BEFORE THE FLORIDA PUBLIC SERVICE COMMISION

DOCKET NO. 090009-EI
FLORIDA POWER & LIGHT COMPANY

IN RE: NUCLEAR POWER PLANT COST RECOVERY AMOUNT TO BE RECOVERED DURING THE PERIOD JANUARY – DECEMBER 2010

REBUTTAL TESTIMONY OF:

J. REED

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

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AUGUST 10, 2009

I. INTRODUCTION

Q. Please state your name and business address.

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

Q. Are you the same John J. Reed who previously filed direct testimony in this proceeding?

A. Yes, I am.

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

A. Yes I am. The following exhibits are attached to my rebuttal testimony in this proceeding:

Exhibit JJR_2 – The Contract Price/Owner Contingency Dynamic

Exhibit JJR_3 – Nuclear Reactors under Construction, Planned or Proposed

Exhibit JJR_4 – NYMEX Natural Gas Futures Prices

Q. Please state the purpose of your rebuttal testimony.

A. I have been asked by Florida Power & Light ("FPL" or the "Company") to respond to certain portions of the direct testimony of Dr. William Jacobs testifying on behalf of the Florida Office of the Public Counsel ("OPC"), and the direct testimony of Arnold Gunderson and Dr. Mark Cooper, both of whom are testifying on behalf of

the Southern Alliance for Clean Energy ("SACE"). Specifically, FPL has asked me to provide my opinion regarding OPC Witness Jacobs' criticism of FPL's selection of Black & Veatch/Zachry ("BVZ") to conduct preliminary construction engineering for the Company's Turkey Point 6 & 7 ("PTN 6 & 7") new nuclear project and FPL's decision not to enter into an Engineering, Procurement and Construction ("EPC") agreement in 2008, and OPC Witness Jacobs' request that the Commission direct FPL to update the Company's cost estimate for the PTN 6 & 7 project. With regard to SACE Witness Gundersen, FPL has asked me to respond to his contentions that the Company has failed to demonstrate the feasibility of the PTN 6 & 7 project due to certain schedule and cost uncertainties. I have also been asked to respond to SACE Witness Cooper's assertions that the PTN 6 & 7 project is no longer feasible due to projected decreases in electricity demand, lower natural gas and environmental compliance prices, the cost and availability of alternative resources and his analysis of the cost of to develop and construct PTN 6 & 7. Finally, FPL has asked me to respond to SACE Witness Cooper's assertion that in times of uncertainty FPL should focus its generation investment on smaller natural gas-fired generation.

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

A. The remainder of my testimony is organized into six sections. Section II of my testimony discusses my conclusions related to each witness's testimony. In Section III I respond to OPC Witness Jacobs' concerns regarding FPL's selection of BVZ to perform preliminary construction engineering for the PTN 6 & 7 project. In Section IV, I respond to OPC Witness Jacobs' request that the Commission direct FPL to update its cost estimate for the PTN 6 & 7 project. Finally, Section V of my

testimony responds to the cost and schedule uncertainties discussed by SACE Witness Gundersen, and Section VI of my testimony responds to the assertions and analysis of SACE Witness Cooper.

II. SUMMARY OF CONCLUSIONS

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

A. OPC Witness Jacobs has raised several concerns related to FPL's decision to retain BVZ to perform certain construction related engineering work and FPL's decision not to use an updated cost estimate for the PTN 6 & 7 project's feasibility analysis. Neither of his concerns relate to the prudence of FPL's 2007 and 2008 costs nor FPL's 2009 and 2010 cost projections. However, OPC Witness Jacobs does note that FPL should be put on notice that the decision to retain BVZ could result in higher cost for FPL's customers in the future. With regard to FPL's decision to retain BVZ, OPC Witness Jacobs is concerned that BVZ may not be a qualified to perform the work and that, by selecting BVZ to perform this scope of work, FPL is precluded from entering into an EPC agreement with a consortium of Shaw and Westinghouse at a later date. Based on Concentric's review of the project to date, selecting BVZ for this scope of work does not preclude the Company from later entering into a EPC agreement, but it does foster potential competition should FPL decide to put the construction of the PTN 6 & 7 project out to bid. In addition, BVZ was selected for this scope of work based on an internal review process and appears qualified to perform the specific scope of work for which it was retained.

Despite OPC Witness Jacobs' assertion to the contrary, putting FPL on notice today that the Company will be responsible for any additional cost that could result from this decision is exactly the type of hindsight review the Commission must reject. Results-oriented approaches to a prudence review are completely inappropriate, and OPC Witness Jacobs' recommendation, if adopted, would send a very negative message to investors and the financial community. Finally, FPL's feasibility analysis continues to rely upon the best information available to the company and provides a reasonable basis from which to determine the feasibility of the PTN 6 & 7 project.

Q. Please summarize your conclusions regarding the direct testimony of SACE Witness Gundersen in this proceeding.

A. SACE Witness Gundersen has presented a number of uncertainties related to the construction of new nuclear power plants. Each of these uncertainties is clearly recognized by FPL. In fact, SACE Witness Gundersen cites portions of the testimony of FPL Witness Scroggs which indicate that FPL is keenly aware of each of these risks. However, SACE Witness Gundersen has not presented any new uncertainties or risk faced by the project and has failed to discuss any FPL document which demonstrates that FPL has not fully assessed these risks. In addition it is my understanding that SACE Witness Gundersen did not request access to and has not reviewed any of the materials FPL produced during discovery prior to offering his opinions in his pre-filed testimony.

Q. Please summarize your conclusions regarding the direct testimony of SACE Witness Cooper in this proceeding.

A. SACE Witness Cooper states that a number of conditions related to the long-term feasibility of the project have changed since the Commission issued its

Determination of Need for the PTN 6 & 7 project. These changes include changes in the price of fossil fuels, environmental compliance, the cost to construct the PTN 6 & 7 project and the cost and availability of competing resources. Based on these changes SACE Witness Cooper contends that the prudent course of action is to eliminate the option of nuclear power for FPL's customers. It is my opinion that the approach advocated by SACE Witness Cooper in this proceeding is exactly the opposite of prudent utility management. Rather than halting the development of options during periods of extreme uncertainty, FPL and the Commission should preserve every option available to them. This strategy allows FPL to be more nimble when responding to any final climate change legislation and implementing regulations. Finally, I believe SACE Witness Cooper has erred in several of his analyses presented in his direct testimony. These errors included the use of long-dated NYMEX natural gas futures contracts to project the long-term (i.e., greater than 10 years) cost of natural gas, his application of the HHI to FPL's resource portfolio and his comparison of various nuclear construction cost estimates. Contrary to SACE Witness Cooper's position, it is my opinion that FPL has demonstrated the continued feasibility of the PTN 6 & 7 project.

III. BVZ PRELIMINARY ENGINEERING CONTRACT

Q. Please briefly describe the concern expressed by OPC Witness Jacobs' related to the BVZ contract for preliminary construction engineering.

A. Based on my review of OPC Witness Jacobs' testimony, it would appear that OPC Witness Jacobs is concerned about FPL's choice of BVZ to perform certain preliminary engineering services related to the PTN 6 & 7 project because he

believes there is a potential for this decision to ultimately increase the total project costs. Further, it would appear, based upon this section of his testimony, which OPC Witness Jacobs believes FPL has firmly committed itself to using a separate contractor for the construction of the PTN 6 & 7 project.

Q. Has FPL committed to using a separate contractor to construct the PTN 6 & 7 project?

A. No, FPL has not committed to using a separate contractor to construct the PTN 6 & 7 project. Instead, FPL has prudently sought to preserve the option to competitively bid the construction portion of the PTN 6 & 7 project at a later date. Nothing FPL has done to date would preclude the Company from pursuing an EPC agreement with the Shaw/Westinghouse consortium. In this regard, it should be made clear that FPL has also not executed an engineering and procurement agreement for PTN 6 & 7.

Q. Why is it prudent for FPL to preserve the option to competitively bid the construction of the PTN 6 & 7 project?

A. As will be discussed later in my testimony, from the beginning of the PTN 6 & 7 project, FPL has recognized the significant uncertainty that is inherent in the construction of a new nuclear generating station. Thus, FPL has sought to delay or defer entering into commitments for the PTN 6 & 7 project as long as feasible while still preserving the deployment schedule for PTN 6 & 7 project where practical. FPL's decision to retain BVZ is in accordance with this stepwise approach to project management. At this time there is no need to retain a construction contractor for the PTN 6 & 7 project to preserve the schedule. Further between today and the time at which FPL may be required to retain a construction contractor, a significant

portion of the generic detailed design of the AP 1000 will be completed. Thus an opportunity could exist to competitively bid the largest scope of work for PTN 6 & 7 project. This could create future savings for FPL's customers.

Q. How could this competitive bidding opportunity result in savings for FPL's customers?

A. To answer this question, one must first understand how construction contractors price large construction contracts. Specifically, these types of contracts are priced based on two very general inputs: the cost of the resources needed to complete the project and the risk the contractor is being asked to retain. Currently, there is a substantial amount of risk associated with entering into a construction contract for a new nuclear reactor. This is because the reactor designs are still at a preliminary stage that leaves open a number of items. As a result, a construction contractor must either push this risk onto the project sponsor, in this case FPL and its customers, or include a substantial contingency to account for possible cost and schedule over-runs that occur once the final detailed design work nears completion. In contrast, once the detailed design work is complete, a construction contractor is able to gain much greater certainty regarding the ultimate cost to construct the facility. The contractor can then more comfortably assume additional risk based upon the more detailed project design information, and price the contract with a smaller amount of contingency included. It is also important to note that no EPC vendor to date has been willing to enter into a full turn-key/fixed price EPC agreement for a new nuclear power plant.

Q. Have you observed other sponsors of new nuclear projects considering or pursuing this approach?

A. Yes I have. While OPC Witness Jacobs correctly notes that other AP 1000 sponsors have entered in complete EPC agreements, through Concentric's experience working with three sponsors of new nuclear facilities and two potential investors in new nuclear projects, I am aware of other parties that are considering separating the EP and C functions. With one exception the companies that are pursuing this approach have generally not publicly disclosed their intentions to do so in order preserve their negotiating position with each of their vendors. Luminant Energy, however, announced on July 6, 2009, that it would pursue an engineering and procurement contract with Mitsubishi Heavy Industries while reserving the option to separately contract for construction services (Contract).

Q. Have there been any public discussions of the EP and C approach to constructing new nuclear plants?

A. Yes, a recent article by Standard & Poor's succinctly described the challenges faced by nuclear developers (Prabhu). First, this article points out that the type of turnkey, lump-sum agreements which OPC Witness Jacobs is advocating in this proceeding are simply not available in the current market despite what some developers or the construction firms may be stating publicly. The article goes on to discuss the inherent trade-offs between the risk allocated to the construction firm and the price the owner is charged. In Exhibit JJR_2, I have produced a chart which is derived from this article. This chart illustrates this trade-off. However, this chart goes further to demonstrate that as more of the project risk is allocated to the EPC firm the total project cost including the owner's contingency will initially fall and then increase. This relationship results from the fact that past a certain level of risk, the

EPC firm's risk tolerance is not directly correlated with the risk tolerance of the owner. The point where this inflection occurs is the lowest total project cost.

The chart in Exhibit JJR_2 also illustrates what is expected to occur over time. That is to say the cost of the total project cost will fall as additional detailed design is complete. This results from the fact that the construction firm no longer requires as significant a contingency to cover potential cost over-runs. Similarly, the owner's contingency can also be reduced because there is greater certainty in the ultimate cost to construct the facility. However, at some point the total project cost will begin to rise as the contractor must incur additional cost to meet the project schedule.

In addition to the Standard & Poor's article discussed above, a recent article which appeared in Power Engineering International provides additional support for FPL's approach to potentially bidding the construction contract. The author of this article notes the following:

> "In general, early NRC design certification approval provides a firmer foundation for defining and pricing the scope of work. Hence, without approval, owners and EPC contractors are left with a larger portion of the scope that remains variable price and with risks that are not properly allocated."

Thus by waiting to commit itself to a single construction firm, FPL will be able capitalize on the more complete NRC design certification. This should provide FPL with an opportunity to reduce the total cost of the project by lowering the overall

contingency and fixing or firming up the price of a larger portion of the total construction scope.

Q. OPC Witness Jacobs indicates that the single EPC approach will reduce the risk to FPL. Is this true?

A. The answer to this question is unclear at this time. The basis for this statement seems to be that the Shaw/Westinghouse consortium would be willing to assume substantial risk at a reasonableness cost. However, there is evidence, including the S&P article discussed above, that the EPC contracts being offered by the Shaw/Westinghouse Consortium are not the "turn-key" approach that OPC Witness Jacobs cites or that have been routinely used for less complex construction projects. Also, my review of publicly available EPC agreements from Southern Company, Progress Energy Florida, SCANA and others indicates these agreements are likely subject to cost escalation due to changes in agreed upon cost indices.

Q. Is BVZ a qualified contractor for performing this scope of work?

A. Yes it is. FPL undertook a significant internal review process before deciding to retain BVZ for this project. As support for his concerns, OPC Witness Jacobs cites one portion of a FPL single source justification memorandum ("SSJ") which notes BVZ is a qualified engineering firm. In his testimony OPC Witness Jacobs chose to add emphasis to a particular section of this memorandum which identifies BVZ as the only qualified vendor that does not have experience with the AP 1000 design. In doing so, he has neglected the remainder of the SSJ which discusses the complete rationale for selecting BVZ on a single source basis. The remainder of the SSJ notes the current BVZ contract is a small portion of the overall development and construction efforts. By selecting BVZ at this stage, BVZ is able to gain sufficient

experience with the AP 1000 design to allow BVZ to potentially submit a competitive bid for the construction of the PTN 6 & 7 project at a time when there is less risk to FPL and its customers. This approach will allow FPL to further foster a competitive environment for the PTN 6 & 7 construction contract. However, FPL has not selected BVZ to construct the PTN 6 & 7 project by entering into the existing contract.

Q. OPC Witness Jacobs notes that he is raising his concerns at this time so that it is clear that the potential for increased costs was identified without the benefit of hindsight. Do you agree with this statement?

A. No I do not. While I completely agree with OPC Witness Jacobs that it is vitally important the Commission adopt an approach to prudence reviews that clearly excludes hindsight to determine the prudence of the Company's decision, OPC Witness Jacobs' approach does just the opposite.

OPC Witness Jacobs' approach is essentially one in which he wants to wait to see what the future EPC costs are, and then he will determine whether FPL's current contracting practices are prudent. That is not a proper application of a prudence determination and does not reflect the real world decision-making that FPL must perform. First, it is important to understand that costs are not prudent or imprudent, decisions are. Second, the prudence standard in regulation considers decisions based on what was known, or should have been known, at the time the decision had to be made, not based on the future outcomes of a decision. Dr. Jacob's position on the prudence of FPL's decision to contract with BVZ is that it is

too soon to tell. That type of results-oriented regulation is exactly what a properly applied prudence standard is meant to avoid.

FPL's decision to contract with BVZ is unquestionably prudent based on the circumstances surrounding the decision. FPL carefully made this decision to heighten competition for future contracting for PTN 6 & 7, with the goal of producing lower costs for FPL's customers. This approach preserves significant optionality and flexibility, while keeping the project on schedule. This approach to contracting, which splits the EPC contract into separately bid components, is being used by other energy companies for major projects and can be a highly cost-effective contracting strategy when a project, its technology and design are undergoing a lengthy development process. FPL's decision could conceivably lead to higher costs under some circumstances, but it is much more likely to be beneficial. Based on everything that is known now, I concur that it was the right decision, and its prudence must be judged based on currently available information. Dr. Jacob's "wait and see" attempt to recast the long-established prudence standard in regulation should be flatly rejected. I can think of no more dangerous and harmful message to investors and the broader financial community than one announcing that the Commission was adopting a "wait and see" approach to recovery of prudently incurred costs.

IV. OPC WITNESS JACOBS' FEASIBILITY ANALYSIS CONCERN

Q. Has OPC Witness Jacobs expressed any concerns related to FPL's feasibility analysis?

A. Yes he has. Specifically, OPC Witness Jacobs is concerned that FPL did not update the Company's cost estimate for developing and constructing the PTN 6 & 7 project. OPC Witness Jacobs does not express any concerns related to the remainder of FPL's feasibility analysis.

Q. Why has FPL not updated the cost estimate for the PTN 6 & 7 project that was utilized in the Company's feasibility analysis in this proceeding?

A. FPL's feasibility analysis continues to be based upon a wide range of total construction costs. This wide range allows FPL to evaluate the feasibility of the projects under a variety of economics conditions and price fluctuations. FPL did not update the cost estimate for the PTN 6 & 7 project this year because the current estimate continues to represent the best information available to the Company and is appropriate for the purpose of the feasibility analysis. As was discussed in my direct testimony and will be discussed later in my testimony, FPL's current cost estimate continues to compare favorably with similar projects around the country. Additionally, there has been significant volatility in the price of several of inputs to a cost estimate for any new nuclear project. As a result, any update at this time does not necessarily provide more accurate future construction cost estimates. Finally, it is important to remember that many of the commodity inputs that are required to construct a new nuclear plant are the same commodities that are required to construct most other generating resources. However, a new nuclear plant will require a far greater quantity of these commodities. Thus to the extent that commodity prices have fallen since FPL completed its cost estimate, the price

declines are likely to only enhance the economic advantage of a new nuclear plant holding all else equal.

Q. Do you believe it is reasonable for FPL to continue to use the Company's existing cost estimate when performing the feasibility analysis for this proceeding?

A. Yes, I fully endorse FPL's decision in this specific case. As will be discussed in Section VI below, the cost to construct all types of generating resources is generally believed to have declined since 2008 (Marn). Further, most analysts believe new nuclear plants have been the generation type most affected by the recent downtrend in prices. Thus FPL's cost estimate, which was developed in mid-2007, likely represents a mid-point in the current construction cycle. That is not to say; however, that a return to economic growth will not later increase the cost to construct the facilities. Nonetheless, it is conservative and prudent to continue to use the original cost estimate at this time to evaluate the continued feasibility under the current recessionary, macroeconomic conditions.

V. SACE WITNESS GUNDERSEN AND PTN 6 & 7 COST AND SCHEDULE UNCERTAINTY

Q. Are you aware that SACE has raised certain cost and schedule uncertainties related to the PTN 6 & 7 project in this proceeding?

A. Yes I am. SACE Witness Gundersen has filed direct testimony on behalf of SACE regarding certain cost and schedule uncertainties that he has identified in this proceeding.

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

A. In his direct testimony, SACE Witness Gundersen addresses four "obstacles" to completing the PTN 6 & 7 project. These obstacles included the following:

1. "Because the 10 CFR Part 52 licensing process for the AP 1000 is brand new and has never been applied before, there is definite scheduling uncertainty due to licensing delays
2. Hurricanes Katrina and Rita demonstrated that major construction projects are subject to delays due to the worldwide demand for construction materials and skilled labor. It is very likely that those nuclear construction materials in highest demand will face shortages and procurement delays given the great number of nuclear power plants proposed for construction in the Southeastern U.S.
3. The nuclear industry as a whole is facing a labor shortage due to the limited qualified individuals capable of performing this work
4. Building nuclear power plants is a complicated construction process in which scheduling delays, lengthy construction times and delayed operation is routine." (4)

Obstacles two and three appear to be essentially the same point regarding potential shortages of materials and labor.

Q. Based upon your review of SACE Witness Gundersen's direct testimony, have you identified any new uncertainties in his testimony of which the Commission was not made aware during the Determination of Need proceeding or the 2008 NCRC review cycle?

A. No I have not. As was discussed extensively during the Determination of Need proceeding, the prospect of developing and constructing a new nuclear facility is fraught with uncertainty. These uncertainties include the ultimate total cost to construct the facility, whether the facility can be constructed in the time frame projected by the project sponsor, the NRC and state licensing processes and the potential for cost recovery. Indeed, both my testimony and the testimony of FPL Witness Scroggs in that proceeding list the numerous uncertainties inherent in new nuclear construction programs. SACE Witness Gundersen attempts to reintroduce those uncertainties in this proceeding despite the fact that the Commission has already considered these uncertainties in its Determination of Need for PTN 6 & 7.

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

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

"Although we acknowledge the NRC licensing process is more enhanced today than it was in the 1970s and 1980's, we still believe that the regulatory approval process associated with pursuing a new nuclear facility will emerge as a potential constraint...However, this new regulatory approval process remains untested and therefore deserves careful attention" (New 7).

One important development related to the PTN 6 & 7 licensing process since 2007 is that the NuStart consortium has elected to shift the reference plant for the AP 1000 from the Tennessee Valley Authority's ("TVA") Bellefonte site to Southern Company's Plant Vogtle site. As SACE Witness Gundersen notes, the NRC was notified of this decision on April 28, 2009. However, SACE Witness Gundersen fails to note the reasons for this change which include that TVA is reconsidering whether to complete two partially completed plants at the Bellefonte site rather than or in connection with moving forward with the new reactors (Flessner). In addition, this change has been advocated by former NRC Commissioner Dale Klein due to the more advanced stage of planning for the Vogtle units. In addition, Southern Company had previously filed for and is expected to receive an Early Site Permit for the Vogtle site. If anything, this change should facilitate the licensing process, as it will ensure that the reference application for the AP 1000 reactor technology is of a very high quality.

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

A. Yes, the NRC has stated for some time that the COLA process is a challenging undertaking. These challenges include the sheer number of applications the NRC has received and training a relatively new review staff. In addition, as SACE Witness

Gundersen notes, the NRC is concurrently reviewing new or amended design certifications for multiple reactor designs. As support for his arguments, SACE Witness Gundersen cites a recent NRC letter and emphasizes a statement in that letter which indicates that the licensing process is not proceeding as planned. However, he fails to convey the overall message of this letter which indicates the NRC is actively managing the licensing process and taking steps to mitigate schedule risks.

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

A. First, it is important for the Commission to note that FPL is in a somewhat advantageous position by having submitted its COLA subsequent to sixteen other applications. Thus FPL has and will continue to have the opportunity to learn from the challenges faced by applicants which submitted their applications earlier in the process. In this regard, FPL has taken note of the challenges faced by other applicants and delayed its application submittal this year in order to address concerns that were being raised in another applicant's COLA. FPL also has a number of internal controls and processes in place to manage each of the challenges associated with the NRC's review. These processes include regular meetings to discuss the review process, and issuing a process to its COLA contractor, Bechtel, to ensure that the NRC's RAIs issued to other applicants are being monitored and evaluated for their impact on the PTN 6 & 7 COLA.

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

A. Yes, SACE Witness Gundersen identified certain transmission and ground water concerns related to the PTN 6 & 7 project. However, it is unclear to me why SACE Witness Gundersen believes these concerns have changed since the Commission issued its Determination of Need, and why he believes these uncertainties have not been addressed by FPL. The PTN 6 & 7 project has always been sited at the Company's Turkey Point site and the number of transmission options available to the Company has existed since that time. In addition, FPL considered both of these concerns while undertaking an extensive site selection study which was discussed in Concentric's internal control review from April 2009 and was filed with the Commission as Exhibit SDS_7 in this proceeding. Similarly, FPL is undertaking a detailed study of the various transmission options from the site that will allow the additional energy generated by the PTN 6 & 7 project to be delivered to FPL's customers. Finally, SACE Witness Gundersen does not cite any FPL document produced during discovery as support for his opinion that FPL has not adequately accounted for potential delays in the PTN 6 & 7 project planning process.

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

A. Yes, FPL has considered the need to include a contingency in its cost estimate. However, development and construction of a new nuclear plant is an incredibly complex undertaking and the potential does exist that the PTN 6 & 7 project will exceed these contingencies. Nonetheless, FPL has followed appropriate industry guidelines and practices when calculating its contingency factors. This contingency

factor was fully discussed in my testimony in the 2008 NCRC proceeding and was again addressed in my direct testimony in this proceeding.

Q. Please discuss SACE Witness Gundersen's concerns related to the demand for construction materials and skilled labor.

A. SACE Witness Gundersen states that "Hurricanes Katrina and Rita demonstrated that major constructions projects are subject to delays due to the worldwide demand for construction materials and skilled labor." His testimony never expands on why he believes these two unfortunate events demonstrated these shortages. Nonetheless, he states that international demand for nuclear materials and qualified workers create the possibility for delays for the PTN 6 & 7 project. SACE Witness Gundersen does not, however, state why he believes FPL has not anticipated, evaluated or mitigated the possibility of labor and material shortages. In fact, he does not cite any document produced in discovery to support his opinion that FPL has not considered these uncertainties.

Q. Are there reasons, other than Hurricanes Rita and Katrina for the material shortages that SACE Witness Gundersen notes?

A. Yes, I discussed in the Determination of Need proceeding and the 2008 NCRC Review proceeding, the market for nuclear quality materials is constrained by the limited number of suppliers qualified to supply these material and international demand for these products (26-27). Interestingly, SACE Witness Gundersen relies upon the same article I cited on page 27 of my direct testimony in the 2008 NCRC Review proceeding. Additionally, robust global economic growth has spurned many countries including China and India to advance their nuclear power construction programs.

Q. Do you agree with SACE Witness Gundersen's opinion that FPL has not anticipated the potential for shortages in the materials required to complete the PTN 6 & 7 project?

A. I completely disagree with SACE Witness Gundersen's opinion. FPL is actively monitoring the market for the critical construction materials required to complete the PTN 6 & 7 project, and entering into reservation or supply agreements as market conditions necessitate such agreements. For instance, in keeping with the guidance from the DOE which is cited by SACE Witness Gundersen, FPL has entered into a reservation agreement with Westinghouse to secure manufacturing space for the reactor vessel forgings for the PTN 6 & 7 project. FPL is also regularly communicating with Westinghouse regarding the current state of the supply chain necessary to develop and construct the AP 1000 reactors. It would be difficult for SACE Witness Gundersen to be aware of FPL's efforts in this regard without first reviewing the extensive documentation FPL produced in discovery.

Q. Do you agree with SACE Witness Gundersen that FPL has not anticipated labor shortages?

A. No I do not. It is widely recognized by the nuclear industry that a significant number of the industry's workers are eligible to retire in the next five years. This is a critical challenge for both existing and new nuclear power plants of which the Company has been aware for a number of years. SACE Witness Gundersen acknowledged in his direct testimony that FPL as a Company is well aware of these challenges by citing remarks of a senior FPL executive at a recent industry conference. As a result, the company has undertaken a number of efforts to help mitigate this risk at both its existing nuclear power plants and the PTN 6 & 7 project.

In its April 2009 Review of FPL's Internal Controls, Concentric also recommended that the Company develop contingency plans which address the possibility of a labor shortage. Despite each of these activities, SACE Witness Gundersen opines that FPL has not anticipated labor shortages, but does not cite any FPL documents produced during discovery as support for his arguments.

Q. What is FPL doing to manage potential labor shortages?

A. FPL's first step in addressing potential labor shortages is a staffing plan that monitors the current workforce needs of the project and indicates when a new hire is anticipated. The PTN 6 & 7 project can then seek qualified candidates from a number of labor pools including internal candidates, external direct hires or staff augmentation labor. As one of the largest nuclear power operators in the Country, the Company also enjoys an advantage when recruiting personnel to its nuclear facilities because potential employees see substantial opportunities for advancement within the Company. To address the need for new workers in the power industry in general, FPL has established a cooperative program with the Homestead campus of Miami Dade College (Valdemoro). This program provides new workers with training in one of three disciplines and places them at the Company's existing power plants at the Turkey Point site. Finally, FPL's Internal Control organization monitors the manhours expended by the PTN 6 & 7 contractors to identify potential trends in the number of resources assigned to the project. When a negative trend that could affect the PTN 6 & 7 schedule is identified, FPL works closely with the vendor to make certain adequate resources are assigned to the PTN 6 & 7 project on a going forward basis.

Q. What concerns related to the PTN 6 & 7 construction schedule has SACE Witness Gundersen raised?

A. SACE Witness Gundersen appears to be concerned that the pattern of design delays and construction delays that occurred in the 1970's and 1980's will be repeated during the current construction program. As support for his argument, SACE Witness Gundersen states that the AP 1000 is a brand new design that has not been constructed, and he cites a New York Times article which discusses construction difficulties faced by the sponsor of new nuclear plant under construction in Finland. SACE Witness Gundersen does not address why he believes FPL has not evaluated and/or mitigated these concerns.

Q. Has FPL undertaken any efforts to address the risk of delays during construction of the PTN 6 & 7 project?

A Yes it has. As discussed in my direct testimony, FPL's construction schedule was originally developed using an industry standard, known as the critical path method, and an often-used software program which facilitates updates to this schedule. Once completed, the PTN 6 & 7 schedule was reviewed and vetted internally. In addition, FPL has asked BVZ to further review the schedule. The PTN 6 & 7 schedule will continue to be subject to various risks going forward, but FPL has taken appropriate steps to address the risk SACE Witness Gundersen has identified and to address new risks as they may emerge.

Q. What is the status of other nuclear power plants under construction around the world?

A As shown on Exhibit JJR_3, which is attached to this rebuttal testimony, a number of countries have embarked on nuclear construction projects. In addition to the

Okiluoto-3 reactor that SACE Witness Gundersen cites in his direct testimony, there are two AP-1000 projects under construction in China along with several other projects around the world. While concerns may arise later, the AP1000 projects have progressed relatively smoothly. In addition, Japan has actively and relatively successfully constructed nuclear power plants since the 1970's. Clearly, not every reactor under construction has encountered the number and magnitude of problems faced by the Okiluoto-3 reactor. Indeed, the owner of Okiluoto-3 was not discouraged by the construction problems faced by the project and has since applied to the Finnish nuclear authority for permission to construct a fourth plant at the Okiluoto site (Application). In addition, FPL and the rest of the U.S. nuclear industry will have the opportunity to learn from the lessons at these earlier projects by participating in global industry partnerships and information sharing networks.

VI. SACE WITNESS COOPER AND THE PTN 6 & 7 FEASIBILITY ANALYSIS

Q. Are you aware that SACE Witness Cooper has filed direct testimony in this proceeding?

A. Yes I am aware that SACE Witness Cooper has filed direct testimony in which he discusses a number of uncertainties related to the PTN 6 & 7 project. He does not comment on any of FPL's 2007, 2008 or 2009 expenditures.

Q. Please summarize the testimony SACE Witness Cooper.

A. In his direct testimony SACE Witness Cooper asserts a strategy for dealing with uncertainty in FPL's and the State of Florida's resource planning process. In addition, SACE Witness Cooper asserts a number of changed regulatory, financial,

market and technical conditions which challenge the long-term feasibility of the PTN 6 & 7 Project. These changed conditions include:

- Declining customer demand
- Recently falling natural gas prices
- Potential renewable energy and energy efficiency standards
- The potential cost of carbon emissions
- Cost of nuclear cost construction
- The potential cost and available of alternative resources
- The state of financial markets
- Investor perceptions of nuclear construction

Q. What is your opinion of the uncertainty related to the PTN 6 & 7 project?

A. If completed, the development period for PTN 6 & 7 will exceed a decade. During this time, electricity demand, fuel prices and environmental compliance costs will fluctuate substantially as economic cycles progress and new policies are implemented. As has been discussed previously, these fluctuations and new policies are sources of tremendous cost and schedule uncertainty for the PTN 6 & 7 project.

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

A. Yes. For example, it is often suggested that there could be significant changes in the cost, performance, and reliability of renewable energy alternatives in response to greater demand. Others predict that new renewable generating technologies, such as ocean current/wave/thermal resources, will be commercialized and provide a clean, affordable means of producing electricity. The future availability, cost and

performance parameters of these alternatives are inherently uncertain, which adds to the challenges facing electric resource planners. Cost is also not the only potential factor that could limit penetration of these resources; permitting issues for such installations are frequently a major issue.

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

A. SACE Witness Cooper's statement is partially correct. However, he fails to make one critical distinction. It is true that in times of extreme uncertainty such as now, a prudent utility should make investment decisions that enhance its overall flexibility. This includes preserving options which are inherently more flexible than fixed assets. The option to construct new nuclear power plants is one such option. Because of the lead time associated with a new nuclear power plant, failing to take steps at this time to pursue a new nuclear plant would effectively eliminate the role of nuclear as an option within the next decade for FPL and its customers.

Ironically, SACE Witness Cooper forgets his own admonition about the importance of preserving flexibility and the need for regular reviews of a utility's resource plan when he evaluates FPL's development of the nuclear option for PTN 6&7. In his direct testimony, SACE Witness Cooper states the following:

> "As very large investments that take a long time to construct and produce large quantities of electricity, they [nuclear plants] represent a huge quantity of inflexible service costs. These investments are

incapable of responding to change. They are inherently "go-no-go" decisions that should be made before costs are incurred." (7)

I am in complete disagreement with SACE Witness Cooper on this point, at least as it relates to FPL's nuclear strategy. FPL is preserving the nuclear generation alternative for its customers through a carefully conceived and well executed step-by-step approach. It has sought to preserve optionality at the lowest possible cost that permits the project to meet the need identified. FPL has wisely chosen to learn from the experience of others and avoid if at all possible an early "go-no-go" decision that would lock in a decision to build PTN 6 &7.

SACE Witness Cooper's view that a "go-no-go" decision should be made before costs are incurred is reminiscent of the worst examples of resource planning from the 1980s, when utilities were locked into proceeding with nuclear projects, without ongoing reviews, and billions of dollars were wasted on projects that were eventually cancelled. A step-by-step approach, with frequent re-examination and review, and prudent expenditures to develop, evaluate and preserve this resource option, is unquestionably better than the wasteful "go-no-go" approach.

Q. Is FPL's development approach to the PTN 6 & 7 consistent with this view?

A. Yes, FPL is pursuing a stepwise process to preserve the option to build two new nuclear power plants. This strategy involves delaying upfront customer expenditures as long as practical to meet the project's development schedule and undergoing the Commissions annual feasibility review as part of the NCRC process. This process allows both FPL and the Commission to evaluate new information on a timelier basis, but also allows the Commission to defer judgment until more definite

information is available. Further, this approach does not prevent the Commission or FPL from simultaneously pursuing all other resource options, including renewable energy and energy efficiency resources, which may become available during the PTN 6 & 7 project's useful life.

Q. What are the implications of SACE Witness Cooper's strategies if they were pursued?

A. SACE Witness Cooper advocates that FPL plan to invest in short lead time power plants such as natural gas power plants that can be developed on relatively little notice. His position is presumably based on his belief that sufficient new renewable resources and energy efficiency may become available to meet FPL's entire need for new resources. For reasons discussed later in this section of my testimony, such a strategy represents a gamble on the development of these technologies. If that gamble does not prove correct, however, FPL and its customers would be forced to build the natural gas assets SACE Witness Cooper is advocating. These assets will further subject FPL's customers to fluctuations in the price and availability of natural gas, which are very substantial already. Unlike the New England region with which SACE Witness Cooper is likely familiar, Florida has a limited number of options for transporting natural gas to the region. Thus the risk of hurricane related supply disruptions could have tremendous implications for FPL and its customers. It would not be prudent for FPL to pursue such a speculative investment strategy in times as uncertain as these. In contrast to SACE Witness Cooper's strategies, FPL's strategy will still enable the utility to vigorously pursue any viable energy efficiency and renewable energy resources which may become available while preserving the option to construct PTN 6 & 7 on the earliest practical deployment schedule.

Q. Do you agree with SACE Witness Cooper's opinion that the recent shift in consumption is permanent and signals slower growth in the future?

A. No. As a preliminary matter, SACE Witness Cooper offers no support for his opinion that the recent shifts in consumer behavior will become permanent. It is critically important to note, however, that nuclear is a long-term (i.e. 40-60 year) investment. It would not be prudent to base such a resource planning decision on near-term economic cycles which occur during the facilities' development, construction and operational periods. Nonetheless, it does seem reasonable that for the very near term, future economic growth will be slowed from projections that were offered prior to 2008. It is currently very uncertain how long this reduced growth will continue and how dramatic the reductions will be in that period. I have observed several different predictions that range from a period of "super-growth" at the end of the recession to long-term economic stagnation. From past experience it seems likely medium term and longer-term growth will fall somewhere in between these extremes.

Q. Has FPL experienced a reduction in electricity demand since the 2008 feasibility analysis?

A. Yes, similar to several other utilities in the U.S., FPL has experienced a significant drop in demand since 2008. This reduction results from an ongoing economic recession.

Q. Did FPL account for this reduction in demand in the load forecast the Company used in its annual feasibility analysis?

A Yes, FPL has clearly accounted for this demand reduction in its load forecast. For instance, in the year the first PTN 6 & 7 reactor is expected to enter commercial

service, FPL has reduced its demand forecast by more than 11%. Further to that reduction, however, are the reductions that FPL has projected after 2020. For instance, FPL's projected demand in 2035 is more than 16% lower than the 2008 forecast, and FPL's projected demand in 2040 is more than 20% lower than the 2008 forecast.

Q. If FPL's load forecast has decreased so dramatically, why hasn't the Company's projected reserve margins increased commensurate with the decrease in load?

A. As the Commission noted in its Determination of Need Order, even assuming reduced or no growth for a period of five years or more, FPL has a need for new capacity in excess of the PTN 6 & 7 reactors. FPL's lower demand forecast has simply reduced the increment of new capacity that was in excess of the PTN 6 & 7 project. As the Commission pointed out in its order in that proceeding, FPL intended to meet this additional capacity need with new gas-fired, combined cycle power plants, but has deferred the need for certain of these plants to account for the reduced demand. This clearly demonstrates why it is important to preserve the option to construct the PTN 6 & 7 projects at this time. As SACE Witness Cooper accurately points out, alternative resources have much shorter lead times and can be pursued simultaneously with the new nuclear power plant. Meanwhile, other incremental resources can be used to match fluctuations in the Company's load forecast. However, to choose to cease nuclear power development efforts at this time would force FPL to pursue natural gas as the only currently available alternative for baseload generation.

Q. Why are the renewable resources for which SACE Witness Cooper advocates not suitable alternatives for the capacity need which may be met by PTN 6 & 7?

In order to be more widely deployed in Florida in the longer term, many of these renewable resources would require significant reductions in cost and leaps in efficiency. Also, most of these renewable resource options are unable to meet baseload generating needs, but are better positioned as intermediate and peaking resources that enable a utility to replace its gas- and oil-fired generation. As an example of the viability and availability of renewables in Florida, FPL recently issued a Request for Proposals ("RFP") for energy and capacity from new renewable energy facilities. Unfortunately, none of the responses to this RFP were below FPL's avoided costs of energy and capacity.

Q. What role would a national renewable energy standard play in determining future resource planning decisions?

A. First, it is important for the Commission to note that no proposed national legislation has become law. The version of climate change legislation that is being considered by the Senate is substantially different than that passed by the House. This uncertainty was reinforced in a recent webinar sponsored by SACE in which Michele Boyd stated she anticipated a "enormous battle" to reconcile the bills passed in each house of the U.S. Congress (Boyd). In addition, there is currently no certainty as to how this legislation will be implemented once respective agency regulations are issued. Thus there is extraordinary uncertainty related to final standards that will need to be met by FPL. Nonetheless, virtually every analyst is in agreement that some form of climate change legislation will be implemented in the

coming years and this legislation is very likely to include some form of a national renewable electricity standard which would require each utility to procure a portion of its electricity sales from renewable resources, including nuclear. As SACE Witness Cooper states, this would clearly have some impact on the need for non-renewable resources. However, SACE Witness Cooper has failed to note H.R. 2454, the American Clean Energy and Security Act, excludes nuclear from the total electricity sales baseline to which a utility's renewable purchases are compared. That is to say that new nuclear is effectively exempt from the national renewable energy standard, counting as neither a renewable or non-renewable resource. Furthermore, SACE Witness Cooper fails to mention that many political commentators are speculating that new nuclear may ultimately be included as a renewable resource. Such a measure, if included in the final legislation would further improve the prospects of new nuclear power plants.

Q. In the absence of viable renewable resources would vigorously pursuing demand side management and demand reduction (DSM) programs eliminate the need for future supply side resources?

A. First, I note that the appropriate DSM goals are an issue currently before the Commission in Docket No. 080407-EG. Nonetheless, these programs should be vigorously pursued, and FPL is recognized throughout the electric utility community as being one of the most successful utilities in the nation in achieving cost-effective DSM programs. However, there is no likelihood that even the successful utilization of all of the available cost-effective DSM programs can do anything more than slow the demand growth that the system is facing, and thus will not eliminate the need for new non-GHG-emitting baseload resources in order to both meet demand and

mitigate GHG emissions. In response to this, Dr Cooper contends that as much as 20% of FPL's load can be met with energy efficiency. However, the study which SACE Witness Cooper cites as support for this argument contains a number of assumptions regarding the penetration levels that can be achieved for energy efficiency without citing any analysis to support these assumptions (Elliot 8). In addition, SACE Witness Cooper neglects to mention that this report lists a number of new polices, regulations and legislation that must be implemented to achieve these goals (26-27).

Q. Does SACE Witness Cooper raise any concerns related to FPL's natural gas forecast?

A. Yes, SACE Witness Cooper states he believes FPL's current natural gas forecast is too high given recent market predictions. For support for his argument, SACE Witness Cooper argues that a stream of prices for NYMEX futures on a single day provides definitive evidence of natural gas price expectations through 2020. As explained below, this analysis is not appropriate due to the lack of liquidity in longer maturity futures contracts and the fact SACE Witness Cooper has relied upon a single day's data as a projection of future prices.

Q. Do you have any observations related to SACE Witness Cooper's analysis?

A. While I generally agree that natural gas prices have fallen since FPL's natural gas price forecast was developed, I am concerned with what SACE Witness Cooper asserts is a reasonable projection of the market. In his direct testimony, SACE Witness Cooper notes that the NYMEX futures contract for the Henry Hub has been a reasonable projection of Florida City Gate prices. To support this assertion, SACE Witness Cooper produces an exhibit which plots Florida's natural gas prices

against the NYMEX futures contract. He then goes on to state that the exhibit demonstrates that the NYMEX futures have been a near perfect predictor of natural gas prices for FPL's natural gas price. My concern with SACE Witness Cooper's analysis is that he appears to rely on what is known as "front month" contracts to support his contention that the NYMEX Henry Hub futures contract is a reasonable projection of Florida natural gas prices, but then uses what are known as "long dated contracts" to establish his contention that FPL's projection of natural gas prices is too high.

Q. Please explain what you mean by "front month" and "long dated contracts."

A. Generally, front month contracts are NYMEX-traded agreements that provide the purchaser the right to purchase natural gas at a specified price in the months immediately following the current month. These contracts change hands quite often due to the relatively short time period before they expire and the widely available and relevant market information. Long dated contracts, in contrast, allow a buyer to purchase natural gas at a time further in the future. Currently, these contracts are available until December 2021. However, the long dated contracts trade very infrequently and are typically not relied upon by analysts as projections of future prices.

Q. Why is it not appropriate to use very long dated contracts to project long-term natural gas prices?

A. Very long dated contracts, such as those more than 18-24 months out, cannot be relied upon to predict future natural gas prices because they generally trade sparingly and are purchased as insurance policies for companies whose financial performance is tied to the price of natural gas in some manner. Exhibit JJR_5 is table which

depicts both the trading volume and number of open contracts, known as the open interest, for each contract maturity. Additionally, SACE Witness Cooper's testimony relies upon the price of these contracts as reported on a single day. He makes no effort to illustrate any trends in these prices. FPL Witness Sim provides the rationale behind FPL's current natural gas forecast and why it is appropriate basis from which to perform the feasibility analysis.

Q. Does SACE Witness Cooper also raise concerns related to FPL's cost estimate for the PTN 6 & 7 project?

A. Yes, SACE Witness Cooper notes in his direct testimony that FPL's current range of cost estimates is in the bottom quartile of comparable cost estimates. To support his assertion, SACE Witness Cooper relies on a table of nuclear cost estimates that he appears to have developed for an outside report he published in June 2008 (Cooper "Economics" 23). This report discusses three categories of cost estimate as classified by SACE Witness Cooper; "aspiration (hype), recommendation (hope), and projection (reality)" (17). In addition, SACE Witness Cooper's report, which includes virtually the same table presented in his direct testimony, indicates that several of the estimates on which he relies for his statements "are not very well explained or documented, while a few are analyzed in great detail" (22). Thus it would seem that SACE Witness Cooper's analysis is premised on information for which he likely does not have all of relevant details necessary to make his comparison. Indeed, SACE Witness Cooper even refers to the information on which earlier cost estimates may have been based as "part of a catechism whose basic function was to answer infidels and sustain the faith of the converted" (33).

Q. Why is SACE Witness Cooper's analysis not the appropriate basis from which to perform a cost comparison?

A. SACE Witness Cooper's cost estimate analysis is an entirely inappropriate comparison due to the fact that he has failed to account in any way for the differences between reactor designs or recent trends in commodity prices. Both of these details are critical to making a reasonable comparison between various projects. Westinghouse, for example, has stated that the AP 1000 is expected to use approximately 40% less concrete then a comparable four loop Westinghouse pressurized water reactor from the last wave of construction (Westinghouse). Very basically, some newer designs, such as the US EPR and others, rely upon the conventional safety systems from these earlier plants as the basis for their new designs and then enhance the safety of these earlier plants. It can reasonably be assumed that commodity savings cited by Westinghouse is likely to apply to these plants as well. SACE Witness Cooper relies upon a number of these generic cost estimates and cost estimates for at least three US EPR projects, and one ABWR project which may or may not be provided on comparable economic and financial term as the basis for his cost estimate. I have also noted that SACE Witness Cooper relies upon at least one illustrative example for his argument. In Exhibit MNC-8, SACE Witness Cooper cites a 2008 Moody's Investors Service report for one of his cost estimates, but he does not address the explanatory statement on Page 6 of this report which states "this $7.5 billion [referring to the total cost estimate for a new nuclear power plant] estimate is for illustrative purposes only and does not represent a $/kW capacity figure."

Q. Has Concentric produced its own comparison of cost estimates in this proceeding?

A. Yes, Concentric produced a comparison of various cost estimates from all of the developers of AP 1000 projects in the Southeast United States as Exhibit JJR_3 in my direct testimony filed on March 2, 2009 in this proceeding. This comparison demonstrated that FPL's cost estimate is within a reasonable range when compared to similar projects.

Q. SACE Witness Cooper asserts that the breakeven analysis FPL has used to ascertain the PTN 6 & 7 project's continued feasibility is a contrived and inappropriate means to evaluate feasibility. Have you seen this analysis used elsewhere?

A. Yes this type of analysis is routinely used in financial analysis and is known as a "stress test." Often these tests are used for the very purpose for which it is being used in this proceeding, determining whether a project continues to be economic given a particular set of assumptions. Concentric often utilizes this test when performing valuations of power plants for financial investors.

Q. Why are financial investors interested in the results of this type test?

A. Concentric's clients have requested this analysis to determine at what price the plant ceases to be economic or at what point the investment begins to pay off for the investor.

Q. Are there other considerations related to the PTN 6 & 7 project's feasibility analysis which are addressed by SACE Witness Cooper?

A. Yes, SACE Witness Cooper also briefly discusses whether FPL can further diversify its generating portfolio by pursuing renewable energy resources and energy

efficiency. He bases his discussion upon the Herfindahl-Hirschman Index ("HHI"), a well known indicator of market concentration.

Q. Did SACE Witness Cooper appropriately consider the HHI in this instance?

A. SACE Witness Cooper has failed to appropriately consider the HHI. In his discussion of the HHI, SACE Witness Cooper provides three scenarios under which FPL would invest in a variety of resources. SACE Witness Cooper then provides an HHI for each of the three portfolios and concludes that if FPL invested more in renewable energy and energy efficiency it would have a more diverse portfolio. This is not a startling conclusion. The HHI considers both the market share of a firm or resource and the number of firms or resources in the market. Thus the HHI will always fall by simply adding a new firm or resource regardless of the amount of market share garnered. In other words, one could achieve a similar result by dividing nuclear into two separate resources known as existing nuclear and new nuclear, or by adding any other resources as a new category. The opposite is also true. Should SACE Witness Cooper not separate energy efficiency into a third category, but included in the other category with the same market share used in his example, the calculated HHI would not fall as dramatically as he has portrayed it. The final demonstration of this would be to separate efficiency into every technology that produces an energy savings. Although each of these technologies would have an extremely small market share, the presence of a number of additional resources in the market would serve to reduce the level of concentration in the market.

Q. Does this conclude your testimony?

A. Yes it does.

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The Contract Price / Owner Contingency Dynamic

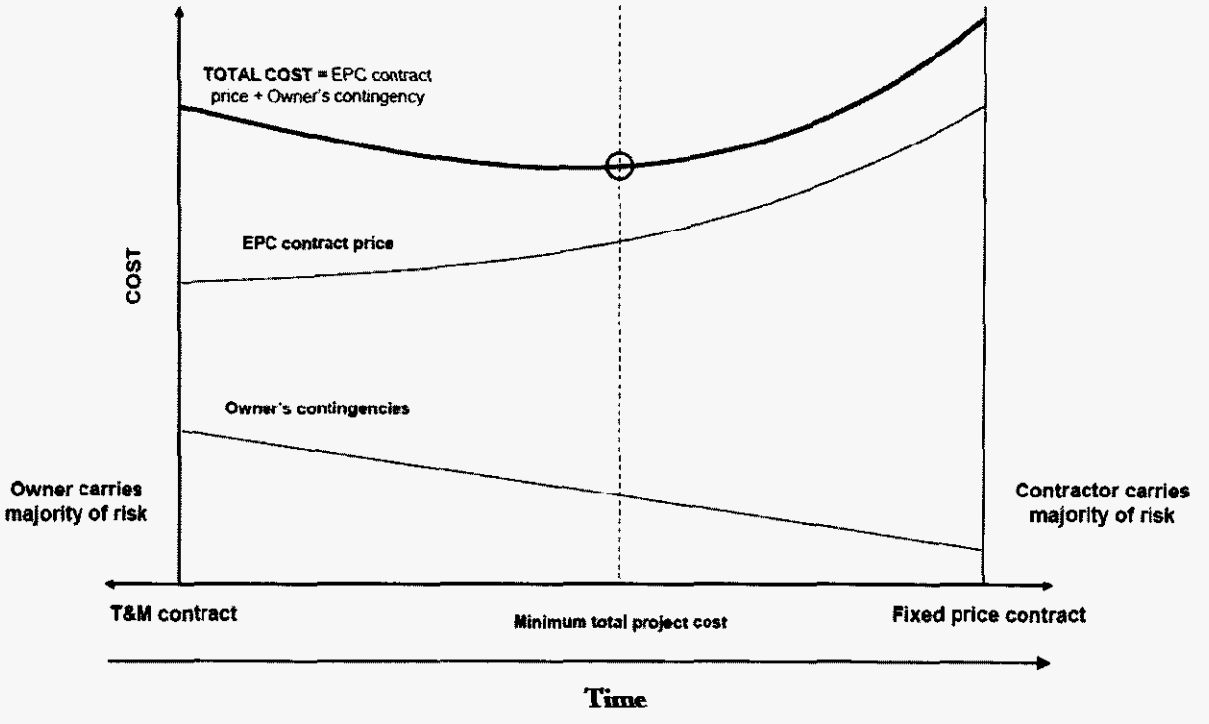

Exhibit JJR_3: Nuclear Reactors under Construction, Planned or Proposed

Source: World Nuclear Association

World Nuclear Power Reactors 2008-09 & Uranium Requirements

1 August 2009

This table includes only those future reactors envisaged in specific plans and proposals and expected to be operating by 2030. Longer-range estimates based on national strategies, capabilities and needs may be found in the WNA Nuclear Century Outlook. The WNA country papers linked to this table cover both areas: near-term developments and the prospective long-term role for nuclear power in national energy policies.

COUNTRY (Click name for Country Profile)	NUCLEAR ELECTRICITY GENERATION 2008		REACTORS OPERABLE 1 August 2009		REACTORS UNDER CONSTRUCTION 1 August 2009		REACTORS PLANNED August 2009		REACTORS PROPOSED August 2009		URANIUM REQUIRED 2009
	billion kWh	% e	No.	MWe	No.	MWe	No.	MWe	No.	MWe	tonnes U
Argentina	6.8	6.2	2	935	1	692	1	740	1	740	122
Armenia	2.3	39.4	1	376	0	0	0	0	1	1000	51
Bangladesh	0	0	0	0	0	0	0	0	2	2000	0
Belarus	0	0	0	0	0	0	2	2000	2	2000	0
Belgium	43.4	53.8	7	5728	0	0	0	0	0	0	1002
Brazil	14.0	3.1	2	1901	0	0	1	1245	4	4000	308
Bulgaria	14.7	32.9	2	1906	0	0	2	1900	0	0	260
Canada	88.6	14.8	18	12652	2	1500	4	4400	3	3800	1670
China	65.3	2.2	11	8587	15	15360	34	36380	80	72000	2010
Czech Republic	25.0	32.5	6	3686	0	0	0	0	2	3400	610

COUNTRY (Click name for Country Profile)	NUCLEAR ELECTRICITY GENERATION 2008		REACTORS OPERABLE 1 August 2009		REACTORS UNDER CONSTRUCTION 1 August 2009		REACTORS PLANNED August 2009		REACTORS PROPOSED August 2009		URANIUM REQUIRED 2009
	billion kWh	% e	No.	MWe	No.	MWe	No.	MWe	No.	MWe	tonnes U
Egypt	0	0	0	0	0	0	1	1000	1	1000	0
Finland	22.0	29.7	4	2696	1	1600	0	0	1	1000	446
France	418.3	76.2	59	63473	1	1630	1	1630	1	1630	10569
Germany	140.9	28.3	17	20339	0	0	0	0	0	0	3398
Hungary	14.0	37.2	4	1826	0	0	0	0	2	2000	274
India	13.2	2.0	17	3779	6	2976	23	21500	15	20000	961
Indonesia	0	0	0	0	0	0	2	2000	4	4000	0
Iran	0	0	0	0	1	915	2	1900	1	300	143
Israel	0	0	0	0	0	0	0	0	1	1200	0
Italy	0	0	0	0	0	0	0	0	10	17000	0
Japan	240.5	24.9	53	46236	2	2285	13	17915	1	1300	8388
Kazakhstan	0	0	0	0	0	0	2	600	2	600	0
Korea DPR (North)	0	0	0	0	0	0	1	950	0	0	0
Korea RO (South)	144.3	35.6	20	17716	5	5350	7	9450	0	0	3444
Lithuania	9.1	72.9	1	1185	0	0	0	0	2	3400	0
Mexico	9.4	4.0	2	1310	0	0	0	0	2	2000	242
Netherlands	3.9	3.8	1	485	0	0	0	0	0	0	97
Pakistan	1.7	1.9	2	400	1	300	2	600	2	2000	65
Poland	0	0	0	0	0	0	0	0	5	10000	0
Romania	7.1	17.5	2	1310	0	0	2	1310	1	655	174
Russia	152.1	16.9	31	21743	9	7130	7	8000	28	25880	3537

COUNTRY (Click name for Country Profile)	NUCLEAR ELECTRICITY GENERATION 2008		REACTORS OPERABLE 1 August 2009		REACTORS UNDER CONSTRUCTION 1 August 2009		REACTORS PLANNED August 2009		REACTORS PROPOSED August 2009		URANIUM REQUIRED 2009
	billion kWh	% e	No.	MWe	No.	MWe	No.	MWe	No.	MWe	tonnes U
Slovakia	15.5	56.4	4	1688	2	840	0	0	1	1200	251
Slovenia	6.0	41.7	1	696	0	0	0	0	1	1000	137
South Africa	12.7	5.3	2	1842	0	0	3	3565	24	4000	303
Spain	56.4	18.3	8	7448	0	0	0	0	0	0	1383
Sweden	61.3	42.0	10	9104	0	0	0	0	0	0	1395
Switzerland	26.3	39.2	5	3237	0	0	0	0	3	4000	531
Thailand	0	0	0	0	0	0	2	2000	4	4000	0
Turkey	0	0	0	0	0	0	2	2400	1	1200	0
Ukraine	84.3	47.4	15	13168	0	0	2	1900	20	27000	1977
UAE	0	0	0	0	0	0	3	4500	11	15500	0
United Kingdom	52.5	13.5	19	11035	0	0	4	6400	4	6000	2059
USA	809.0	19.7	104	101119	1	1180	11	13800	20	26000	18867
Vietnam	0	0	0	0	0	0	2	2000	8	8000	0
WORLD**	**2601**	**15**	**436**	**372,533**	**49**	**44,358**	**136**	**150,085**	**277**	**288,805**	**65,405**
	billion kWh	**% e**	**No.**	**MWe**	**No.**	**MWe**	**No.**	**MWe**	**No.**	**MWe**	**tonnes U**
	NUCLEAR ELECTRICITY GENERATION 2008		REACTORS OPERATING		REACTORS BUILDING		ON ORDER or PLANNED		PROPOSED		URANIUM REQUIRED

Sources:
Reactor data: WNA to 1/8/09
IAEA- for nuclear electricity production & percentage of electricity (% e) 5/09.
WNA: Global Nuclear Fuel Market (reference scenario) - for U.

Operating = Connected to the grid;

Building/Construction = first concrete for reactor poured, or major refurbishment under way;

Planned = Approvals, funding or major commitment in place, mostly expected in operation within 8 years, or construction well advanced but suspended indefinitely;

Proposed = Specific program or site proposals, expected operation within 20 years. Planned and Proposed are generally gross MWe;

TWh = Terawatt-hours (billion kilowatt-hours), MWe = Megawatt net (electrical as distinct from thermal), kWh = kilowatt-hour.

65,405 tU = 77,132 t U_3O_8

** The world total includes 6 reactors operating on Taiwan with a combined capacity of 4927 MWe, which generated a total of 39.3 billion kWh in 2008 (accounting for 17.1% of Taiwan's total electricity generation). Taiwan has two reactors under construction with a combined capacity of 2600 MWe, and six proposed, total 8000 MWe. U demand of 831t is expected in 2009.

NYMEX Natural Gas Futures Contract Prices

Settlement Month	Most Recent Settle	Open Interest	Estimated Volume	Settlement Month	Most Recent Settle	Open Interest	Estimated Volume
September-09	$ 4.00	176348	41	November-15	$ 7.55	24	n/a
October-09	$ 4.28	93919	n/a	December-15	$ 7.84	1990	n/a
November-09	$ 5.01	43158	n/a	January-16	$ 8.05	2	n/a
December-09	$ 5.69	45555	n/a	February-16	$ 8.05	2	n/a
January-10	$ 5.95	46871	n/a	March-16	$ 7.82	105	n/a
February-10	$ 5.97	22828	n/a	April-16	$ 7.12	131	n/a
March-10	$ 5.91	37466	n/a	May-16	$ 7.08	n/a	n/a
April-10	$ 5.82	38440	n/a	June-16	$ 7.16	22	n/a
May-10	$ 5.87	19277	n/a	July-16	$ 7.26	3	n/a
June-10	$ 5.96	9637	n/a	August-16	$ 7.33	n/a	n/a
July-10	$ 6.07	9975	n/a	September-16	$ 7.36	6	n/a
August-10	$ 6.16	9179	n/a	October-16	$ 7.44	6	n/a
September-10	$ 6.22	6887	n/a	November-16	$ 7.69	n/a	n/a
October-10	$ 6.33	18726	n/a	December-16	$ 7.98	13	n/a
November-10	$ 6.70	6107	n/a	January-17	$ 8.21	n/a	n/a
December-10	$ 7.05	13494	n/a	February-17	$ 8.20	n/a	n/a
January-11	$ 7.27	8193	n/a	March-17	$ 7.97	5	n/a
February-11	$ 7.27	5028	n/a	April-17	$ 7.27	5	n/a
March-11	$ 7.08	13599	n/a	May-17	$ 7.24	n/a	n/a
April-11	$ 6.55	8434	n/a	June-17	$ 7.32	n/a	n/a
May-11	$ 6.51	6901	n/a	July-17	$ 7.41	n/a	n/a
June-11	$ 6.59	2606	n/a	August-17	$ 7.47	n/a	n/a
July-11	$ 6.68	2907	n/a	September-17	$ 7.50	n/a	n/a
August-11	$ 6.75	3116	n/a	October-17	$ 7.58	n/a	n/a
September-11	$ 6.78	3154	n/a	November-17	$ 7.85	n/a	n/a
October-11	$ 6.86	5984	n/a	December-17	$ 8.15	4	n/a
November-11	$ 7.09	2370	n/a	January-18	$ 8.38	30	n/a
December-11	$ 7.38	4932	n/a	February-18	$ 8.37	30	n/a
January-12	$ 7.59	3131	n/a	March-18	$ 8.14	30	n/a
February-12	$ 7.58	1327	n/a	April-18	$ 7.42	30	n/a
March-12	$ 7.35	4315	n/a	May-18	$ 7.38	30	n/a
April-12	$ 6.64	2463	n/a	June-18	$ 7.46	30	n/a
May-12	$ 6.59	1905	n/a	July-18	$ 7.55	30	n/a
June-12	$ 6.67	1277	n/a	August-18	$ 7.61	30	n/a
July-12	$ 6.77	1226	n/a	September-18	$ 7.64	30	n/a
August-12	$ 6.83	1485	n/a	October-18	$ 7.72	30	n/a
September-12	$ 6.86	1344	n/a	November-18	$ 7.99	30	n/a
October-12	$ 6.94	2003	n/a	December-18	$ 8.29	30	n/a
November-12	$ 7.17	1880	n/a	January-19	$ 8.53	n/a	n/a
December-12	$ 7.45	5344	n/a	February-19	$ 8.52	n/a	n/a
January-13	$ 7.65	1302	n/a	March-19	$ 8.30	n/a	n/a
February-13	$ 7.65	602	n/a	April-19	$ 7.56	n/a	n/a
March-13	$ 7.42	1196	n/a	May-19	$ 7.52	n/a	n/a
April-13	$ 6.71	921	n/a	June-19	$ 7.60	n/a	n/a
May-13	$ 6.67	883	n/a	July-19	$ 7.69	n/a	n/a
June-13	$ 6.75	718	n/a	August-19	$ 7.76	n/a	n/a
July-13	$ 6.85	680	n/a	September-19	$ 7.78	n/a	n/a
August-13	$ 6.92	618	n/a	October-19	$ 7.87	n/a	n/a
September-13	$ 6.95	489	n/a	November-19	$ 8.15	n/a	n/a
October-13	$ 7.04	945	n/a	December-19	$ 8.46	n/a	n/a
November-13	$ 7.28	400	n/a	January-20	$ 8.70	50	n/a
December-13	$ 7.56	5746	n/a	February-20	$ 8.69	n/a	n/a
January-14	$ 7.76	1118	n/a	March-20	$ 8.46	n/a	n/a
February-14	$ 7.76	110	n/a	April-20	$ 7.70	n/a	n/a
March-14	$ 7.53	384	n/a	May-20	$ 7.66	n/a	n/a
April-14	$ 6.84	297	n/a	June-20	$ 7.74	n/a	n/a
May-14	$ 6.79	162	n/a	July-20	$ 7.83	n/a	n/a
June-14	$ 6.87	96	n/a	August-20	$ 7.88	n/a	n/a
July-14	$ 6.97	89	n/a	September-20	$ 7.90	n/a	n/a
August-14	$ 7.04	94	n/a	October-20	$ 7.99	n/a	n/a