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March 30, 2007

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VIA HAND DELIVERY

Ms. Ann Cole
Division of the Commission Clerk and
Administrative Services
Florida Public Service Commission
Betty Easley Conference Center
2540 Shumard Oak Boulevard, Room 110
Tallahassee, FL 32399-0850

Re: Docket No. 070098-EI
Florida Power & Light Company's Petition to Determine Need for FPL Glades Power Park Units 1 and 2 Electrical Power Plant

Dear Ms. Cole:

Enclosed for filing on behalf of Florida Power & Light Company ("FPL") are an original and fifteen (15) copies of FPL's Rebuttal Testimony including Rene Silva, Kennard F. Kosky, William L. Yeager, Seth Schwartz, Steven R. Sim, Stephen D. Jenkins, David N. Hicks, Judah L. Rose and C. Dennis Brandt in connection with FPL's Petition to Determine Need for FPL Glades Power Park Units 1 and 2 Electrical Power Plant.

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Please note that FPL views certain elements of the testimony filed on behalf of the intervenors represented by Earthjustice as non-jurisdictional and/or irrelevant to any issue in this proceeding. In lieu of a motion to strike, FPL has elected in some instances to provide brief responsive testimony rather than permit the record to be unfairly colored by unanswered allegations. FPL's testimony in this regard should not be construed as an agreement that such issues are jurisdictional or relevant to the issues before the Commission.

Please contact me if you or your Staff have any questions regarding this filing.

Sincerely,

R. Wade Litchfield

RWL: jp
Enclosures

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BEFORE THE

FLORIDA PUBLIC SERVICE COMMISSION

In re: Florida Power & Light Company's Petition to Determine Need for FPL Glades Power Park Units 1 and 2 Electrical Power Plant	)))	Docket No: 070098-EI Filed: March 30, 2007

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing has been furnished by United States Mail this 30th day of March, 2007, to the following:

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ORIGINAL

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 070098-EI
FLORIDA POWER & LIGHT COMPANY

IN RE: FLORIDA POWER & LIGHT COMPANY'S PETITION TO DETERMINE NEED FOR FPL GLADES POWER PARK UNITS 1 AND 2 ELECTRICAL POWER PLANT

REBUTTAL TESTIMONY & EXHIBIT OF:

RENE SILVA

ORIGINAL

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

FLORIDA POWER & LIGHT COMPANY

REBUTTAL TESTIMONY OF RENE SILVA

DOCKET NO. 070098-EI

MARCH 30, 2007

Q. Please state your name and business address.

A. My name is Rene Silva, and my business address is 9250 West Flagler Street, Miami, Florida 33174.

Q. Have you previously testified in this docket?

A. Yes.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to respond to various comments related to FPL's petition for determination of need for the addition of FGPP made by witnesses who have filed testimony in this docket on behalf of several environmental organizations and Ellen Peterson.

Specifically, my rebuttal testimony asserts that: (1) FPL has appropriately considered all available alternatives to meet the resource needs of FPL's customers and maintain fuel diversity in the future; (2) FPL has performed an effective, complete evaluation that addressed all issues relevant in the determination of the best resources to add to FPL's portfolio in 2013 and 2014; (3) The results of FPL's evaluation presented to the Commission as part of its petition for a determination of need demonstrate that the addition of

FGPP in 2013 and 2014 is the best, most cost-effective alternative to maintain system reliability by maintaining adequate resource reserves and maintaining fuel diversity in FPL's system; (4) The 20% reserve margin reliability criterion utilized by FPL in its integrated resource planning process has been reviewed and approved by the Commission and it is appropriate and necessary to ensure reliable service for FPL's customers; and (5) Delaying the decision to add FGPP would not be in the best interests of FPL's customers because such a delay would likely be, in effect, a decision to reject FGPP and consequently not maintain fuel diversity, making FPL's customers even more vulnerable to the very uncertainties that a delay would purport to mitigate.

Q. On page 1, lines 20 and 21 of Mr. Schlissel's supplemental direct testimony he states: "FPL recognizes that the resource planning scenarios presented in its Need Study do not support the choice of FGPP." Is his statement correct?

A. No. FPL's testimony is clear on this point. It is precisely because of the uncertainties demonstrated in part through FPL's resource planning scenarios that the addition of FGPP is necessary. The FPL scenario analysis recognizes that no one, including Mr. Schlissel, knows what actual future fuel prices will be, nor what future environmental compliance costs will be for any generating unit on FPL's system, whether existing today, currently proposed in this proceeding, or yet to be proposed at some time in the future. FGPP is beneficial for customers, not because there exists a single set of assumptions that can be relied upon to demonstrate a particular cost-effective outcome, but

because there is a range of outcomes that depend on too many variables. The only way to effectively address such uncertainty is to maintain fuel diversity in FPL's resource portfolio. Failure to decide to add FGPP to maintain fuel diversity in this instance is a decision to not have fuel diversity, and to rely more and more heavily on natural gas to generate a large portion of the electric power in the state of Florida, certainly not what we are recommending to the Commission in this proceeding.

Q. On page 1, lines 22 and 23 of his supplemental testimony Mr. Schlissel states: "FPL's major justification for FGPP can be summed up in four words "no new natural gas." Is this interpretation correct?

A. No. In making this statement Mr. Schlissel ignores the fact that FPL is already in the process of constructing almost 3,600 MW of new gas fueled generation to a system that in 2006 already produced half of all the electricity delivered to its customers using natural gas. In addition, as shown in Dr. Sim's Document SRS-5, aside from the addition of FGPP, FPL's Plan with Coal reflects FPL's projection that it will add another 2,300 MW of new gas-fueled generation between 2015 and 2017. In other words, between 2007 and 2017 FPL projects that it will add about 5,900 MW of new gas-fueled generation. This will result in a net increase in gas generation of almost 4,500 MW between 2007 and 2016. In addition, between 2006 and 2015, increases in DSM will enable FPL to avoid 1,639 MW of new generation. During the same period, because about 1,300 MW of contracts for purchased power produced with coal will have expired, the net effect of adding FGPP is the

addition of only 648 MW of coal generation. In summary, of the net planned resource additions of 6,769 MW between 2007 and 2016, almost 4,500, or 66% will be provided by natural gas, 1,639 MW of generation equivalent, or 24% will be provided by DSM, and only 648 MW, or 10% will be provided by coal – if FGPP is placed in service. In light of these facts it is impossible to conclude that FPL's objective is to add "no new natural gas." Rather, our decision to recommend adding advanced technology coal at this time is to mitigate the very significant additions of new natural gas generation to FPL's system..

Q. Mr. Schlissel suggests that FPL did not give adequate consideration to renewable energy alternatives to FGPP. Do you agree?

A. No. As addressed in my direct testimony, FPL continues to work to encourage the development of renewable projects. However, there are not sufficient renewable resources to avoid or defer the need for the baseload capacity and energy that the FGPP units will provide.

As an example, FPL's studies indicate the best technical potential for wind generation in Florida is on the coast, with a clear site line to the ocean. Even so, the winds are light, with most sites resulting in a capacity factor for the turbines of only 8 to 12 percent. Generously assuming a 15 percent capacity factor and assuming GE 1.5 MW wind turbines are used, FPL would need more than 8,000 wind turbines to equal the energy output of FGPP, or about 69 percent of the total installed wind generation capacity in the U.S. as of the

end of 2006. Even if these turbines were spaced along the entire Florida coast -- from Alabama in the West, across the Gulf Coast, down the West coast, around the keys, up past Miami, Canaveral, and Jacksonville, all the way to Georgia in the East – there still would not be adequate space to site the needed capacity.

Using solar energy as another example of renewable potential, based on insolation (sunshine) data from the Florida Solar Energy Center (FSEC) and National Renewable Energy Laboratory (NREL), approximately 5.5 watt-hours per day of energy will be produced for each watt of photovoltaic (PV) cells installed. Therefore, to replace the energy output of FGPP would require 7,868 MW of photovoltaics, almost 100 times more than the total installations of PV cells throughout the U.S. in 2005. Using typical commercial solar cells, these panels would cover over 20 square miles.

Of course, both wind and solar energy systems are intermittent in nature and can be used to provide energy, but not needed capacity. Renewable sources that, unlike wind and solar, can provide both energy and capacity include biomass, waste-to-energy and landfill gas facilities. However, there is limited achievable potential for incremental capacity from these sources in Florida, and certainly not enough to avoid or defer the need for FGPP.

Q. On page 1, lines 24 and 25 of his supplemental testimony Mr. Schlissel states that principles of least cost, least risk resource planning should be applied to the FGPP decision. What is your reaction?

A. The principles of lowest cost per kwh and least risk are precisely what FPL has applied in reaching the conclusion that the addition of FGPP to FPL's portfolio is the best alternative to maintain system reliability and the most cost-effective alternative to maintain fuel diversity in FPL's system, and in petitioning the Commission for a determination of need. Maintaining fuel diversity on FPL's system is a least risk approach to resource planning, at a reasonable cost. To do otherwise, simply puts too much weight and risk on a single set of factors related to natural gas pricing, availability, and deliverability.

Q. Has FPL applied these principles of lowest cost per kwh and least risk resource planning in FPL's decision to add FGPP?

A. Yes. Had Mr. Schlissel given FPL's filing anything more than a cursory review, and sought to understand how FPL arrived at its decision he would have realized that FPL did indeed apply these principles. For example, on page 18, lines 11 through 20 and continuing on page 19, lines 1 through 3 of Mr. Schlissel's corrected direct testimony he explains how utilities should plan for and mitigate the risk of CO2 regulation. He states that a utility that is considering a new carbon-intensive energy source should, as a minimum, develop an expected carbon price forecast as well as reasonable sensitivities. Putting aside whether one can use the word "expected" to describe any carbon

price forecast, for the purpose of assessing FGPP over a reasonable range of possible outcomes, FPL developed four environmental compliance cost forecasts and utilized these forecasts in its analysis. Even if Mr. Schlissel has a different opinion regarding what might happen in actual practice, several facts remain. First, FPL has not ignored the prospect of CO2 regulation. Second, FPL has modeled a reasonable range of scenarios to develop some sense for how the costs of FGPP could be affected by CO2 regulation. Third, although impossible at this time to quantify, but a significant factor nevertheless, CO2 regulation of any kind will most certainly further increase the demand for and price of natural gas. Similar reasons could drive down the price of coal. By how much these fuel prices would change due to CO2 regulation, no one can precisely project at this time, but it is certain that any resulting increase in the price of natural gas will further improve the relative economics of FGPP – an outcome that should shift the results reflected on RS-3 and RS-4 in favor of adding coal. So, while it is significant that the results of FPL's analysis reflect scenarios that show FGPP is a cost effective resource addition under certain fuel and CO2 outcomes, it is precisely because of the range of potential outcomes under these and other scenarios not modeled (e.g., increased gas prices due to CO2 regulation), that it is imperative to undertake at this time the addition of a highly efficient, fuel diverse resource option to FPL's system.

Q. Do you find any other noteworthy comments in this section of Mr. Schlissel's testimony?

A. Yes. In the same section of page 18 Mr. Schlissel explains that to not give consideration to CO2 regulation as part of the decision to add coal generation is "like choosing to build a gas-fired power plant without consideration of the cost of gas."

Q. Why do you consider this comment noteworthy?

A. Because it clearly illustrates Mr. Schlissel's lack of understanding not only of FPL's decision process, but also of the true complexity of the integrated resource planning process. The fact is that one cannot consider one set of issues for one type of generation and a different limited set of issues for another type of generation. Both CO2 regulation and the cost of natural gas must be considered as part of the decision process for any type of new generation, whether gas-fueled generation, or renewable generation, or coal generation or nuclear generation. Other factors, including but not limited to, the cost of coal, the existing and projected system fuel mix and the risk that an unbalanced fuel mix creates, the availability of additional cost-effective DSM, the cost and operating characteristics of various generation technologies, and the cost of compliance with other environmental requirements must also be considered, and these factors must be considered as they pertain to the utility's entire portfolio. As I indicated, FPL modeled a set of reasonable assumptions as to the direct cost of CO2 regulation, demonstrating some of the scenarios under which a coal option would prove more cost effective than a natural gas

option. What we have not reflected in the analysis is the offsetting effect that will be caused by CO2 regulation by raising the price of natural gas and lowering the price of coal. In this regard we have overstated the net cost of FGPP. Again, the rationale for adding coal-fired generation to FPL's preponderantly gas-based resource portfolio is not based on any particular set of assumptions, fuel or CO2 scenarios, but rather on the need to best position FPL and its customers to mitigate the associated uncertainties through diversification of fuel sources.

Q. In your description of the factors that must be considered you mentioned the risk associated with an unbalanced fuel mix. Does Mr. Schlissel's testimony address that risk?

A. No, not at all. It is not clear from his testimony that he is even aware of FPL's fuel mix or of the fact that without FGPP FPL would rely on natural gas for 71% of its customers' electricity by 2016. Nor would it serve his purpose to acknowledge that if FPL is not allowed to maintain fuel diversity in its system, it may not be able to mitigate the effect of an interruption in the supply of natural gas to Florida. This risk is not one Mr. Schlissel attempts to address. But it must be considered if FPL's customers are to be reliably served.

Q. Does Mr. Schlissel correctly present the results of FPL's analysis as they are shown in Document No. RS-3?

A. No. Mr. Schlissel's testimony presents the wrong results for two of the sixteen scenarios, including one of the scenarios he selects to reach his erroneous

conclusions. The correct result presented in Document No. RS-3 corresponding to scenario 1D reflects that the Plan with Coal would have a **lower** cost by $666 million (CPVRR) than the Plan without Coal, not a higher cost as he incorrectly presents. Thus, his conclusion that in his preferentially selected subset of scenarios only one outcome favors the addition of FGPP is incorrect.

Q. Does Mr. Schlissel acknowledge the fuel reliability benefit of having the capability to store up to 60 days of coal inventory for FGPP on site?

A. No. His discussion on FPL's scenario analysis was limited to the results presented on my Document RS-3, which do not reflect FPL's quantification of the cost that would be incurred if FPL were to add gas-fueled generation instead of FGPP but sought to maintain an inventory of natural gas or fuel oil equivalent to that provided by FGPP in order to mitigate the risk of an interruption in the supply of natural gas. Had he correctly adhered to the resource planning principles he touts on page 1, lines 24 and 25 of his supplemental testimony he would have used the results of FPL's economic analysis presented in Document RS-4, which properly reflects all the cost components on a comparable basis, instead of selectively utilizing the partial results presented on Documents RS-3 that suit his purpose because they don't reflect the total comparable cost of adding gas-fueled generation.

Had he used the correct results presented in Document RS-4, even after his arbitrary and improper dismissal of two of the environmental compliance cost

forecasts, he would have recognized that four of the eight scenarios he arbitrarily selected show that the addition of FGPP in the Plan with Coal has lower costs than the Plan without Coal. While he chooses to ignore it for his purposes, FPL included it in its analysis because it affects the reliability and cost of electric service.

Q. As you indicate above, in pages 2 and 3 of Mr. Schlissel's supplemental testimony he argues that two of the environmental compliance cost forecast used by FPL should not be used. Do you agree?

A. No. Contrary to his statement on page 19, lines 2 and 3 that a prudent utility should develop reasonable sensitivities, here he arbitrarily concludes which sensitivities are appropriate for consideration. It is interesting that he rejects the use of current environmental requirements as being an invalid case to be used in the analysis. Despite the fact that FPL believes that it is likely that some CO2 regulation will be implemented in the future, we should not lose sight of the fact that there remain many controversial hurdles to clear before any such legislation might pass. Because currently no such regulation exists, because the political debate regarding what legislation will be enacted may continue for some time, and because no one knows what form such legislation will take, and more important, how it will affect FPL's entire portfolio differently were FPL to add FGPP or some other generation, it is appropriate to include the current situation as one of the scenarios in the analysis in order to effectively reflect the range of uncertainty that exists. It is absolutely possible that the effect of CO2 regulation will have a very small differential

effect on FPL's portfolio related to the type of generation technology that will be added.

Q. Please explain why it is possible that the effect of CO2 regulation will have a very small differential effect on FPL's portfolio related to the type of generation technology that will be added.

A. As explained earlier in my rebuttal testimony, adding FGPP to FPL's portfolio will result in a net addition of only 648 MW of coal generation, equivalent to 10% of net planned resource additions, while the net increase in natural gas generation will be almost 4,500 MW. In addition, all of the new generation will be more efficient than the existing generation, owned and purchased, some of which will be replaced. As a result, the rate of CO2 emissions in tons per kwh for FPL's system will decrease from 976 pounds per MWh in 2005 to 853 pounds per MWh in 2016, a reduction of 11.5%. FPL's rate of CO2 emissions was already among the lowest of any utility in the United States in 2005. It is entirely possible that at the further reduced rate of CO2 emissions, FPL could receive sufficient CO2 allowances that the differential cost of CO2 regulation on FPL's portfolio related to the type of generation technology that will be added would be very small.

Q. What other environmental forecast used by FPL was rejected by Mr. Schlissel?

A. Mr. Schlissel also improperly dismisses FPL's low CO2 cost forecast, not because he has knowledge of what will actually happen, but only because in his opinion such a cost would not be sufficient to effect what he calls

"significant reductions" in greenhouse gas emissions. His comments are in direct conflict with the basis of scenario analysis. The concept of scenario analysis is not to select only those future conditions one thinks will occur or those that will support one's preferred or assumed outcome as Mr. Schlissel suggests, but rather to explore the range of possibilities, both favorable and unfavorable, to develop insight that is useful in reaching a sound decision. For all his rhetoric about the principles of resource planning, Mr. Schlissel's testimony exhibits an extremely narrow approach to decision-making.

Q. Do you have any comments related to Mr. Schlissel's testimony regarding the Synapse forecast of CO2 costs?

A. Yes. The rebuttal testimonies of Messrs. Rose and Kosky address Mr. Schlissel's testimony regarding the Synapse CO2 cost projections themselves. However, it is important to understand that if one were to consider the higher CO2 costs Mr. Schlissel presents, one would also have to recognize that the imposition of such higher CO2 costs would result in much higher natural gas prices than FPL has utilized in its scenario analysis and, conversely, lower coal prices, thus shifting all of the scenarios in the direction of favoring FGPP. Mr. Schlissel's testimony conveniently fails to address this fact.

Q. Please explain why the imposition of CO2 costs would contribute to higher gas prices and lower coal prices?

A. Mr. Schlissel states that the CO2 price must be higher than FPL's forecasts because it must be sufficiently high that operators of pulverized coal plants

would rather pay what he admits would be a high cost of capture, plus the unknown cost of sequestration than pay the CO2 price.

But the market provides another alternative for electricity generators, that is to operate existing and projected gas-fueled generation at the maximum level of their availability to reduce the use of existing coal generation, build new gas generation to meet all load growth, and perhaps even build additional gas-fueled generation to replace existing coal generation, at least until the total cost of gas generation becomes as high as the cost of continuing to operate coal plants, after reflecting the high cost of capture and sequestration, or the presumably even higher cost of paying the high CO2 price.

Therefore, the demand for natural gas would increase significantly, with an accompanying increase in price and the demand for coal would decrease. This process would continue until the price differential between gas and coal becomes sufficiently large that the cost of gas generation is comparable the total cost of coal generation, including the cost of CCS, or the CO2 price. The resulting price difference between natural gas and coal would then be much greater than projected by FPL in any of the forecasts used in its scenario analysis.

In summary, the implementation of a higher CO2 price would cause a higher fuel price differential between natural gas and coal that would offset the effect

of the higher CO2 price on the comparative cost between the Plan with Coal and the Price without Coal. Therefore, this result is already captured in the scenarios presented by FPL.

Q. On page 10, lines 18 and 19, and continuing on page 11, lines 1 through 4 of his supplemental testimony Mr. Schlissel states that the 20% reserve margin that is one of two established reliability criteria approved by the Commission as the basis for resource planning for FPL's system is not needed because one could lower the reserve margin to 15% and still meet the second reliability criterion, that of not exceeding a Loss of Load Probability (LOLP) of 0.1 days per year. Do you agree?

A. No. First, as explained in Dr. Sim's rebuttal testimony, if the reserve margin criterion were to be set at whatever level is necessary in each year in the plan to meet the LOLP criterion, then this would mean that the reserve margin criterion would be eliminated and only the LOLP criterion would be used. As Dr. Sim explains, using LOLP as the single reliability criterion would not be sufficient to ensure continuing reliable electric service to FPL's customers. I will explain why a 15% reserve margin is not adequate to ensure reliable service in FPL's system.

Q. How was FPL's current reserve margin criterion of 20% established?

A. Prior to 1999 FPL used a reserve margin criterion of 15%. It should be noted that FPL's reserves at that time consisted more heavily of generation reserves, with load management contributing less than half of what it will provide in 2013. However, the Commission initiated in the late 1990s a proceeding to

determine what the appropriate reserve margin criterion should be to ensure reliability of electric service in the future, recognizing rapid increases in electric loads, the introduction and expansion of new technologies, and recognition that fuel supply interruptions could occur. After audits were performed by the Commission Staff, and after several stakeholders, including Florida's investor-owned utilities, presented their analyses and conclusions, all parties agreed that a 20% reserve margin for the investor-owned utilities was the appropriate level that would ensure reliability of service in the utilities' systems, as well as in peninsular Florida. These investor-owned utilities stipulated that they would agree to use a 20% reserve margin as one of the reliability criteria for resource planning, in addition to a probabilistic criterion such as LOLP, beginning in the summer of 2004. This stipulation was approved by the Commission. It should be noted that using only the LOLP criterion, as implied by Mr. Schlissel, was never advocated by any of the stakeholders in that proceeding. Neither should it be today.

Q. Why is a 15% reserve margin not adequate to ensure reliability in FPL's system?

A. Because a 15% reserve margin, as used in the resource planning process, would provide a level of generation reserves that would be too low to offset the consequences of commonly occurring differences between the assumptions used in FPL's long term plan and actual operating conditions, especially if those differences occur at times when FPL has scheduled planned maintenance outages for one or more generating units.

Q. What differences are you referring to?

A. There are a number of such differences, as one would expect when recognizing that seven or eight years can separate forecasts that are used to make resource decisions from actual conditions at the time the resource plan is implemented. To illustrate my point I will provide a numerical example that addresses two differences: one is the point in time during the year in which the peak load actually occurs, and the other is the difference between the actual magnitude of the peak load in any year and the projected magnitude of the peak for that year that would have been forecasted seven or eight years earlier, when the necessary resource decisions must be made.

Q. How will you present this illustration?

A. I will first use the calculation presented by Dr. Sim in Document No. SRS-1 to show, pursuant to the resource planning process FPL follows to determine future needs, how FPL's projected reserve margin was calculated for the summer of 2013, without the addition of FGPP. The forecasted values for 2013 were developed in 2006 as part of FPL's IRP process. Column 3 shows the total projected capacity available in FPL's system in the summer of 2013 without the addition of FGPP (26,495 MW). Column 4 shows the projected peak load in the summer of 2013 (25,590 MW). Column 5 shows the quantity of projected DSM available in the summer of 2013 (2,516 MW). Column 6 shows the projected "firm" peak load; that is, that portion of the projected peak load that cannot be mitigated through the exercise of DSM. This projected "firm" peak load is equal to the projected peak load less the

projected DSM, or 23,074 MW. It should be noted that this demonstrates that in its resource planning process FPL first considers all the cost-effective DSM as a resource before determining what additional supply-side resources are required.

Column 7 shows the projected generation reserves compared to the projected "firm" load. This projected generation reserve compared to projected "firm" peak load is equal to projected capacity available less projected "firm" peak load, or 3,421 MW. Column 8 shows the projected reserve margin that this projected generation reserve provides compared to the "firm" peak load; it is equal to the projected generation reserve against "firm" peak load divided by "firm" peak load, expressed as a percent. This is the reserve margin that is used in resource planning by developing plans that will provide a 20% reserve margin relative to "firm" peak load. In this case, without the addition of FGPP, this projected reserve margin against the projected "firm" peak load, after all the DSM is utilized is only 14.8% in the summer of 2013. As column 9 shows, FPL needs to add 1,194 MW of additional firm capacity in order to meet the 20% reserve margin criterion. But if it is assumed that FGPP is not added, as Mr. Schlissel suggests, the projected reserve margin compared to "firm" peak load would be only 14.8%.

Q. You indicated that the calculation above is consistent with FPL's resource planning process. How does FPL allocate resources to meet actual electric load?

A. In actual daily operations FPL dispatches its generation resources in economic order, with lowest cost generation first, to produce all the electricity its customers need. It is only if generation resources are insufficient to meet actual load that the load management portion of DSM is utilized. For simplicity, my example assumes that all the DSM consists of load management. Using the same situation above as if it were the actual situation, because the peak load is 25,590 MW and total capacity available is 26,495 MW, FPL would be able to meet the load and have 905 MW of unused generation. It would also have 2,516 MW of unused DSM for total reserves of 3,421 MW. This is the same total of reserves as above; but note that only 905 MW are generation reserves. In other words, in actual operations, generation reserves are only 26.5% of total reserves, with DSM providing 73.5%. Another way to look at these results is that, in effect, accepting the 14.8% reserve margin criterion as advocated by Mr. Schlissel would result in generation reserves that actually provide only a 3.5% operational reserve margin. Applying the rest of the reserve margin, which is provided by DSM, requires partial curtailment of service to customers who subscribe to load control. This is the situation that would exist if all happens as was forecasted seven years earlier, in 2006.

Q. How would a difference between the projected and actual date of a year's peak load affect FPL's ability to meet its customer's needs?

A. FPL's forecast typically projects that the summer peak load will occur in August and, at present, no plant outages for inspection and maintenance are planned during that month. However, the peak load can occur in June and July when such plant outages are planned. In fact, in the last 15 years the actual peak load day has occurred in August only 8 times. Therefore, it has been a fairly common occurrence that the peak day has occurred in June or July, instead of August.

Q. How would the actual peak day occurring in June of 2013 instead of August affect the results presented above, assuming FGPP is not added in 2013?

A. FPL's long-term plant maintenance schedule indicates that 799 MW of generation capacity will be out of service for planned maintenance in June of 2013. If the projected peak for 2013 were to occur in June during the term of this planned outage, instead of having 905 MW of generation reserves on the peak load day FPL would have only 106 MW of generation reserves. In other words, the operational reserve margin provided by generation resources in this situation would be only 0.4%.

Q. How would a difference between the actual and projected magnitude in the peak load affect FPL's ability to meet its customer's needs?

A. If the actual peak load in a particular year is significantly greater than had been projected at the time the resource plan was developed for that year as

much as seven or eight years earlier, unless the reserves are adequate FPL would not be able to meet its customers' needs.

Q. What has been the average percent difference between the actual peak load in the last three years and the peak load forecast developed seven years earlier?

A. On average in the last three years the actual peak load has been 10.87% higher than had been projected 7 years before. As stated previously, the resource plan that includes the proposed addition of FGPP in 2013 and 2014 utilizes FPL's most recent peak load forecast developed in 2006.

Q. How would your results above change if instead of the actual peak in 2013 occurring in August it occurred in June, and if the actual magnitude of the peak load were 10.87% higher than the forecast, consistent with the three-year average percent variance, and assuming that FGPP is not added in 2013?

A. The actual peak load in June of 2013 would be 28,372 MW, which would exceed the combined resource total of generation capability and DSM of 28,196 MW. In other words, if "average" differences were to occur in only these two areas that affect FPL's ability to meet its customers' needs, without the addition of FGPP in 2013 there would not be sufficient resources to serve its customers, even after exercising all the DSM. In fact, FPL would be 176 MW short of serving peak load even after all DSM is exercised.

Q. Under these circumstances wouldn't FPL return to service all generation facilities that are scheduled for planned maintenance to meet the higher than projected peak load?

A. FPL would indeed try to bring as many of the resources as possible back in service. However, depending on the type of technology scheduled for planned maintenance, the type of maintenance activity to be performed or the stage at which the maintenance work is when there are indications that a significant peak load is likely, FPL may not be able to return generation to service quickly enough to meet the peak load requirement. It should be noted that as FPL continues to add advanced gas turbines to its system, there will be less and less flexibility regarding scheduling planned outages. For advanced gas turbine technology, inspections and maintenance must be performed on a strict schedule to avoid the risk of catastrophic technical failure.

Q. In your calculations above have you assumed that any unplanned generation or transmission outages would occur on the peak day?

A. No. The results provided above assume that all generation that is scheduled to operate on the peak day is operating at maximum capacity and that there are no transmission interruptions. Similarly, this calculation assumes that there are no fuel interruptions and that FPL is not providing emergency assistance to other utilities. In other words, the calculations represented in these examples reflect perfect performance of all systems, with only commonly recurring differences between actual operating conditions and the forecast on which the resource plan is based. The results above indicate that if everything

in 2013 were to occur exactly as projected, generation reserves would be adequate to mitigate the effect of a combination of unplanned outages and interruptions totaling up to 905 MW. To put this in perspective, FPL has more than 20 generating units with generating capacity greater than 400 MW, of which 9 have a generating capacity greater than 630 MW. Therefore, unplanned outages that could exceed 905 MW are not rare.

If the only deviation from the forecast is that the peak occurs in June when 799 MW of capacity is out of service for a planned maintenance outage, generation reserves of 106 MW would not be adequate to mitigate the effect of any unplanned outage except for one occurring in FPL's smallest peaking units. As can be seen, the 15% reserve margin advocated by Mr. Schlissel is not adequate.

Q. How would the results with the higher adjusted peak load occurring in June of 2013 change with the addition of FGPP 1 in June 2013?

A. Adding FGPP in June 2013 would result in a reserve margin of 19.1%, still 214 MW short of the 20% reserve margin. Before 2013 FPL will add the additional 214 MW of resources needed to meet the 20% reserve margin planning criterion from power purchases, or upgrades in existing units, or new generation, or additional cost-effective DSM or a combination of some or all of the above. If one assumes that only generation is added to provide the remaining 0.9% of reserve margin, this plan would result in available generating capacity of 26,890 MW (after accounting for the 799 MW

scheduled for planned maintenance in June 2013), plus 2,500 MW of DSM for a total of 29,390 MW of resources against the higher adjusted total peak of 28,372 MW. In this situation FPL would be able to meet load demand, provided that it exercises 1,482 MW of DSM, leaving a DSM reserve of 1,018 MW to meet any other unexpected circumstance. It is important to note that even with a plan to meet 20% reserve margin, the occurrence of ordinary differences between planned and actual peak load conditions such as those presented in this example could use up all generation reserves and about 60% of available DSM would have to be utilized. For this reason FPL believes that maintaining a 20% reserve margin for resource planning purposes is in the best interest of its customers.

Q. Is this example intended to demonstrate that FPL's 20% reserve margin criterion will always be the correct level of reserve margin to apply to resource planning?

A. No. This example shows that the Commission should dismiss Mr. Schlissel's unsupported suggestion that a 15% reserve margin planning criterion would be adequate. The results above show that a 15% reserve margin reliability criterion is not adequate to ensure that FPL could provide reliable service to its customers. The question regarding the proper level of reserve margin for future resource planning processes would need to be addressed in an independent proceeding and the implementation date of any change should be far enough into the future to allow utilities to incorporate it into their strategic and operational planning processes. It is important to note that the reserve

margin criterion is a critical starting point in a utility's multi-year process of identifying need for new resources, obtaining data on the various alternatives, evaluating those alternatives, selecting the best alternative to meet that need, negotiating contract for equipment and construction services or purchased power, and presenting a petition to the Commission to obtain a determination of need. If this basic foundation of the process were to be changed as part of the need determination proceeding or, as Mr. Schlissel suggests, after the need determination proceeding, there would be no basis on which a utility could begin the planning process. This view is consistent with the Commission's own views, expressed in Commission Order No. PSC-03-0175-FOF-EI regarding a need determination petition for Progress Energy Florida's Hines Unit 3 in which the Commission stated that it is inappropriate to consider a change to the reserve margin planning criterion in a particular utility's need determination proceeding.

Q. On page 11, lines 1 through 3 Mr. Schlissel states that maintaining a 20% reserve margin instead of a 15% reserve margin brings little in the way of reliability benefits and costs FPL's customers $5.7 billion. Do you agree?

A. No. I disagree with both parts of Mr. Schlissel's statements. The analysis results presented above demonstrate that the additional reliability provided by a 20% reserve margin criterion compared to what it would be with a 15% reserve margin is very valuable to FPL's customers, and further, that a 15% reserve margin criterion is totally inadequate to ensure reliable service to FPL's customers. In addition, the effect of utilizing the inappropriately low

reserve margin of 15%, in and of itself, would not eliminate the need for new capacity, rather it would defer that need for only one year; nor would it eliminate the need to maintain fuel diversity, so it would not eliminate the need for FGPP. Since the need for FGPP would not be eliminated as a result of Mr. Schlissel's unsupported suggestion that the reserve margin criterion be reduced, neither would the cost of building FGPP.

Q. Would there be reasons to construct FGPP in this time frame even if the Commission were to set FPL's reserve margin reliability criterion at 15%?

A. Yes. As explained in FPL's petition, without the addition of FGPP by 2016 natural gas will contribute 71% of all the electricity delivered to FPL's customers. Thus, the effect of not adding FGPP in this time frame would be to effectively eliminate the benefit of fuel diversity in FPL's system and thereby make the system much more vulnerable to interruptions in the supply of gas and to increases in the price of gas.

As most industry observers have suggested, it is likely that CO2 regulation will be imposed in the future. As I have explained above, the effect of such regulation will affect users of natural gas very significantly through higher gas prices as markets move in the direction of cost equilibrium between coal generation and gas generation in the face of costs imposed by CO2 regulation.

Q. On page 14, lines 3 through 7 of his direct testimony, Mr. Plunkett recommends that the Commission direct FPL to design and develop an aggressive DSM portfolio capable of deferring the need for additional generation for at least five years, that is, through 2018, to allow time for FPL and the Commission to evaluate a wider range of alternatives. Do you agree with Mr. Plunkett's recommendation?

A. No. Mr. Brandt's rebuttal testimony explains that there is not sufficient achievable cost-effective additional DSM measures that could defer the need for FGPP. I will address Mr. Plunkett's implication that there are benefits in delaying the addition of FGPP.

FPL has been evaluating and implementing alternatives to maintain fuel diversity in its system since the early 1980s when it was highly dependent on residual fuel oil for much of its generation and therefore vulnerable to price increases in fuel oil as well as interruptions in oil supply. Since that time, FPL completed a fourth nuclear unit and built transmission facilities to the Georgia border to obtain "coal by wire" both of which still provide benefits to FPL's customers. By 2015 FPL will have avoided 5,800 MW of generating capacity through conservation and load management programs. FPL has also considered utilizing different fuels and fuel blends and as part of that effort has tested a coal-oil mixture, a coal-water mixture, and Orimulsion. FPL has also taken advantage of significant improvements in gas combustion technology combined with what until a few years ago was a moderate price of

natural gas to add significant quantities of very efficient gas-fueled generation to its system, and as I explain earlier in my rebuttal testimony FPL will continue to add gas-fueled generation in the future.

Since 2003 FPL has been evaluating the latest versions of other technologies, such as Circulating Fluidized Bed generation, IGCC generation, Pulverized Coal generation, Ultra-Supercritical Pulverized Coal generation, Renewable generation and Nuclear generation, that could also be added to FPL's portfolio along with natural gas generation in order to maintain fuel diversity in the future. FPL has kept the Commission informed of the results of its evaluation regarding most of these alternatives since early 2005. These results clearly show that the Ultra-Supercritical Pulverized Coal technology selected for FGPP is the best, most cost-effective alternative to maintain fuel diversity in FPL's system in 2013 and 2014. In its petition for a Determination of Need FPL has demonstrated that the addition of FGPP in 2013 and 2014 is needed to maintain reliability by meeting its reserve margin criterion and by maintaining fuel diversity, and that it is the best alternative to meet those needs for the benefit of FPL's customers.

Neither FPL nor the Commission need additional time to re-evaluate alternatives, nor is there any new information to require a re-evaluation or to suggest that a different result would be obtained. In addition, because, as Mr. Brandt explains, Mr. Plunkett's suggestion that the need for FGPP could be

deferred through the use of aggressive DSM is pure fantasy, a decision is needed now if FPL's customers are to be reliably served.

Q. Wouldn't deferring the decision on FGPP to obtain more information as Mr. Plunkett implies be beneficial?

A. No. It would be neither appropriate nor beneficial to FPL's customers to delay the addition of FGPP 1 and 2 for a number of reasons.

First, no one knows when new information that might be relevant in a re-evaluation of FGPP would be available. For example, it is not clear when CO2 regulation specifically applicable to FPL's portfolio would be finalized and implemented, nor what form such regulation would take. Even if one assumes that some form of CO2 regulation affecting FPL's facilities could be finalized by 2009, such a period of delay would add at least four years to the addition of fuel-diverse generation. In other words, the in-service date of a fuel-diverse would not occur before 2017 and 2018, respectively, instead of 2013 and 2014 because FPL would be required to commence the entire process of evaluation, development, permitting, design, contracting and filing anew in 2010, at the earliest.

After such a delay, the site selected for FGPP may not be available, the cost of materials and services will have changed, the equipment and service providers selected for FGPP would no longer be bound by contract, and development of a fuel delivery infrastructure will be more challenging than it is today. In

addition, transmission requirements will probably have changed. In short, such a delay will in effect be a rejection of the proposed FGPP, and if FPL were to present new coal-fueled generation to the Commission for approval it would not be before 2011.

Furthermore, there is no assurance that FPL could, in the future, propose a coal-fueled generating plant. The opportunity to site a large coal-fueled plant close to the load center, or anywhere in FPL's service territory will diminish with time because of rapid residential and commercial growth in Florida. Therefore, additional costs for transmission facilities would be required. In addition, FPL may not be able to obtain the same contract terms from equipment suppliers and construction services providers because there would be little confidence among such suppliers and providers that a future FPL coal-fueled addition, whether USCPC , IGCC or another technology would, in fact, be approved and constructed. Therefore, the delay posed in this question could well result in the elimination of any coal-fueled generation technology as an alternative for FPL's portfolio.

Second, waiting until new information regarding a particular area of uncertainty related to any decision for new generation capacity, such as CO2 legislation, becomes available would not eliminate the other key uncertainties that affect these decisions. For example, even if CO2 legislation is enacted in 2009, by the time any new deferred generation is placed in service in 2017,

and during the entire term of that generator's life of forty years, it is realistic to expect that environmental legislation and regulation will continue to change. The environmental requirements with which FGPP 1 and 2, or any other type of generation, will have to comply during its entire life will not be definitively known in advance. Recent requirements imposed by the CAIR rule, which affects all the generation facilities in FPL's system, regardless of when they were placed in service provides evidence that waiting until the next round of decisions does not reduce uncertainty. The same is true regarding another key area of uncertainty related to generation capacity decisions, the future price differential between natural gas and coal. In 2011, when FPL could again petition for a determination of need for coal-fueled generation, the future price differential between natural gas and coal will not be clearer than it is today. Therefore, there would be no benefit from delaying the decision to add FGPP 1 and 2.

Third, even if coal-fueled generation could be added in later years, delaying the addition of FGPP will result in FPL's reliance on natural gas and fuel oil to grow significantly in the interim. Because of the low variable cost of nuclear generation and coal generation, these types of generation typically operate all the time. Therefore, the nuclear facilities in FPL's system and the existing coal-fueled resources will continue to be fully utilized, whether FGPP is added or not. But without FGPP, the generation that would have otherwise been generated by FGPP would instead have to be generated by natural gas

and fuel oil. Therefore, by 2016 natural gas would provide 71% of FPL's electricity. As a result, any spike in the price of gas of the type that has occurred a number of times in the recent past would cause a significant increase in the price of electricity. Of course, if CO2 costs are high pursuant to future legislation, the demand for natural gas will increase and, therefore, the price of natural gas will increase. And because without FGPP FPL would use significantly more natural gas, the effect on FPL's price of electricity would be greater. Of even greater concern is the fact that if there is an interruption in the supply of natural gas, FPL's ability to serve its customers would be severely impaired. Simply stated, energy prices are increasing globally and unpredictably. CO2 regulation will increase the cost of electricity no matter what. FPL and its customers are much better off moving forward with a state-of-the-art coal-fired generation now, to best position themselves to face what is, at best, an uncertain energy cost future, and at worst, a future characterized by extreme spikes in the cost of natural gas.

Fourth, it is logical that if there is indecision regarding FGPP due to uncertainty in future CO2 regulation and the future price differential between natural gas and coal, two name two areas of uncertainty, such indecision would be equally applicable to any decision to add generation - be it natural gas, coal, nuclear, renewable, etc. - given that the relative costs between the various alternatives will be predicated on the form and extent of CO2 regulation. This implies that if we cannot make a decision to add FGPP,

neither can we make a decision to add any other type of generation. Such indecision would result in the reliability of FPL's system being further eroded - beyond the detrimental effect of not maintaining fuel diversity. Specifically, FPL's summer reserve margin would be reduced to 14.8% in 2013, 13.0% in 2014, and 10.5% in 2015. Of equal concern is the fact that, as explained earlier in my rebuttal testimony, the portion of FPL's reserves that would be supplied by actual generation units would shrink dramatically. In fact, if one were to consider only generation-based reserves in those years, FPL's projected operating reserves would be reduced to 3.5%, 1.5%, and -1.0% of peak load in those years, respectively. In such a case, FPL's reserves in 2013 and 2014 would be almost exclusively comprised of demand side management resources to the point that FPL would have a negative reserve margin by 2015. Moreover, this would require FPL's old and peaking facilities to operate many more hours than they would normally be expected to operate, which will make them more susceptible to forced outages. In summary, a delay in adding FGPP to mitigate the effect of uncertainty – a fact that cannot be avoided - would certainly result in deterioration of FPL's system reliability.

The fact is that neither FGPP, nor a gas-fired facility that would inevitably have to be added at some point to maintain system reliability if FGPP is not built, can be shown to have been the best choice under all reasonable possible future conditions. Therefore, it would be logical to ask the same question of a future petition to obtain approval to add gas generation - would it be

advantageous to wait until the CO2 and fuel price differential issues become clearer? The answer is that the uncertainty regarding CO2 and the fuel price differential should not impede our efforts to create a more fuel-diverse portfolio of generating assets. On the contrary, faced with the almost certain prospect of higher energy prices, but not knowing how the relative costs of various fuel and generation types will actually play out either in the near or the long term, the best course is to pursue more diversity in FPL's generating portfolio by adding FGPP at this time.

It is important to note that coal-fired capacity was rejected by the Commission in the 1990s due to a similar concern over the uncertainty of future natural gas and coal prices and a preference to see how fuel prices would actually move in the future. While certainly no one can claim definitively to know how fuel prices will move, either then or today, it is at least certain that the addition of coal would help maintain diversity in FPL's generating portfolio to help mitigate the impact of potential natural gas price spikes in the future and the resulting cost on customers.

It must be understood that there is, and will continue to be, very large quantities of gas-fired generation in FPL's system so that in those periods when gas prices are low the customers will continue to benefit from the 60% contribution (even after FGPP is added) of natural gas. But when gas prices are high, or worse, when gas supply is interrupted, FPL's customers will be

much less vulnerable to price spikes and service interruptions after FGPP is added. In other words, with the addition of FGPP the customer always wins regardless of what happens to natural gas - if gas prices go up, this plant will be a winner, and if prices go down (which would be unlikely because of tight supply and the upward pressure on demand that will result from CO2 legislation), customers will still benefit because we will still have a lot of gas generation on FPL's system which would result in lower electricity prices.

It would be illogical to delay (or essentially reject, for the reasons noted above) the addition of FGPP because of concern that in some circumstances it might not be the lowest cost alternative, but on the other hand readily choose to add gas-fired generation even though it is equally clear that gas-fired generation will not be the lowest cost alternative under other, perhaps equally likely, circumstances. FPL's petition proposes a much more practical alternative to address the continuing uncertainties that surround the decision regarding what type of generation to add to FPL's portfolio; it is to grant a Determination of Need for the addition of FGPP 1 and 2, and conduct annual reviews as FPL proposes.

Q. Please summarize your rebuttal testimony.

A. My rebuttal testimony explains that FPL has appropriately considered all available alternatives to meet the resource needs of FPL's customers and maintain fuel diversity in the future, that FPL has performed an effective, complete evaluation that addressed all issues relevant in the determination of

the best resources to add to FPL's portfolio in 2013 and 2014, and that the results of FPL's evaluation presented to the Commission as part of its petition for a determination of need demonstrate that the addition of FGPP in 2013 and 2014 is the best, most cost-effective alternative to maintain system reliability by maintaining adequate resource reserves and fuel diversity in FPL's system.

Second, my rebuttal testimony explains that the 20% reserve margin reliability criterion utilized by FPL in its integrated resource planning process that has culminated in petitioning the Commission for a determination of need for the addition of FGPP has been reviewed and approved by the Commission and it is appropriate and necessary to ensure reliable service for FPL's customers.

Third, my rebuttal testimony demonstrates that delaying the decision to add FGPP would not be in the best interests of FPL's customers because such a delay would likely be, in effect, a decision to reject FGPP and consequently not maintain fuel diversity, making FPL's customers even more vulnerable to the very uncertainties that a delay would purport to mitigate.

As I have stated above, it is necessary to consider my testimony, and indeed FPL's entire petition for a determination of need for FGPP, not only from the perspective of the component of generation capacity that will be added in 2013 and 2014, but also from the broader portfolio perspective. FPL has performed a full economic analysis to show the effect of adding FGPP

compared to adding different generation technologies in 2013 and 2014. These results show that the addition of FGPP is the lowest cost and most reliable alternative when compared to other technologies that use solid fuels. The results of FPL's economic analyses also show that the addition of FGPP will result in a lower cost than the addition of combined cycle generation in about half of the scenarios analyzed by FPL. But it is not because of the single expected outcome that FGPP should be approved, but rather precisely because of the range of potential results that may occur depending on a number of variables that the Commission should approve FGPP in order to maintain a measure of fuel diversity on FPL's system The fact that FGPP may not be always the lowest cost alternative does not change the fact that no other alternative can provide a better set of economic results than the addition of FGPP.

At this point it is essential to recognize that when added to FPL's generation portfolio, only FGPP in the 2013 and 2014 timeframe can enable FPL to maintain the level of fuel diversity necessary to deliver service reliability and mitigate the effect of uncertainty in fuel markets for the benefit of its customers. There is no better alternative to maintain fuel diversity. It is also important to consider that in 2006 natural gas produced 50% of the electricity delivered to its customers, and that even after adding FGPP FPL's portfolio will see a net increase of about 4,500 MW of natural gas generation in the next nine years, while of the 1,960 MW of coal generation provided by FGPP,

about 1,300 MW will replace existing coal-fired generation from power purchase that will expire and will no longer be available to FPL. It is also critical to recognize that delaying a decision on FGPP or denying FPL's petition for a timely determination of need will inevitably result in a much higher level of risk regarding both service reliability and cost and would not be in the best interests of FPL's customers.

Q. Does this conclude your testimony?

A. Yes.