submitted to support my cost analysis in May 2010.

16 **Q. Did SACE Witness Cooper make other suggestions regarding FPL's feasibility**
17 **analysis?**

18 A. Yes, he did. As he did in Docket 090009-EI, last year's proceeding, SACE Witness Cooper
19 argued that FPL's natural gas and carbon price forecasts were too high.

1 **Q. Was the Commission receptive to this line of reasoning?**

2 A. No, it was not. In fact, the Commission dismissed SACE's reasoning with respect to gas
3 and carbon pricing. When discussing SACE Witness Cooper's allegation pertaining to
4 natural gas prices in Order No. PSC-09-0783-FOF-EI, the Commission stated that

5 We believe that there is inherent uncertainty surrounding fuel forecasting.
6 FPL's use of third party forecasts is consistent with our practice. Reviewing
7 the TP67 project feasibility using a range of longterm fuel forecasts
8 reasonably accounts for the volatility in the natural gas market. As discussed
9 below, the updated fuel forecasts did not significantly affect the break-even
10 analysis.²⁸

11 Similarly, in addressing SACE Witness Cooper's perspective on carbon prices the
12 Commission stated that

13 There is uncertainty regarding the future legislation of carbon dioxide (CO₂),
14 as well as potential issues regarding the timing of filing requirements and on-
15 going legislation. Providing a range of CO₂ forecasts is reasonable until
16 legislation is enacted.²⁹

17 The Commission deemed that the FPL approach, which is the same approach taken this
18 year, is the more appropriate way of modeling the economic impacts of natural gas and
19 carbon prices.

20 FPL Witness Sim addresses the numerous other analytical flaws contained with SACE
21 Witness Cooper's testimony.

22 **Q. Is SACE Witness Cooper's statement that FPL did not properly account for policy**
23 **changes that may affect the economics of nuclear power correct?**

24 A. SACE Witness Cooper is correct that there is a great deal of uncertainty surrounding the
25 implementation of public policy pertaining to energy infrastructure, including carbon

1 emissions policy. However, he is incorrect to suggest that FPL has not accounted for this
2 uncertainty in its feasibility analyses of the EPU and new nuclear projects.

3 The highly uncertain policy environment— particularly in an election year— yields a range
4 of potential cost implications for different generation technologies. Policy developments
5 both here in the United States and internationally call into question the assumption that new
6 generation resources will operate under a binding GHG cap and trade program similar to
7 that proposed in the Waxman-Markey bill. As a matter of fact, Congress has recently
8 abandoned its efforts to pass comprehensive energy legislation, sensing that there is
9 currently insufficient support for a new bill containing many of the elements SACE Witness
10 Cooper discusses in his testimony.

11 Congressional inaction on climate change legislation and the failure of the international
12 community to agree on a plan to achieve meaningful near-term reductions in GHG
13 emissions, creates additional uncertainty as to the ultimate regulatory framework for GHG
14 emissions. This high degree of uncertainty was the impetus for the FPL's evaluation of a
15 variety of price scenarios.

16 **Q. On what grounds does SACE Witness Cooper object to FPL's modeling of**
17 **compliance costs under potential future policy scenarios?**

18 A. SACE Witness Cooper has stated that FPL's analysis incorporates compliance costs that are
19 higher than those that are projected by the Environmental Protection Agency ("EPA").

20 It is important to note, however, that there are significant limitations to the EPA modeling
21 effort that SACE Witness Cooper mentioned in his testimony. For example, a CRA
22 International analysis of the EPA modeling demonstrates that "EPA did not use its more

1 realistic model of the electric sector, IPM, which found smaller emission reductions at EPA's
2 estimated carbon prices, and which would have shown much higher costs to meet the
3 cap."³⁰ In addition, the CRA International analysis shows that other shortcomings have
4 caused EPA to substantially understate household costs under the policy. "If EPA had
5 presented their cost estimates in [a] more appropriate manner [household] costs in 2020
6 would be 50% higher and in 2050 would be 280% higher."³¹

7 Finally, FPL's analysis included an assessment of the economic implications of a variety of
8 policy outcomes. This was done to ensure that the feasibility analysis reflected the highly
9 uncertain policy environment in which the FPL nuclear projects exist.

10 **Q. What were the results of FPL's feasibility analysis?**

11 A. As discussed by FPL Witness Sim, FPL's feasibility analysis incorporated a considerable
12 range of natural gas and carbon prices in contrast to the single forecast employed by SACE
13 Witness Cooper. In addition, FPL conducted its feasibility study using a load forecast that is
14 considerably lower today than it was in 2007. Even using this wide range of potential cost
15 effects, the Projects remained economically beneficial to Florida ratepayers in every iteration
16 tested.

17 **Q. What is the current status of public policy that may affect the economics of the EPU
18 and new nuclear projects?**

19 A. Political leaders of both major parties have reiterated their commitment to new energy
20 legislation. The details of proposed laws, however, remain highly uncertain. This is
21 particularly true of H.R. 2454, the American Clean Energy and Securities Act, which SACE

1 Witness Cooper cites in his testimony. While that bill passed in the House, it is currently
2 stalled in the Senate, where attention has shifted to other priorities.

3 Considerable attention has recently been focused on energy initiatives from Senators Kerry,
4 Lieberman, and until recently, Senator Graham. Their bill, which initially enjoyed
5 momentum among politicians and environmental advocates, has languished. It now appears
6 that the bill may be split into several independent pieces to be considered separately in the
7 next Congress. Thus it is highly unlikely that sweeping energy legislation with the ability to
8 affect the economics of any particular energy technology will be passed this year given the
9 upcoming mid-term elections in November 2010.

10 **SECTION VII: FLORIDA PSC STAFF'S REVIEW OF THE PTN 6 & 7 AND EPU**
11 **PROJECTS**

12 **Q. Have you reviewed the direct testimony of Florida PSC Staff Witnesses Fisher and**
13 **Rich?**

14 **A. Yes, I have. The Florida PSC Staff Witnesses provide a comprehensive review of the PTN 6**
15 **& 7 and EPU Projects in 2009 and 2010. However, there are two items I believe are worthy**
16 **of additional clarification.**

17 First, Florida PSC Staff Witnesses Fisher and Rich have accurately noted that in 2009,
18 Concentric made a recommendation to the PTN 6 & 7 Project Team that they conduct
19 annual audits of Bechtel's billings that were related to subcontractors. This recommendation
20 was made because Bechtel had been awarded responsibility for coordinating the work of
21 several vendors completing work for the Site Certification Application ("SCA") and the cost
22 associated with these vendors was relatively significant. In 2009, FPL conducted such an

1 audit and determined that Bechtel had overbilled the Company by less than \$50,000. In
2 2010, FPL responded to Concentric's 2009 recommendation by stating that the Company no
3 longer believed an annual audit was necessary. However, the Company continues to retain
4 the right to conduct such an audit if it is necessary. Concentric has concurred with this
5 response due to an important change to the Bechtel COLA contract. Specifically, Bechtel is
6 no longer responsible for overseeing the large number of vendors that are responsible for
7 developing the PTN 6 & 7 SCA. These vendors are now contracted directly with FPL. As a
8 result, the risk of a substantial error occurring and not being caught by FPL's existing invoice
9 review process is greatly diminished.

10 Second, Florida PSC Staff Witnesses Fisher and Rich have stated that

11 "We conclude that the replacement of FPL's Extended Power Uprate
12 management team in July 2009 resulted at least in part from FPL's concerns
13 about performance. An investigative report by Concentric Energy Advisors,
14 Inc. appears to confirm our conclusion. We believe that some additional or
15 unnecessary costs may have resulted from actions before and after [the] EPU
16 management transition. These actions are discussed in detailed within
17 Section 3.1 of our attached report, Exhibit Number FR-1. We recommend
18 that the Commission open a new docket to further investigate the possibility
19 of unnecessary EPU costs or defer any decision to a future Nuclear Cost
20 Recovery Clause proceeding."³²

21 These statements were made with regard to FPL's efforts in 2009 to perform a mid-cycle
22 scope review, an outage optimization process and to retain a third party to conduct an
23 independent cost estimate. The FL PSC audit staff have also clarified in their report that
24 they believe some portion of these activities could have been the result of the natural
25 progression of large projects.

26 Concentric does not believe it is necessary to defer the Commission's ruling on these 2009
27 costs to a future proceeding, if that is what the Staff is proposing. Concentric has reviewed
28 the processes by which FPL made the decisions to incur these costs and believes they are

1 entirely appropriate. These activities represent prudent project review and planning activities
2 that should be incorporated into most large projects such as the EPU Project. Moreover,
3 these activities are entirely consistent with established project management principles.³³
4 These principles call for initial planning, initial project execution, interim monitoring and
5 verification, and action to correct problems. In this case, the activities discussed by Florida
6 PSC Staff Witnesses Fisher and Rich represent the “monitoring and verification” portion of
7 the cycle and are necessary to ensure a project meets its objectives and addresses key changes
8 to the project environment. Furthermore, in my experience, mid-term scope reviews and
9 outage optimization processes are used by almost all top utility companies to make certain all
10 of their major projects are providing maximum value to the Company.

11 **Q. Has Concentric found any evidence of costs that were imprudently incurred by the**
12 **EPU Project in 2009?**

13 A. No. Concentric thoroughly reviewed the EPU Project’s 2009 costs. In neither case did
14 Concentric identify any imprudently incurred costs.

15 **SECTION VIII: CONCLUSIONS**

16 **Q. Please state your conclusions related to the testimony of OPC Witness Jacobs.**

17 A. OPC Witness Jacobs has raised a concern related to the EPU Project’s updated estimate of
18 the cost to complete the EPU Project relative to the cost of the PEF’s EPU Project and
19 produced two recommendations associated with his concern. OPC Witness Jacobs
20 comparison of the FPL and PEF EPU ignores the differences in scope and scale associated
21 with each project. His recommendations that result from this comparison ignore a
22 fundamental economic principle in one instance (e.g., sunk costs) and the Florida

1 Legislature's and FL PSC's decisions to support new nuclear power in his second
2 recommendation. As a result, OPC Witness Jacobs' concern is not well founded and should
3 be rejected by the Commission.

4 **Q. Please state your conclusions related to the testimonies of SACE Witnesses Cooper**
5 **and Gundersen.**

6 A. Both SACE Witnesses Cooper and Gundersen present a discussion of the PTN 6 & 7
7 Project which is largely identical to their contentions in Docket 090009. In that docket, the
8 Commission rejected those contentions and acknowledged that FPL had appropriately
9 accounted for the enormous uncertainty associated with new nuclear development through a
10 cautious, stepwise project management strategy and a broad range of assumptions to
11 determine the cost effectiveness of the PTN 6 & 7 Project. Nevertheless, SACE Witnesses
12 Gundersen and Cooper continued to contend that all of FPL's PTN 6 & 7 Project activities
13 should cease because they advocate that the Companies should be forced to make a "go/no-
14 go" decision today. The Commission should reject these contentions on all accounts since
15 they represent resource planning at its worst and would imprudently bind the Company to a
16 resource planning strategy without ongoing evaluations of that strategy.

17 **Q. Do you have any other conclusions related to the EPU Project and the PTN 6 & 7**
18 **Project?**

19 A. Yes. Both of FPL's Projects remain fundamentally cost effective projects that should be
20 pursued for the benefit of FPL's customers. These customer benefits include increased fuel
21 diversity that will lessen FPL's current dependence on natural gas fired generation, avoid
22 GHG and other emissions, and fuels savings. In the case of the EPU Project, FPL should
23 proceed with the execution of these projects in 2011 and 2012. Meanwhile, FPL should

1 continue to develop and preserve the 20+ year option to build PTN 6 & 7 while deferring
2 the commitment of customer funds for as long as practical.

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

4 **A. Yes it does.**

Endnotes:

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- ¹ Direct Testimony of Terry Jones, before the Florida Public Service Commission, Docket No. 100009-EI, March 1, 2010, p. 6.
 - ² *Ibid.*, p. 7.
 - ³ Direct Testimony of Terry Jones, before the Florida Public Service Commission, Docket No. 100009-EI, May 3, 2010, p 37
 - ⁴ Florida Public Service Commission Order No. PSC-08-0237-FOF-EI, Docket No. 070650-E1, April 11, 2008, p. 27.
 - ⁵ Direct Testimony of William R. Jacobs, Jr., PhD, before the Florida Public Service Commission, Docket No. 100009-EI, July 8, 2010, p. 11.
 - ⁶ *Southwestern Tel. Co. v. Pub. Serv. Comm.*, 262 U.S. 276, 289 n. 1, 43 S.Ct. 544, 67 L.Ed. 981 (1923).
 - ⁷ Florida Public Service Commission, *Review of 2009 Ten-Year Site Plans for Florida's Electric Utilities*, Tallahassee, Florida, October, 2009, p. 22.
 - ⁸ Florida Public Service Commission Rule 06.0423, February 3, 2008, paragraph (1).
 - ⁹ *Ibid.*, paragraph (2)(d).
 - ¹⁰ "Construction Costs to Soar for New U.S. Nuclear Power Plants," Standard & Poor's, 15 October 2008.
 - ¹¹ "Project Plan for Turkey Point Units 6 & 7," September 19, 2006.
 - ¹² "Project Plan for Turkey Point Units 6 & 7," Revision 1, January 2010.
 - ¹³ Before the Florida Public Service Commission, Docket No. 070650.
 - ¹⁴ Direct Testimony of Steven Scroggs, before the Florida Public Service Commission Docket No. 070650, October 16, 2007, p. 4
 - ¹⁵ *Ibid.*, p. 9
 - ¹⁶ *Ibid.*

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- ¹⁷ Direct Testimony of John Reed, before the Florida Public Service Commission, Docket No. 080009, May 1, 2008, p. 37.
- ¹⁸ Direct Testimony of Steven Scroggs, Before the Florida Public Service Commission, Docket No. 080009, May 1, 2008, pp. 8-9.
- ¹⁹ Florida Public Service Commission Order No. PSC-08-0237-FOF-EI, Docket No. 070650-E1, April 11, 2008, pp. 31-33.
- ²⁰ *Ibid.*
- ²¹ Hevert, Kathleen T., "Real Options Primer: A Practical Synthesis of Concepts & Valuation Approaches," *Journal of Applied Corporate Finance*, Vol. 14, Issue 2, April 11, 2005, pp. 25-40.
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- ²³ "New Nuclear Generation in the United States: Keeping Options Open vs. Addressing An Inevitable Necessity," Moody's, October, 2007, p. 7.
- ²⁴ Telephonic deposition of Arnold Gundersen on July 30, 2009 in Docket No. 09009-EI, p.27-28.
- ²⁵ Florida Public Service Order 08-0783-FOF-EI, Docket No. 090009, November 19, 2009, p. 21.
- ²⁶ "New Nuclear Generating Capacity: Potential Credit Implications for US. Investor Owned Utilities," Moody's, May, 2008, p. 6.
- ²⁷ California Energy Commission Staff, *Comparative Costs of California Central Station Electricity Generation, Draft Staff Report*. August, 2009, Page 1.
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- ²⁹ *Ibid.*
- ³⁰ Montgomery, W. David, Paul Bernstein and Scott Bloomberg, "An Assessment of H.R. 2454 Cost Estimates by EPA and CBO," CRA International, p.1.
- ³¹ *Ibid.*

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- ³² Direct testimony of Lynn Fisher and David Rich, before the Florida Public Service Commission, Docket No. 10-0009, July 20, 2010, p. 4.
- ³³ *See for example: A Guide to the Project Management Body of Knowledge*, Project Management Institute, 4th Edition, 2008, p. 6.

The Contract Price / Owner Contingency Dynamic

