

**BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**

**DOCKET NO. 110009-EI  
FLORIDA POWER & LIGHT COMPANY**

**IN RE: NUCLEAR POWER PLANT COST RECOVERY AMOUNT  
TO BE RECOVERED DURING THE PERIOD  
JANUARY - DECEMBER 2012**

**REBUTTAL TESTIMONY & EXHIBITS OF:**

**STEVEN R. SIM**

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1 planning issues. Because both of these witnesses are from the same company  
2 (GDS), and appear to have virtually identical views, I will use the convention  
3 of referring to their testimonies as “GDS testimony”. However, when  
4 discussing a specific statement, I will identify the witness who provided that  
5 statement.

6 **Q. What is your overall reaction to the GDS testimony?**

7 A. My first reaction is that now, in the 2011 NCRC docket, which represents a  
8 very late point in the overall timeline of the EPU project, OPC, through the  
9 GDS testimony, is attempting to introduce a new set of “rules” by which the  
10 EPU project should now be judged, not only on a prospective basis, but  
11 retrospectively as well. Using the analogy of an athletic contest, this strikes  
12 me as not only attempting to change the rules after play has begun, but to  
13 attempt to do so after play has begun in the 4<sup>th</sup> quarter of the contest. Such an  
14 attempt is highly questionable.

15  
16 Second, FPL’s expedited approach for the EPU project was fully disclosed in  
17 the 2007 Need filing and has been openly discussed in each NCRC docket  
18 since that Need filing. OPC has been a party to all of those dockets.  
19 Furthermore, although the GDS testimony now criticizes the expedited  
20 approach FPL has openly taken since the project’s inception in 2007, the GDS  
21 testimony is not quite clear as to what other approach or path they believe FPL  
22 should have taken starting in 2007. Putting aside the fact that OPC never  
23 raised any of these concerns when the project and its timelines were being

1 discussed and decided in 2007 and 2008, the only other options (of either a  
2 longer/slower schedule or not doing the project at all) would have resulted in  
3 very poor results for FPL's customers.

4  
5 Delaying the project by proceeding on a slower schedule would have  
6 guaranteed that: (i) fuel costs for FPL's customers would have been at least  
7 \$840 million higher based on current assumptions, and (ii) the cost-  
8 effectiveness of the EPU project would have been significantly reduced due to  
9 these lost fuel savings. Not undertaking the EPU project at all would have  
10 meant proceeding with building more gas-fired new units. This path would  
11 have resulted in FPL's customers not receiving the many benefits of the EPU  
12 project that were the basis of the original decision by the FPSC for FPL to  
13 proceed with the EPU project. In addition to significant projected economic  
14 savings, the benefits of the EPU project include: (i) greater fuel diversity for  
15 the FPL system, (ii) emission-free energy that would be delivered at very high  
16 (90%) capacity factors, (iii) a hedge against unexpected cost increases in,  
17 and/or unavailability of, fossil fuels, (iv) a hedge against new or unexpected  
18 environmental regulations that affect fossil fuel-fired generation sources, (v)  
19 generation and delivery of baseload capacity and energy at a location (Turkey  
20 Point primarily) that will improve the overall efficiency in FPL's transmission  
21 system, and (vi) generation and delivery of baseload capacity and energy at a  
22 location (Turkey Point) that will help maintain a balance between growing  
23 load and generation in Southeastern Florida.

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Third, the new ill-advised “rules” recommended by the GDS testimony should be rejected because they (i) ignore well established and widely accepted economic principles, (ii) require an arbitrary selection of a single “standard” rather than continuing to rely on a very wide range of information regarding potential future outcomes for the EPU project, and (iii) install a “moving target” by changing the “standard” each year.

Fourth, I disagree with the GDS testimony that FPL should not have excluded sunk costs in its 2011 feasibility analyses of the EPU project. This recommendation: (i) ignores the plain language of the FPSC’s Nuclear Cost Recovery Rule and the specific guidance provided by the FPSC regarding the treatment of sunk costs; (ii) seeks to turn the well established and widely accepted economic principle of excluding sunk costs in economic analyses on its head by advocating that this principle now be “conditional”, based on a characteristic of the project being analyzed, which goes against common sense and would unnecessarily introduce arbitrariness into economic analysis; and (iii) is inconsistent with panel testimony provided by Witness Jacobs in a recent Georgia Public Service Commission nuclear docket. Therefore, the GDS testimony recommendation that the FPSC suddenly change the way in which economic analyses of resource options have consistently and successfully been performed in Florida for decades does not warrant serious

1 consideration. This topic is discussed below in section I of my rebuttal  
2 testimony.

3  
4 Fifth, the GDS recommendation that FPL begin using the same breakeven cost  
5 analysis approach used for evaluating the Turkey Point 6 & 7 project, and to  
6 then apply the results from this approach in the manner recommended in the  
7 GDS testimony, should be rejected because it would result in the arbitrary  
8 selection of a single value each year from this analysis to use as a standard for  
9 judging future EPU project costs, despite the fact that this arbitrarily selected  
10 value allows only a very narrow perspective to be taken and the arbitrarily  
11 selected value will change from year to year. This approach would  
12 improperly introduce both arbitrariness and confusion into the NCRC dockets.  
13 This topic is discussed below in section II of my rebuttal testimony.

14  
15 Sixth, from a resource planning perspective I discuss and challenge several  
16 points raised in the GDS testimony in section III of my rebuttal testimony.  
17 Among these is the GDS testimony suggestion that the expedited approach of  
18 the EPU project was inappropriate ignores significant advantages that will be  
19 realized by FPL's customers from the expedited approach.

20  
21 Another such point is the GDS testimony implication that the July 2009  
22 sensitivity analyses performed by FPL were something unusual, as well as the  
23 GDS testimony's contention that FPL should have informed the FPSC of the

1           “...*material changes in...feasibility...*” (Witness Jacobs, page 39, lines 17 and  
2           18) are also discussed in section III of my testimony. This particular  
3           sensitivity analysis is merely one of many such sensitivity analyses FPL  
4           performs each year in regard to various types of resource options. Therefore,  
5           the fact that a sensitivity analysis was performed is not noteworthy.  
6           Furthermore, the results of this sensitivity analysis are entirely consistent with  
7           prior and then-current EPU feasibility analyses results. Therefore, the results  
8           of the July 2009 sensitivity analyses did not represent a ‘*material change*’ in  
9           the projected feasibility of the project.

10  
11           Yet another point is the inherent implication in the GDS testimony that FPL’s  
12           analytical approach to evaluating the feasibility of the EPU project may be  
13           designed to artificially enhance the projected cost-effectiveness. However,  
14           exactly the opposite is true. For example, FPL’s feasibility analyses have  
15           deliberately not accounted for additional benefits of the EPU project that are  
16           real, but difficult to accurately quantify at this time, or for potential benefits  
17           which are speculative at this time. FPL’s feasibility analyses of the EPU  
18           project do not currently account for two benefits that are certain to result from  
19           the EPU project: (i) reduced transmission losses due to increased baseload  
20           capacity and energy, particularly from the Turkey Point site, close to FPL’s  
21           load center, and (ii) assistance from additional baseload capacity and energy at  
22           the Turkey Point site in addressing the ongoing issue of an imbalance between

1 growing load and generation in the Southeastern Florida region (i.e., in  
2 Miami-Dade and Broward counties).

3  
4 I believe that the FPSC and FPL's customers have been well served by the  
5 economic analysis approach that FPL has been utilizing since the 2007 Need  
6 filing for the EPU project. This analytical approach is straightforward, logical,  
7 and utilizes well established and widely accepted economic principles.

8  
9 **I. The Issue of Sunk Costs**

10  
11 **Q. Please summarize the recommendation regarding sunk costs that is made  
12 in the GDS testimony.**

13 A. The recommendation that is made in the GDS testimony regarding sunk costs  
14 is that it is inappropriate to remove sunk costs in FPL's annual feasibility  
15 analyses of the EPU project. The GDS testimony asserts that the well  
16 established economic principle of excluding sunk costs when evaluating  
17 whether to proceed with a project should be ignored if a certain "condition"  
18 exists for the project. Specifically, this principle should be ignored if the costs  
19 for the project increase over time.

20 **Q. Do you agree with the GDS testimony that this established economic  
21 principle should be changed and now be made conditional?**

1 A. No. The GDS recommendation is inconsistent with both the Nuclear Cost  
2 Recovery Rule and specific guidance provided by the FPSC on the treatment  
3 of sunk costs, in addition to being illogical.

4  
5 Rule 25-6.0423(5)(c)5 states that by May 1 of each year, the utility shall  
6 submit an analysis of the long-term feasibility of **completing** the power plant.  
7 This is a requirement to examine whether to proceed with the project, in light  
8 of remaining costs, precisely as FPL has done. The FPSC has also provided  
9 specific guidance regarding the requirements of the long-term feasibility  
10 analyses for purposes of complying with this Rule. The FPSC stated in Order  
11 No. PSC-08-0237-FOF-EI, on page 29, as follows:

12  
13 “FPL shall provide a long-term feasibility analysis as part of its annual  
14 cost recovery process which, in this case, shall also include updated  
15 fuel costs, environmental forecasts, break-even costs, and capital cost  
16 estimates. In addition, FPL should account for sunk costs.”

17  
18 This guidance from the FPSC clearly distinguishes “sunk costs” from  
19 “updated capital cost estimates” in regard to feasibility analyses.  
20 Consequently, FPL has effectively separated sunk costs from its updated  
21 capital cost estimates, resulting in the use of the relevant portion of the  
22 updated capital cost estimate (i.e., the “going forward” portion of the capital  
23 costs) in its feasibility analysis. While FPL’s approach to sunk costs complies

1 with the Rule and follows the guidance provided by the FPSC, the GDS  
2 testimony recommendation to not exclude sunk costs is a recommendation to  
3 violate the Rule and the FPSC's order regarding this issue.

4 **Q. Please explain why the GDS recommendation is illogical.**

5 A. The economic principle that sunk costs should not be included when  
6 evaluating whether to proceed with a project is not contingent upon a certain  
7 condition such as whether costs of a project are changing. Nor should the  
8 economic principle now be warped into being contingent upon such a  
9 condition.

10  
11 A simple analogy or example should help demonstrate this. Let's assume that  
12 a couple is faced with a decision of whether to remodel their home or  
13 purchase a new home. Let's also assume that the couple will be equally  
14 satisfied with both alternatives so the sole decision criterion is cost.

15  
16 At the start of the process, the couple obtains estimates of the costs for the two  
17 options. The remodeling option initially had an estimated (i.e., non-binding)  
18 cost of \$300,000 and the new home option had a projected cost of \$500,000.  
19 The couple chooses the remodeling option. Skipping ahead to a point in time  
20 when a significant portion of the remodeling work has now been completed,  
21 the couple is informed that \$200,000 has already been spent on the  
22 remodeling effort, and they receive an updated projection of costs to complete  
23 the project.

1 At this point we will take a look at two different, updated cost-to-complete  
2 projection scenarios which the couple might receive in order to see how the  
3 couple should respond. In Scenario 1, we assume that the cost-to-complete is  
4 now projected to be an additional \$250,000. Therefore, the total cost of the  
5 entire remodeling project is now projected to be \$450,000 (= \$200,000 of  
6 costs already spent, or sunk costs, + \$250,000 to complete the project). The  
7 couple once again considers its two options: complete the remodeling, or stop  
8 the remodeling work and buy a new house (which we will assume still costs  
9 \$500,000). If our couple is thinking rationally from an economic perspective,  
10 it understands that its true cost options are: (i) spend \$250,000 to complete the  
11 remodeling, or (ii) spend \$500,000 for a new home. The \$200,000 that has  
12 already been spent (i.e., sunk costs) has no bearing from an economic decision  
13 making perspective on the choice the couple now faces. The couple chooses  
14 to continue the remodeling because it is clearly the economic choice.

15  
16 In Scenario 2, we assume that the cost-to-complete is projected to be  
17 \$350,000. Therefore, the total cost of the entire remodeling project is now  
18 projected to be \$550,000 (= \$200,000 in sunk costs + \$350,000 to complete  
19 the project). The total cost of the remodeling project is now projected to be  
20 higher than the \$500,000 cost of buying a new home. The couple will again  
21 consider its two options: complete the remodeling or stop the remodeling  
22 work and buy a new house (which still costs \$500,000). If our couple is still  
23 thinking rationally from an economic perspective, it understands that its cost

1 options are: (i) spend \$350,000 to complete the remodeling, or (ii) spend  
2 \$500,000 to purchase a new home. The \$200,000 that has already been spent  
3 (i.e., sunk costs) again has no bearing from an economic decision making  
4 perspective on the choice it now faces. The couple chooses to continue the  
5 remodeling because it is clearly the economic choice.

6  
7 Under either scenario, the couple has made the economically sound choice by  
8 ignoring sunk costs and selecting the option that results in the lowest going  
9 forward costs. If the couple ignored the economic principle of sunk costs,  
10 they could end up much worse off by spending a total of \$700,000 (=\$200,000  
11 of remodeling costs already incurred + \$500,000 for a new home purchase).

12 **Q. What conclusion do you draw from this example?**

13 A. It is clear that there should be no “conditional” corollary attached to the well  
14 established economic principle of excluding costs already spent when  
15 evaluating the economics of proceeding with a project, even when the  
16 projected costs of the project are increasing. To do otherwise fails the basic  
17 test of common sense. However, the GDS testimony calls for just such a  
18 corollary to be attached to this sound economic principle.

19 **Q. Does the fact that we are examining the costs of the EPU project in a**  
20 **regulated utility environment suggest that there should somehow be a**  
21 **change in this economic principle?**

22 A. No. However, Witness Smith attempts to make this case in his testimony at  
23 page 4, lines 9-18 of his testimony.

1       **Q. In this testimony, Witness Smith seems to believe that it is important in a**  
2       **“going forward” analysis to know if a past cost has been allowed or**  
3       **disallowed for cost recovery. Do you share this belief?**

4       A. No. If a past cost for the EPU project is deemed prudent, and is allowed to be  
5       recovered from FPL’s customers, that cost will be recovered in both the  
6       Resource Plan with EPU and the Resource Plan without EPU. However, if a  
7       past cost for the EPU project is not deemed prudent, and is not allowed to be  
8       recovered from FPL’s customers, that cost will not be recovered in either the  
9       Resource Plan with EPU or the Resource Plan without EPU. From a going  
10      forward economic analysis perspective, the past cost can be properly excluded  
11      from the analysis for both resource plans in either case.

12      **Q. Are there any other aspects of the GDS testimony regarding the issue of**  
13      **sunk costs that you would care to comment on?**

14      A. Yes. I was surprised by the fact that Witness Jacobs’s statement that sunk  
15      costs should be thought of as somehow conditional is not consistent with  
16      recent testimony he was a part of. In Docket No. 29849, the Georgia Public  
17      Service Commission addressed the “Review of Proposed Revisions and  
18      Verification of Expenditures Pursuant to GEORGIA POWER COMPANY’S  
19      Certificate of Public Convenience and Necessity for Plant Vogtle Units 3 and  
20      4”.

21

1 In testimony on December 16, 2009, Dr. Jacobs was on the stand as part of  
2 panel testimony with a Mr. Hayet. The relevant part of that testimony appears  
3 starting on page 202, line 18, through page 203, line 7:  
4

5 “Q. In Georgia Power’s economic analysis, you make reference to the  
6 fact that they ignore sunk costs and also they said that they ignore  
7 the weighting of various factors. I think that’s page 25. Could  
8 you kind of elaborate on that, please? And why that matters or  
9 doesn’t matter?”

10 A. (Witness Hayet) “The point there is just to point out that the  
11 economic analysis as you go forward with the project, the question  
12 that you have to answer is what are the future costs that will be  
13 incurred and what do those costs – how do those costs compare to  
14 your next best alternative. So, the notion of the costs that have  
15 already been spent as being sunk is something that you ignore and  
16 we’re just simply pointing that out, that’s the company’s practice,  
17 **we agree with it and that’s fairly industry standard.**” (emphasis  
18 added)  
19

20 Pages 202 and 203 of testimony in this docket are presented in Exhibit SRS –  
21 13.  
22

1 Yet Witness Jacobs, who is now recommending that the concept of sunk costs  
2 should be thought of as being somehow conditional, was comfortable with his  
3 co-panelist Mr. Hayet stating that both of them agreed with the conventional  
4 approach to sunk costs; i.e., sunk costs should be removed from economic  
5 decision-making regarding whether to proceed with a resource option, even  
6 for new nuclear plants whose cost is inherently uncertain. Witness Jacobs does  
7 not appear to have offered any suggestion that “conditions” should be placed  
8 on the treatment of sunk costs in the Georgia Public Service Commission  
9 docket.

## 11 II. The Concept of a Breakeven Cost Approach

12  
13 **Q. Another aspect of the GDS testimony that deals with FPL’s feasibility**  
14 **analyses of the EPU project is a dual recommendation that FPL be**  
15 **required to: (i) now utilize a specific breakeven cost analytical approach**  
16 **for the EPU project that is being used to evaluate the Turkey Point 6 & 7**  
17 **project, and (ii) perform such a breakeven cost analysis separately for**  
18 **Turkey Point and St. Lucie. Do you believe that either of these**  
19 **recommendations is warranted or advisable?**

20 **A. No.**

21 **Q. FPL is using a type of breakeven cost approach for analyzing its Turkey**  
22 **Point 6 & 7 project. Why did FPL utilize this approach for the Turkey**  
23 **Point 6 & 7?**

1 A. The traditional and historically acceptable way in which the evaluation of two  
2 generation options is performed is to compare the total cumulative present  
3 value of revenue requirements (CPVRR) costs of two resource plans in which  
4 each resource plan has one of the two competing generation options. In such  
5 analyses, projections for key parameters of both generation options are known  
6 or can be reasonably estimated.

7  
8 However, in 2007 when FPL began evaluating the Turkey Point 6 & 7 project,  
9 many of these key parameters were unknown and could not be reasonably  
10 estimated. For example, at that time FPL had not yet decided on a reactor  
11 technology. As a consequence of that, there was a wide range of potential  
12 MW that could be supplied by two new nuclear units: 2,200 MW to 3,020  
13 MW. This wide range in technology size also contributed to a wide range in  
14 potential costs for the two units.

15  
16 In order to perform a traditional CPVRR analysis of the new nuclear units  
17 versus CC capacity, FPL would have had to assume a technology and  
18 associated MW size and costs at a time when no selection of the technology  
19 had been made. It was believed that this would likely lead to confusion  
20 regarding the results of economic analyses carried out in later years which  
21 might be compared back to these original analysis results and assumptions,  
22 particularly in regard to the assumed costs of new nuclear units.  
23 Consequently, FPL chose to introduce what was (in regard to FPL's FPSC

1 filings) a new and different breakeven cost approach for evaluating the Turkey  
2 Point 6 & 7 project.

3 **Q. Please describe this breakeven cost approach.**

4 A. In this type of breakeven cost approach, the capital cost of one of the two  
5 resource options being evaluated is omitted. In the breakeven cost analyses for  
6 Turkey Point 6 & 7, a traditional CPVRR evaluation of the two resource plans  
7 is first carried out, but with the assumption of zero capital costs for Turkey  
8 Point 6 & 7. In this analysis, the Resource Plan with Turkey Point 6 & 7 has  
9 significantly lower CPVRR costs than the Resource Plan without Turkey  
10 Point 6 & 7. Then, using that CPVRR cost differential between the two  
11 resource plans, a “breakeven” overnight capital cost value for Turkey Point 6  
12 & 7 is calculated that will result in the total CPVRR costs for the two resource  
13 plans being identical.

14  
15 However, as FPL’s feasibility analyses of Turkey Point 6 & 7 have shown,  
16 there: (i) is a different breakeven cost for each scenario of fuel cost and  
17 environmental compliance cost, and (ii) those different breakeven costs by  
18 scenario change from year-to-year as numerous assumptions are updated.

19  
20 In regard to FPL’s initial analyses of the EPU project that was to be included  
21 in its 2007 Need filing, FPL could have selected either a CPVRR approach or  
22 this same type of breakeven cost approach. My view of the assumptions  
23 regarding the EPU project was that, although there was less certainty

1 regarding various aspects of the EPU project than is typically the case with  
2 new CC capacity, the uncertainty level of the EPU project was significantly  
3 less than with the Turkey Point 6 & 7 project. For that reason, a decision was  
4 made to utilize the traditional CPVRR analytical approach for evaluating the  
5 EPU project instead of the type of breakeven cost analysis approach used for  
6 evaluating Turkey Point 6 & 7. As I mentioned earlier, this proposed  
7 approach was clearly delineated in the 2007 EPU project need determination  
8 docket that culminated in the FPSC's approval.

9 **Q. Does FPL's current CPVRR analysis provide breakeven information**  
10 **similar to that sought by Witness Jacobs?**

11 A. Yes. While Witness Jacobs asserts that a breakeven analysis should be done,  
12 he misses the point that the CPVRR analysis already provides breakeven cost  
13 information. The CPVRR-based approach that FPL has used in its feasibility  
14 analyses of the EPU project uses the currently projected going forward capital  
15 costs of completing the EPU project. The result of these analyses is a  
16 projection of net CPVRR benefits for the EPU project for each fuel cost and  
17 environmental compliance cost scenario. The result for each such scenario  
18 represents not only the projected net CPVRR benefits for the EPU project for  
19 that scenario, but also represents the CPVRR amount of additional money that  
20 could be spent on the EPU project so that the projected net CPVRR benefits  
21 become zero; i.e., to reach a breakeven point.

22 **Q. Do you believe the way in which the GDS testimony recommends to use**  
23 **breakeven cost information would provide the FPSC with a more**

1           **meaningful way to judge the going forward cost-effectiveness of the EPU**  
2           **project?**

3           A.    No. This is the real problem with the GDS testimony recommendation  
4           regarding breakeven costs. FPL's long standing approach examines the  
5           feasibility of the project in a wide range of fuel cost and environmental cost  
6           scenarios. The current results of FPL's analyses show that the EPU project  
7           will be cost-effective in each of these scenarios. The GDS recommendation  
8           would seem to require that a single breakeven cost value be used. If a single  
9           value is to be used, then a single fuel cost and environmental compliance cost  
10          scenario must be chosen to be the basis or standard by which the economics of  
11          the EPU project are judged.

12  
13          This forces the perspective by which the EPU project may be judged from the  
14          current perspective in which a wide range of future fuel and environmental  
15          compliance costs is used, into a much narrower perspective in which only one  
16          view of future fuel and environmental compliance costs will be used to judge  
17          the project (the GDS recommended single breakeven cost approach). In my  
18          opinion, seeking to restrict the breadth of the view by which the EPU project  
19          may be judged to a single scenario of fuel and environmental compliance  
20          costs is not a move in a positive direction.

21          **Q.    What is your opinion regarding Witness Jacobs' recommendation that**  
22          ***"The amount of the breakeven cost could be reviewed and trued up each***  
23          ***year."?***

1 A. My opinion is that Witness Jacobs recognizes that not only is his  
2 recommendation to select a single breakeven cost value by which to judge the  
3 EPU project a call to use an arbitrarily selected single value as a standard, but  
4 he recognizes that this projected value will change from one year to the next.

5  
6 He recognizes that, due to the annual updating of assumptions, the projected  
7 breakeven cost values will change each year. Therefore, he attempts to  
8 account for this in his above 'true up' statement. But his proposed 'remedy'  
9 to this inherent problem in his ill-advised recommendation makes his  
10 "standard" a moving target. This strikes me as a poor solution to a problem  
11 created by a poor recommendation.

12  
13 The result of his recommendation to select an arbitrarily chosen single value  
14 as the standard in one year, then to adjust to a different arbitrarily chosen  
15 single value in each subsequent year (i.e., his moving target remedy), can only  
16 be described as a recommendation to pile confusion on top of arbitrariness.

17  
18 In no way is the GDS testimony's recommendation, to impose an arbitrarily  
19 set standard that will change from year to year, an improvement to the current  
20 feasibility analysis approach which allows the FPSC to judge the feasibility of  
21 the EPU project using a wide range of future fuel and environmental  
22 compliance costs.

1       **Q.    The second aspect of the GDS testimony recommendation is to require a**  
2       **separate analysis of those portions of the EPU project that are being**  
3       **carried out at the St. Lucie site and at the Turkey Point site. Please**  
4       **discuss why FPL has chosen to consider the economics of the EPU project**  
5       **as a whole.**

6       A.    FPL's analyses of the EPU project have consistently evaluated the EPU work  
7       as a single project for several reasons. First, FPL has viewed the EPU project  
8       as a single comprehensive project since the Need filing in 2007 and continues  
9       with that view today. In the 2007 Need docket, FPL proposed the project to  
10      the FPSC as a comprehensive project, and was granted a determination of  
11      need on that basis.

12  
13      Second, although FPL has separate contracts with Bechtel for work at the St.  
14      Lucie and Turkey Point sites, and separate contracts with Siemens for work at  
15      the St. Lucie and Turkey Point sites, all of these contracts were negotiated on  
16      the basis that FPL would proceed with the EPU projects at all four units.  
17      Therefore, all of FPL's projected costs for the EPU project are based on the  
18      total EPU project and would not be appropriate for analyzing EPU work being  
19      conducted at only one site, but with no EPU work at the other site. Thus it  
20      would be meaningless to attempt an analysis of conducting EPU work at only  
21      one site using the current cost projections that are based upon the total EPU  
22      project proceeding at both sites.

23

1 Third, even if one were to try a different approach of first assuming that the  
2 total EPU project would continue (in an attempt to use the current cost  
3 projections), but then try to somehow dissect the current economic analyses of  
4 the total EPU project into two site-based results, one would run into trouble  
5 regarding the benefits. It would not be possible to accurately determine the  
6 site-specific benefits contributions from each site using such an approach.

7  
8 The in-service dates for EPU work at the four units are currently projected to  
9 be as follows: May 2012 (St. Lucie 1), July 2012 (Turkey Point 3), November  
10 2012 (St. Lucie 2), and March 2013 (Turkey Point 4). This means that almost  
11 as soon as the benefits begin to appear at one site, benefits from the other site  
12 also begin to appear. The “mixing” of benefits that occurs is due to the back-  
13 and-forth in-service dates for units between the two sites. This means that  
14 there is no clear chronological dividing line with which to attempt to dissect  
15 the contribution to benefits from the total EPU work from each site. Because  
16 of this, trying to accurately determine EPU benefits separately at each site  
17 from the current feasibility analysis results of the total EPU project is not  
18 workable.

19  
20 In summary, the EPU project has been conceived as a total project from its  
21 inception, all projected costs are based on performing the EPU work at all four  
22 units, and it is not possible to accurately dissect the benefits from the  
23 feasibility analysis results into site-specific components. Consequently, the

1 GDS testimony recommendation to require site-specific analyses is not  
2 practical and should not be given serious consideration.

3  
4 **III. Other Topics**

5  
6 **Q. What other topics from the GDS testimony regarding the EPU project  
7 and FPL's feasibility analyses will you discuss?**

8 A. There are three other such topics that I will discuss from a resource  
9 planning/economic analysis perspective. These topics are: (1) the GDS  
10 testimony implication that the "fast tracking" of the EPU project was  
11 inappropriate; (2) the GDS testimony implication that the July 2009 sensitivity  
12 analyses were something out of the ordinary, and the testimony contention  
13 that FPL should have informed the FPSC of the "...material changes  
14 in...feasibility..." (Witness Jacobs, page 39, lines 17 and 18); and (3) the GDS  
15 testimony's general characterization of FPL's feasibility analysis approach as  
16 inappropriate. In regard to the third topic, specific aspects of this issue have  
17 been discussed in sections I and II of my rebuttal testimony. There are other  
18 aspects related to this statement that I will also address.

19 **Q. Please discuss the first topic: the GDS testimony's contention that "fast  
20 tracking" of the EPU project was inappropriate.**

21 A. From the perspective of a resource planner who is evaluating the projected  
22 economics of two competing resource options, there were, and are, significant  
23 benefits to be gained for FPL's customers by expediting the EPU project.

1 To see this, let's recall what is being analyzed in the Resource Plan with EPU  
2 and the Resource Plan without EPU. In the Resource Plan with EPU, the  
3 resource option in question, the uprating of existing nuclear plants, is an  
4 option that currently has what I will call a "hard stop". Each of these existing  
5 nuclear units has a firm date at which their current operating license will end.  
6 At that time, the operation of the nuclear plant in question, and the benefits  
7 derived from the EPU project, will end.

8  
9 On the other hand, in the Resource Plan without EPU, the resource option in  
10 question is new combined cycle (CC) capacity. This resource option does not  
11 have a hard stop in the same sense. Instead, it has a projected 30-year life, the  
12 duration of which remains the same regardless of whether the resource option  
13 is placed in-service today or some time in the future.

14  
15 Assume for a moment that instead of proceeding with the EPU project in an  
16 expedited approach as the FPSC authorized, FPL had performed all of the  
17 work in a deliberate sequence. Such an approach would have delayed the  
18 completion of the EPU work by approximately 6 years. (This 6-year estimate  
19 of additional time was previously provided by FPL Witness Jones in response  
20 to OPC Interrogatory 47 and is discussed in FPL Witness Jones' rebuttal  
21 testimony.) Because of the hard stop characteristic of the EPU project, this 6-  
22 year project delay would have automatically resulted in a loss up front of 6  
23 years of fuel savings for FPL's customers.

1 **Q. Would these lost fuel savings for FPL's customers have been significant?**

2 A. Yes. The projected first full year nominal fuel savings for the EPU project  
3 (presented in Supplement to Exhibit SRS – 1 to my Supplemental Direct  
4 Testimony) is \$139 million. Even using an approximate annual fuel savings  
5 value of \$140 million, without accounting for expected annual fuel cost  
6 escalation, a 6-year delay in the project would have resulted in approximately  
7 \$840 million of higher fuel costs for FPL's customers over those 6 years.

8 **Q. What would have been the impact of these significant lost fuel savings on**  
9 **the projected cost-effectiveness of the EPU project?**

10 A. From the perspective of project feasibility, these lost fuel savings for FPL's  
11 customers also represent lowered net benefits for the project, thus lowering  
12 the projected cost-effectiveness of the project. Note also that there would  
13 have been no such negative impact for the competing CC capacity because,  
14 all else equal, its 30-year life duration could simply "slide" out in time and  
15 begin six years later.

16 **Q. What is your conclusion with respect to FPL's decision to expedite the**  
17 **EPU project.**

18 A. If FPL had not expedited the EPU project, the resulting delays would have  
19 guaranteed: (i) significant lost fuel savings for FPL's customers, and (ii)  
20 decreased cost-effectiveness of the project.

21 **Q. Please discuss the second topic: the GDS testimony implication that the**  
22 **July 2009 sensitivity analyses were something out of the ordinary, and the**  
23 **testimony contention that FPL should have informed the FPSC of the**

1                    ***“...material changes in...feasibility...”*** (Witness Jacobs, page 39, lines 17  
2                    **and 18).**

3                    A.    In regard to the inherent implication that such analyses are out of the ordinary,  
4                    quite the contrary is true. Sensitivity or scenario analyses are conducted all  
5                    the time by FPL for a wide variety of resource options, particularly when  
6                    preliminary information is first received regarding a resource option.

7                    **Q.    Is there another aspect of the GDS testimony regarding this sensitivity**  
8                    **analysis that you wish to comment on?**

9                    A.    Yes. In Witness Jacobs’ testimony, on page 39, lines 16 through 19, he states  
10                    that FPL has an obligation to inform the FPSC of information regarding the  
11                    EPU project including *“...material changes in...feasibility that occur*  
12                    *following the regular submission date.”* There are two aspects of that  
13                    statement that warrant a response.

14  
15                    First, the NCRC dockets are not “one look only” dockets. By that I mean that  
16                    the FPSC regularly sees updated feasibility analyses that use completely  
17                    updated assumptions on an established, set schedule. Therefore, if an  
18                    assumption used in a current NCRC filing has changed after the filing of the  
19                    feasibility analyses for that year is made, this changed assumption – once the  
20                    change in the assumption has been fully vetted and accepted – will be used in  
21                    the next round of feasibility analyses the following year. Those results will  
22                    then be presented to the FPSC. Witness Jacobs’ concern over changing  
23                    assumptions would seem to be more appropriate for a more regular “one look

1 only” type of docket than for an NCRC docket which is explicitly designed to  
2 update assumptions annually, and provide updated analysis results based on  
3 the updated assumptions, on an established, set schedule.

4  
5 Second, I do not agree that there were in 2009 “...*material changes in...*  
6 *feasibility*”. This is apparent when the results of the 2009 feasibility analyses  
7 filed with the FPSC are compared with the results of the July 2009 sensitivity  
8 analyses. This comparison is presented in Exhibit SRS – 14.

9 **Q. What does this comparison show?**

10 A. The results of the two sensitivity analyses that were performed in July 2009  
11 were either very similar to the results of feasibility analyses previously  
12 presented to the FPSC in the 2007 Need and 2008 NCRC dockets (in which  
13 the EPU project was projected to be cost-effective in all scenarios of fuel and  
14 environmental compliance costs except one), or were very similar to the  
15 results of feasibility analyses previously presented to the FPSC in the then-  
16 current 2009 NCRC docket (in which the EPU project was projected to be  
17 cost-effective in all fuel and environmental compliance cost scenarios). When  
18 viewed as part of a continuum of feasibility results for the EPU project that  
19 had been presented to the FPSC from the 2007 Need docket through the 2009  
20 NCRC filing, the results of the July 2009 sensitivity analyses are very similar.  
21 Consequently, I disagree with Witness Jacobs’ charge that the results of the  
22 July 2009 sensitivity analyses represent a “*material change*” in the projected

1 feasibility of the EPU project. That is simply not an accurate characterization  
2 of the results.

3 **Q. Please summarize your view of the significance of the July 2009**  
4 **sensitivity analyses and the results of those analyses.**

5 A. The fact that FPL conducted such an analysis has little/no significance in itself  
6 because sensitivity or scenario analyses are often conducted by FPL to test the  
7 effect of different assumptions regarding the economics of various resource  
8 options. If there is any significance related to the July 2009 sensitivity  
9 analyses, it is that the results of the sensitivity analyses reaffirmed, once  
10 again, that the EPU project is a cost-effective choice for FPL's customers.

11 **Q. In regard to the third topic regarding the GDS testimony, how would you**  
12 **characterize this analytical approach as applied to the EPU project?**

13 A. I would characterize FPL's analytical approach for evaluating the EPU project  
14 as appropriate, providing meaningful results, and as being conservative by  
15 design.

16 **Q. Would you please explain what you mean by "conservative by design"?**

17 A. Yes. As indicated earlier in my testimony, FPL's analytical approach, as  
18 applied to the EPU project, is conservative by design because it does not  
19 currently include in its calculation two types of benefits that will definitely  
20 result from the EPU project. In addition, there are other types of benefits that  
21 may result from the EPU project, but which are not currently included in  
22 FPL's evaluation because they are speculative in nature at this time.

23

1 Therefore, the projected net benefits for the EPU project that are provided by  
2 FPL's analytical approach are understated. Consequently, FPL's analytical  
3 approach can accurately be described as being conservative by design.

4 **Q. Please discuss the two types of benefits that will definitely occur from the**  
5 **EPU project, but which are not currently included in FPL's feasibility**  
6 **analyses of the project.**

7 A. The first type of benefit that will definitely result from the EPU project, but  
8 which has not been included to-date in FPL's feasibility analyses of the  
9 project, is reduced FPL system transmission losses. This outcome of reduced  
10 losses is due to the additional capacity derived from the EPU project being  
11 generated and delivered close to FPL's load center. This effect is primarily  
12 driven by the additional EPU capacity that will be gained at the Turkey Point  
13 site. This additional baseload capacity at the Turkey Point site will not only  
14 reduce system losses at peak hours, but will also reduce system losses  
15 throughout the year. The result is enhanced system efficiency which results in  
16 savings for FPL's customers. These customer savings also represent  
17 additional net benefits for the EPU project.

18  
19 The second type of benefit that will definitely result from the EPU project, but  
20 which has not been included to-date in FPL's feasibility analyses of the  
21 project, is the contribution that the EPU project will make to maintain a  
22 balance between load and generating capacity in Southeastern Florida (i.e., in  
23 Miami-Dade and Broward counties). As the load continues to grow in these

1 two counties, one of two things must happen. Either generating capacity in  
2 this area must also continue to grow to keep pace with the load, or additional  
3 transmission lines to transport energy into this area must be built.

4  
5 The addition of generating capacity in Southeastern Florida will avoid or defer  
6 the need to build expensive additional transmission lines to bring electricity  
7 into Miami-Dade and Broward counties from elsewhere. If new generating  
8 capacity can be added in this area, the avoided or deferred transmission  
9 expenditures represent savings for FPL's customers.

10  
11 In these two populous counties, it is very difficult to find greenfield sites on  
12 which to build new generating capacity. In regard to FPL's feasibility  
13 analyses and its Resource Plan without EPU, the greenfield CC capacity that  
14 would be added absent the EPU project would almost certainly not be added  
15 in either of these two counties. Thus this greenfield capacity would not help  
16 address the Southeastern Florida imbalance issue.

17  
18 However, the EPU project will add more than 200 MW of baseload capacity  
19 and energy at the Turkey Point site in Miami-Dade County. This capacity  
20 addition will definitely assist in avoiding or deferring transmission  
21 expenditures. This will result in savings for FPL's customers which also  
22 represents additional net benefits for the EPU project.

1       **Q.    Has FPL discussed these two types of additional benefits for the EPU**  
2       **project before and why has FPL not accounted for these additional**  
3       **benefits in its feasibility analyses of the project to-date?**

4       A.    Yes, both of these additional benefits that will definitely result from the EPU  
5       project were discussed at the beginning of FPL's presentation of the EPU  
6       project to the FPSC; i.e., in my direct testimony in the 2007 Need docket for  
7       the EPU project starting on page 47, line 20. However, FPL has not included  
8       these additional benefits from the EPU project in its feasibility analyses to-  
9       date for several practical reasons including, but not limited to, the  
10      combination of lack of specific locations for greenfield CC units and the  
11      different in-service dates of greenfield units between the Resource Plan with  
12      EPU and the Resource Plan without EPU.

13      **Q.    You also mentioned that there are other types of benefits that are not**  
14      **included in FPL's feasibility analyses of the EPU project because they are**  
15      **speculative at this time. Please provide an example of such a potential**  
16      **benefit.**

17      A.    One such example is that FPL has not included in its feasibility analyses of the  
18      EPU project the additional benefits that would be realized from the project if  
19      there were a further extension of the operating licenses for the four existing  
20      nuclear units. The first expiration date among those operating licenses is  
21      approximately 20 years in the future. Consequently, FPL has not had to make  
22      a decision yet regarding a possible license extension request.

23

1 Although the projected benefits for the EPU project that would result from  
2 license extensions are very large, these benefits are speculative at this time  
3 because FPL has not yet applied for, or received, a license extension.  
4 Consequently, FPL has not included the projected benefits from an extension  
5 in its feasibility analyses to-date. However, completing the project ensures  
6 the opportunity to realize these potential additional benefits.

7 **Q. Accepting the fact that a projection of additional benefits from the EPU**  
8 **project due to license extensions is speculative at this time, can you**  
9 **provide approximate values of the potential benefits and costs for the**  
10 **EPU project if license extensions became a reality?**

11 A. Yes. Assuming that the operating licenses for each of the four nuclear units  
12 were extended for 20 years beyond their current license expiration dates, the  
13 projected additional benefits for the EPU project using a Medium Fuel Cost,  
14 Environmental Compliance Cost Env II scenario are approximately \$1,300  
15 million CPVRR. In contrast, the total cost for previously obtaining the license  
16 extensions for all four nuclear units about a decade ago was approximately  
17 \$22 million (nominal \$). Consequently, if license extensions for FPL's four  
18 nuclear units were to occur, the additional benefits from the EPU project that  
19 would be realized by FPL's customers would be very large indeed.

20

1 **IV. Conclusions**

2

3 **Q. Please summarize the conclusions you have reached in your rebuttal**

4 **testimony.**

5 A. Based on my review of the GDS testimony, I have reached the following 4

6 conclusions:

7

8 1) The GDS testimony recommendation that Florida abandon the well

9 established and widely accepted economic principle of excluding sunk

10 costs from current analyses in the sole case of the EPU project has no

11 merit. This recommendation has the dubious distinction of

12 simultaneously: (i) ignoring the basic common sense foundation upon

13 which this well established economic principle was based, and (ii)

14 ignoring the plain language of the Nuclear Cost Recovery Rule, as

15 supported by the FPSC's order regarding how economic analyses of

16 new nuclear capacity are to be performed.

17 2) The GDS testimony recommendation that the FPSC abandon the

18 current economic analysis approach (a CPVRR comparison) it has

19 consistently used to evaluate the EPU project since the 2007 Need

20 docket is also without merit and should be rejected. The CPVRR

21 method provides the Commission with a wide range of fuel and

22 environmental compliance costs from which to judge the EPU project

23 and its economic feasibility. In contrast, the GDS testimony's

1 recommended approach would sacrifice this robust assessment in  
2 exchange for a single, arbitrary snapshot obtained from a breakeven  
3 analysis that would change the following year.

4 3) The GDS testimony recommendation to require that the analysis of the  
5 EPU project be broken out into two separate, site-specific parts should  
6 be rejected for several reasons. Most importantly, FPL proposed and  
7 has managed the EPU project as a comprehensive project  
8 encompassing both sites since its inception, and the FPSC approved  
9 the project in its entirety for the overall system and customer benefits  
10 that would be realized from the project.

11 4) GDS testimony's criticism of the expedited nature of the EPU project  
12 should be rejected. The GDS testimony's claims fail to acknowledge  
13 that proceeding with the EPU project on a slower, sequential schedule  
14 would deprive FPL's customers of more than \$800 million in fuel cost  
15 savings compared with the expedited approach proposed by FPL and  
16 approved by the Commission. FPL's approach maximizes the number  
17 of years that fuel savings, and other benefits, will be realized by FPL's  
18 customers, thus maximizing the cost-effectiveness of the EPU project.

19 **Q. Does this conclude your rebuttal testimony?**

20 **A. Yes.**

BEFORE THE GEORGIA PUBLIC SERVICE COMMISSION

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In the Matter of: :

Review of Proposed Revisions and :  
Verification of Expenditures Pursuant : Docket No. 29849  
to GEORGIA POWER COMPANY's Certificate :  
of Public Convenience and Necessity :  
for Plant Vogtle Units 3 and 4 :  
----- :

Hearing Room  
Georgia Public Service Commission  
244 Washington Street  
Atlanta, Georgia

Wednesday, December 16, 2009

The above-entitled matter came on for hearing  
pursuant to Notice at 10:10 a.m.

BEFORE:

DOUG EVERETT, Chairman  
LAUREN McDONALD, Vice Chairman  
CHUCK EATON, Commissioner  
STAN WISE, Commissioner  
ROBERT B. BAKER, JR., Commissioner

Brandenburg & Hasty  
435 Cheek Road  
Norcross, Georgia 30655

1 not correct?

2 WITNESS JACOBS: That's correct. And many of them  
3 will be neutral, it will be a change in scope trade off with  
4 no cost impact.

5 BY MR. PRENOVITZ:

6 Q You said the consortium does that, the consortium  
7 is Stone and Webster and Westinghouse?

8 A (Witness Jacobs) Yes.

9 Q Basically? And they are -- just so I understand  
10 the process, while they're evolving in the process and so  
11 on, they identify potential problems and so on hence that  
12 causes a change order, is that right or -- what drives a  
13 change order? I mean, why do they do it? Why do they  
14 recommend it?

15 A (Witness Jacobs) It -- as situations come up that  
16 was not anticipated in the EPC contract or is not as the  
17 project was planned in the EPC contract.

18 Q In Georgia Power's economic analysis, you make  
19 reference to the fact that they ignore sunk costs and also  
20 they said they ignore the weighting of various factors. I  
21 think that's page 25. Could you kind of elaborate on that,  
22 please? And why that matters or doesn't matter?

23 A (Witness Hayet) The point there is just to point  
24 out that the economic analysis as you go forward with the  
25 project, the question that you have to answer is what are

1 the future costs that will be incurred and what do those  
2 costs -- how do those costs compare to your next best  
3 alternative. So, the notion of the costs that have already  
4 been spent as being sunk is something that you do ignore and  
5 we're just simply pointing that out, that's the company's  
6 practice, we agree with it and that's fairly industry  
7 standard.

8 Q Wasn't that what led to the massive cost overruns  
9 in the projects, you know, 20 years ago, where basically,  
10 you know, they'd make a budget, say 3 billion, they'd spend  
11 2 billion and then they'd say hey, it's another billion more  
12 and say, well, if it costs 4 billion --

13 VICE CHAIRMAN McDONALD: Mr. Chairman, we're  
14 reflecting again.

15 MR. PRENOVITZ: No, I -- this is very important  
16 because what they're -- they're getting in the same problem  
17 that they had 20 years ago.

18 CHAIRMAN EVERETT: That was a perception, sir, not  
19 a --

20 MR. PRENOVITZ: Okay. Well, my perception.

21 CHAIRMAN EVERETT: Yeah, but we don't allow your  
22 perception here --

23 MR. PRENOVITZ: But it's an accurate one, sir.

24 CHAIRMAN EVERETT: But it's not --

25 MR. PRENOVITZ: I can prove it.

1 CHAIRMAN EVERETT: Well, it's not --

2 MR. PRENOVITZ: But not today.

3 MR. GREENE: Mr. Chairman, I assure you he cannot  
4 show us cost overruns identified in the budget process.  
5 That would be my objection.

6 CHAIRMAN EVERETT: Right.

7 BY MR. PRENOVITZ:

8 Q On page 26 of your testimony, you make reference  
9 to the fact that in 25 -- you're talking about the different  
10 projections or what might likely happen, so 25 percent cost  
11 overrun makes the project unfeasible, is that correct?

12 A (Witness Newsome) Under certain gas assumptions.

13 COMMISSIONER EATON: For clarification, any  
14 project has potential cost overruns, right? I mean, if we'd  
15 gone down the road of natural gas on the same scale as  
16 nuclear, I mean, they could potentially have cost overruns  
17 on that project as well, right?

18 CHAIRMAN EVERETT: And also what you stated was  
19 not exactly correct. It's a 25 percent cost overrun results  
20 in the project being uneconomical 8 of 11 cases so it  
21 doesn't -- you made a flat statement --

22 MR. PRENOVITZ: Okay.

23 CHAIRMAN EVERETT: -- that it's always --

24 MR. PRENOVITZ: 8 out of 11 is about, what, 75  
25 percent of the time?

**Docket No. 110009-EI**  
**Comparison of 2009 Feasibility Analysis Results**  
**and Sensitivity Analysis Results**  
**Exhibit SRS - 14, Page 1 of 1**

**Comparison of 2009 Feasibility Analysis Results and Sensitivity Analysis Results**

(1)	(2)	(3)
2009 Feasibility Analyses	July 2009 Sensitivity Analysis 1 (assumes higher costs)	July 2009 Sensitivity Analysis 2 (assumes higher costs & MW)

Fuel Cost Forecast	Environmental Compliance Cost Forecast	Total Cost Difference Plan with Nuclear Uprates minus Plan without Nuclear Uprates (2009\$)	Total Cost Difference Plan with Nuclear Uprates minus Plan without Nuclear Uprates (2009\$)	Total Cost Difference Plan with Nuclear Uprates minus Plan without Nuclear Uprates (2009\$)
High Gas Cost	Env I	(1,080)	(668)	(1,348)
High Gas Cost	Env II	(1,207)	(796)	(1,503)
High Gas Cost	Env III	(1,401)	(990)	(1,749)
High Gas Cost	Env IV	(1,574)	(1,162)	(1,954)
Medium Gas Cost	Env I	(683)	(271)	(833)
Medium Gas Cost	Env II	(783)	(372)	(967)
Medium Gas Cost	Env III	(1,006)	(594)	(1,239)
Medium Gas Cost	Env IV	(1,181)	(769)	(1,470)
Low Gas Cost	Env I	(256)	155	(311)

Note: A negative value in Columns (1), (2), or (3) indicates that the Plan with Nuclear Uprates is less expensive than the Plan without Nuclear Uprates. Conversely, a positive value in these columns indicates that the Plan with Nuclear Uprates is more expensive than the Plan without Nuclear Uprates.