BEFORE THE 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
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DOCKET NO.: 070098-EI

CORRECTED SUPPLEMENTAL TESTIMONY OF

DAVID A. SCHLISSEL

ON BEHALF OF

THE SIERRA CLUB, INC.

SAVE OUR CREEKS

FLORIDA WILDLIFE FEDERATION

ENVIRONMENTAL CONFEDERATION OF SOUTHWEST FLORIDA

ELLEN PETERSON

MARCH 16, 2007

Q. State your name, occupation and business address.

A. My name is David A. Schlissel. I am a Senior Consultant at Synapse Energy Economics, Inc, 22 Pearl Street, Cambridge, MA 02139.

Q. Are you the same David Schlissel that previously filed testimony in this docket?

A. Yes, I am.

Q. On whose behalf are you testifying?

A: My testimony is sponsored by the Sierra Club, Inc., Florida Wildlife Federation (FWF), Save Our Creeks (SOC), and the Environmental Confederation of Southwest Florida (ECOSWF) and Ellen Peterson.

Q. Please summarize this Supplemental Testimony.

A. My Direct Testimony filed on March 7, 2007 primarily provided Synapse's estimate of the likely cost arising from future greenhouse gas restrictions/reductions. The purpose of this Supplemental Testimony is to provide an FPL-specific context for those costs as well to critique FPL's resource planning in general.

Q. What have you discovered in the course of your review of FPL's resource planning?

A. On page 6, lines 5-8 of his testimony, FPL witness Rene Silva testifies "[G]iven the range of potential outcomes FPL is not recommending approval of FGPP based on any specific, projected set of assumptions or comparative economic results against other forms of generation." That is, FPL *recognizes* that the resource planning scenarios presented in its Need Study do *not* support the choice of FGPP.

FPL's major justification for FGPP can be summed up in four words "no new natural gas." However, that should not be enough to justify the building of a multi-billion dollar coal-fired generating facility. Instead, principles of least-cost, least-risk resource planning ought to compel FPL to justify FGPP on an economic basis. I would ask this Commission to very carefully consider whether building a 1,960 MW coal plant is an appropriate hedge against natural gas prices if the economics do not otherwise justify the building of that plant. I also would ask this Commission to

consider whether the simple comparison between FGPP and natural gas generation that FPL has presented in its Need Study is appropriate. Finally, I will raise the issue of the justification for FPL's 20% reserve margin requirement.

Q. Can you please explain why FPL's analyses do not support the choice of FGPP versus natural gas generation?

A. FPL witness Silva has testified:[1]

> In 7 scenarios that generally reflect a wider fuel price differential between natural gas and coal and/or moderate environmental compliance costs, the Plan with Coal, which reflects the addition of FGPP results in lower costs (CPVRR) than would the plan without Coal. Conversely, in the 9 scenarios that generally reflect a narrower fuel price differential between natural gas and coal and/or higher environmental compliance costs, the Plan with Coal results in higher costs than the Plan without Coal.

The results of these scenarios are summarized in Table 1.

Table 1. Cost Differentials of FPL Scenarios

	A – No CO_2	**B – Low CO_2**	**C – Mid CO_2**	**D – High CO_2**
High Differential	(2,792)	(2,045)	(1,127)	**(666)**
Shocked Differential	(873)	(113)	804	1,278
Medium Differential	(219)	537	1,466	1,930
Low Differential	**1,912**	2,670	3,604	4,037

A negative value indicates that the Plan with Coal is less expensive than the Plan without Coal.

Perhaps not surprisingly, if the analysis does not consider the potential costs of CO_2 regulations, FGPP is a more economic option than the natural gas alternatives. But, as I discussed in my March 7th Direct Testimony, at this time the question of CO_2 regulation is not "if" but "when." Even FPL Group, as discussed in my March 7th testimony, concedes that action on climate change is necessary.

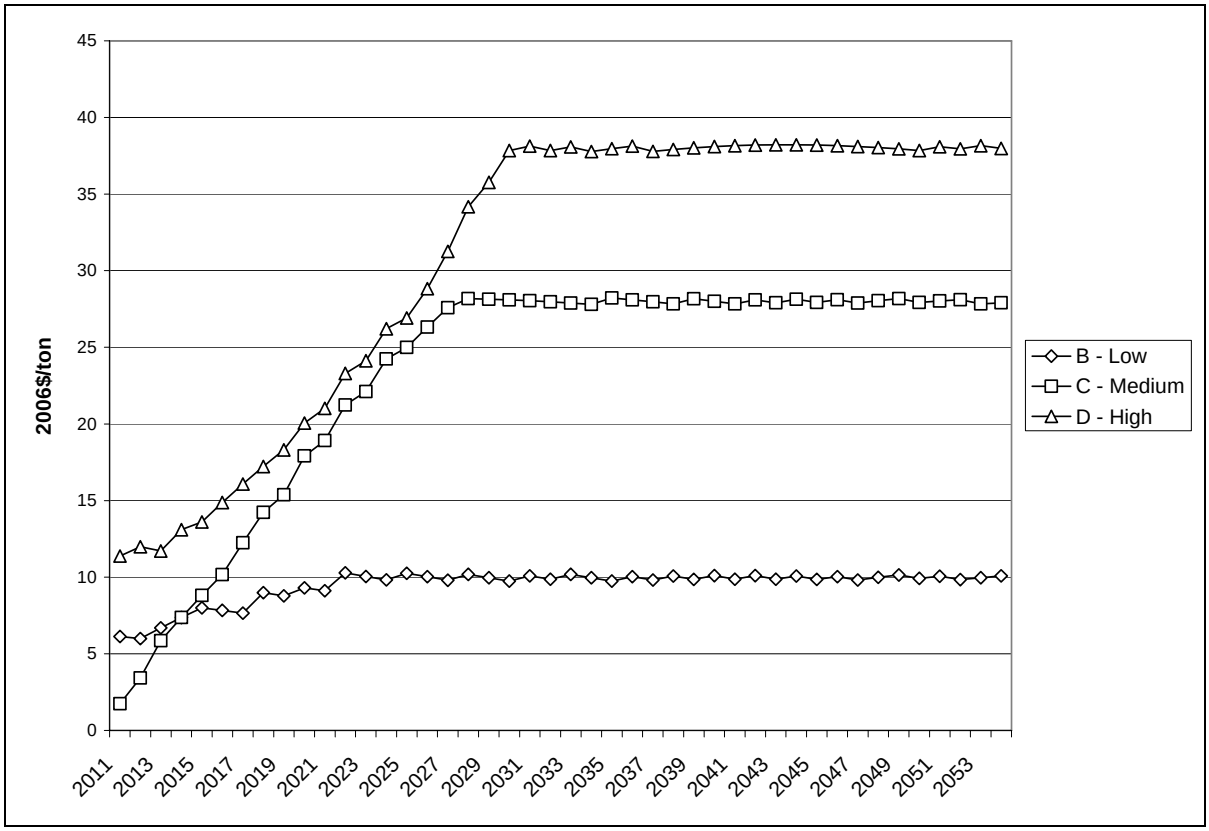
[1] Testimony of Rene Silva, page 32, lines 8-14.

As a result, all of the scenarios in the left column in Table 1 above are not reasonable and should not be considered. That leaves the remaining twelve scenarios, of which only **four** show that FGPP is the lower cost option.

Q. Are these four remaining scenarios that show FGPP as the lower cost alternative reasonably likely?

A. No. FPL apparently evaluates these scenarios through the year 2054 which is to be commended given that FGPP is likely to have an operating life of at least 40 years. By the same token, FPL's environmental compliance forecasts must be evaluated for their reasonableness over the same period. I've taken the nominal CO_2 price forecasts supplied in Appendix F of the Need Study and converted them to real 2006 dollars using a 2.25% inflation rate to illustrate the real cost per ton of CO_2 under each forecast.

Figure 1. FPL CO_2 Price Forecasts (2006$)



Forecast B, FPL's low CO2 price forecast, stands out as being just that, very low. Indeed, it is so low, that it is not reasonable to expect that such low CO_2 prices actually would lead to reductions in CO_2 emissions of sufficient magnitude to address the problem of climate change. In real dollars, the highest price this forecast would ever reach would be $10/ton in 2022. Under all reasonable estimates I've seen, that would not be enough to incent carbon capture and sequestration at coal-fired power plants of any type, for example. Essentially, FPL's low forecast rests upon the assumption that U.S. greenhouse gas regulation will never result in significant reductions of greenhouse gas emissions. This is an unreasonable assumption over such a long period of time and therefore the scenarios assuming FPL's low forecast should not be considered.

That leaves us with just **two** out of eight scenarios (referring back to Table 1) which suggest that FGPP would be the lower cost capacity addition to FPL's system.

Q. Are these scenarios reasonable?

A. **They** may be. Certainly the real cost of CO_2 escalates to a much higher level than in the Company's low CO_2 price scenario. However, the CO_2 price in this scenario still tops out at only $28/ton. But, the more important question is whether the Commission's decision to grant FPL's need request ought to rest upon only these **two** reasonable planning scenarios.

Q. Should the Commission approve the building of FGPP based on the results of these two scenarios?

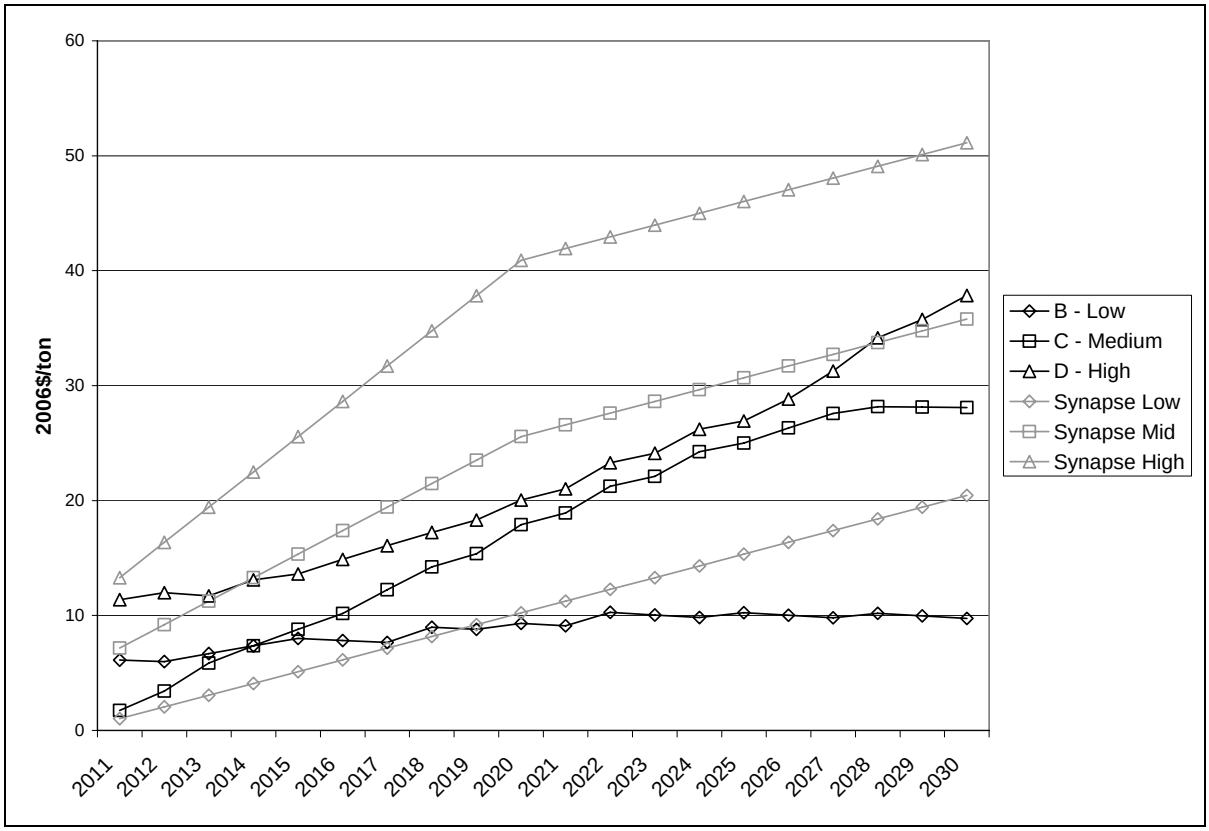
A. No. Even if we were to accept that the very limited comparison between FGPP and natural gas generation is the appropriate comparison, that is, that there are no other reasonable alternatives, the downside of building FGPP is, in most scenarios, much larger than the upside of moving forward with the project.

In the Mid-CO_2 Price, High Differential scenario, the upside of building FGPP rather than natural gas generation would be a cost savings to FPL customers of $1.127 billion. **In the High-CO2 Price, High Difference scenario, the upside of building FGPP would be $666 million. In the other scenarios**, however, it is *more* costly to FPL customers to go forward with FGPP in place of new natural gas-fired generation. According to FPL's own analysis, as shown in Table 1 above, that cost could reach $4.037 billion.

Q. Is $4.037 billion the upper bound of the potential cost differential between FGPP and natural gas generation?

A. Not necessarily. My March 7, 2007 testimony presented Synapse's forecast of the cost of mandatory greenhouse gas reductions. Below, I've created a chart comparing our CO2 price forecast to that used by FPL in its economic analyses of the FGPP project.

Figure 2. Comparison of FPL CO_2 Forecast to Synapse Forecast



As you can see from Figure 2, even the FPL high CO2 price forecast is generally lower than the Synapse mid forecast. Under our Synapse mid and high CO_2 price forecasts, the cost to FPL's customers of proceeding with FGPP would rise significantly above $4.037 billion compared to natural gas generation.

Q. What is the basis for the CO_2 price forecasts used by FPL in its FGPP analyses?

A. According to FPL's response to Staff's First Set of Interrogatories, No. 35, the bills upon which these forecasts are based are:

- Senator Jeff Bingaman's Climate and Economy Insurance Act
- Senator Tom Carper's Clean Planning Act of 2006 (S.2724)
- Senator Dianne Feinstein Discussion Draft – Strong Economy and Climate Protection Act
- Senators John McCain & Joe Lieberman – Climate Stewardship Act (S.1151)

Some of these bills have evolved since then, including latest version of the McCain-Lieberman bill which has more aggressive emission reduction targets as introduced in

2007 compared to 2005. Most importantly, however, it would unreasonable to base a forecast of CO_2 allowance prices through 2054 on bills that do not address the need to stabilize the concentration of CO_2 in our atmosphere. *None* of these bills would achieve that.

Exhibit DAS-4[2] compares the emissions trajectories of several bills proposed in the 109th Congress including the Bingaman, Feinstein and McCain-Lieberman bills upon which FPL's forecasts are based. The Carper bill is, unfortunately, not included, but it is slightly less stringent than the McCain-Lieberman bill. The emission reduction paths to achieve stabilization targets of 550 parts per million (ppm) and 450 ppm are the grey lines. None of the bills upon which FPL relies, would come close to those targets.[3]

As with federal regulation of sulfur dioxide, I would expect federal regulation of carbon dioxide to come in steps. Over time, the regulation will become more stringent in order to address the problem of climate change. Such a trend, however, is apparently not reflected in FPL's CO_2 allowance forecasts.

Q. Does the comparison of fuel price differential and greenhouse gas regulation adequately capture the biggest risks to FGPP?

A. No, it does not. There are other major risks to building coal plants many of which FPL identifies in its Need Study at page 17. One of those risks it has not analyzed, however. That is the risk of increases in "the actual capital cost of completing FGPP and placing the generating units in commercial operation."

Q. Please describe this risk.

A. The projected costs of building new coal plants have increased dramatically over the past few years. This is due in large part to intense global competition for coal plants coupled with constrained supply. A perfect example comes from FGPP itself. At

[2] The graphic in this exhibit is taken from the World Resource Institute and is available at http://www.wri.org/climate/topic_content.cfm?cid=4182.

[3] Those are the lines "Bingaman (2005)," "McCain-Lieberman/Olver-Gilchrest (2005)," and "Feinstein (3/2006)."

page 17, lines 17-23 of his testimony, FPL witness William Yeager says "The immense scope of this project, in the first instance, necessarily limits the number of potential EPC [engineer, procure, construct] contractors. Thus, the EPC pricing was based on an initial inquiry to three major contractors with coal engineering, procurement, construction experience. In fact, the result of this inquiry produced only one contractor with resources available in sufficient quantity to handle a project of this magnitude in the timeframe required."

It is remarkable that the EPC contract for such a large project could not be competitively bid and is an excellent example of why designers, vendors and suppliers can charge premiums on coal plant components and services of all types.

The demand for coal plants therefore translates into a significant cost risk for FGPP. At page 16 of the Need Study, FPL states "There are factors that could cause the capital cost of FGPP to be higher than projected. One reason for this is that there is a much longer lead time required, at least five and a half years from the date of this Need filing for development, permitting and construction of the first FGPP unit, compared to just over three years for gas-fired units, and a correspondingly greater opportunity for changes in the cost of equipment, labor and materials to occur."

Unfortunately, FPL has done no analysis under which it analyzed the effect of potential cost increases in the FGPP capital cost.

Q. Is it possible that FPL could mitigate both the downsides of new natural gas generation and FGPP?

A. Yes, mitigate and perhaps even avoid. Among the hundreds of pages of testimony and the Need Study, the glaring omission is information on how FPL even decided that its only two choices were FGPP or new natural gas generation. It is not enough for FPL to say that it needs to add 1,960 MW of new coal-fired capacity; it must justify that addition over other alternatives like renewables and energy efficiency (see the Testimony of John Plunkett) as well as demonstrate that baseload capacity is needed.

Q. Are you saying that there is no analysis showing how FPL arrived at the conclusion that it would need either gas or coal-fired baseload capacity?

A. Not that I have seen. In a need case such as this, I would expect to see a quantitative, economic analysis likely using a capacity expansion model to evaluate different resources. Instead, what FPL apparently has done is much simpler and excludes any sort of economic considerations.

Q. Please describe what you know about FPL's analysis.

A. FPL witness Steven Sim states at page 8, lines 20-21 of his testimony "FPL utilized its IRP process to first determine the timing and magnitude of resource needs." He does not describe at all what that process entails. However, on the page following he is asked the question "How did FPL decide it needed additional resources and what was the magnitude of the needed resources?" He answers:[4]

> FPL uses two analytical approaches in its reliability assessment to determine the timing and magnitude of its future resource needs…The first approach is to make projections of reserve margins both for Winter and Summer peak hours for future years. A minimum reserve margin criterion of 20% is used to judge the projected reserve margins.
>
> The second approach is a Loss-of-Load-Probability (LOLP) evaluation. Simply stated, LOLP is an index of how well a generating system may be able to meet its demand (i.e., a measure of how often load may exceed available resources)…LOLP is typically expressed in units of "numbers of times per year" that the system demand could not be served.

If these two analytical approaches constitute FPL's "IRP process" the Commission should absolutely *not* rely upon the results of this analysis, i.e., the choice between FGPP and natural gas generation. Even taken together, these approaches give no information about the appropriate mix of resources types (baseload, intermediate, peaking) that represents the least cost mix of resources or the value of delaying resource additions. For example, it's possible that FPL simply looked at its load and resources projection which "has been driven by the Summer reserve margin

[4] Testimony of Steven Sim, page 9, line 10 through page 10, line 5.

criterion,"[5] saw that it needed capacity to meet its summer reserve margin requirement and chose baseload capacity even though that capacity may not operate in the winter months (because it may not be needed).

Q. What would constitute appropriate resource planning?

A. FPL ought to present this Commission with the results of analyses that have directly compared resource choices like coal, gas, renewables and demand-side management.

Q. Do you have any additional issues you would like to raise with this Commission?

A. Yes. FPL's need for new capacity essentially appears to be a result of the 20% reserve margin requirement; a requirement that is much higher than other jurisdictions I am familiar with. To demonstrate the result of having a 20% reserve margin, I've recreated Exhibit SRS-4 for the summer months as Table 2.

Table 2. Projection of FPL's 2007-2015 Capacity Needs: 15% Reserve

August of the Year	Projections of FPL Unit Capability (MW)	Projections of Firm Purchases (MW)	Projections of Total Capacity (MW)	Peak Load Forecast (MW)	Summer DSM Forecast (MW)	Forecast of Firm Peak (MW)	Forecast of Summer Reserves (MW)	Forecast of Summer Reserve Margins w/o Additions (%)	MW Needed to Meet 15% Reserve Margin
2007	22,123	2,993	25,116	22,259	1,768	20,491	4,625	22.6%	(1551)
2008	22,150	2,993	25,143	22,770	1,908	20,862	4,281	20.5%	(1152)
2009	23,370	2,511	25,881	23,435	2,034	21,401	4,480	20.9%	(1270)
2010	24,589	2,107	26,696	24,003	2,146	21,857	4,839	22.1%	(1560)
2011	24,589	2,062	26,651	24,612	2,264	22,348	4,303	19.3%	(951)
2012	24,589	1,906	26,495	25,115	2,388	22,727	3,768	16.6%	(359)
2013	24,589	1,906	26,495	25,590	2,516	23,074	3,421	14.8%	40
2014	**24,589**	**1,906**	**26,495**	**26,100**	2,651	23,449	**3,046**	**13.0%**	**471**
2015	**24,589**	**1,906**	**26,495**	**26,772**	2,790	23,982	**2,513**	**10.5%**	**1084**

If FPL had a 15% reserve margin it would need just 40 MW of new capacity in 2013.

Reserve margins are mechanisms to address resource adequacy concerns. My understanding is that FPL operates under both a LOLP standard of 0.1 days per year as well as a 20% reserve margin requirement. If the 20% reserve margin is not necessary in order to maintain the LOLP standard of 0.1 days per year, that is, if a

[5] Testimony of Steven Sim, page 10, lines 7-8.

15% reserve margin[6] could guarantee the same LOLP standard, then FPL customers are paying additional money for capacity that brings little in the way of reliability benefits. In the case of this particular project, they are paying about $5.7 *billion*[7] extra. I would strongly encourage this Commission to open a docket to examine whether peninsular Florida's reserve margin requirement ought to be revised downward before granting an affirmative need determination for FGPP.

Q. What is your ultimate recommendation to this Commission?

A. I recommend that the Commission deny FPL's need request. FPL has failed to demonstrate that FGPP is the least cost, least risk addition to its system and the Commission should revisit the 20% reserve margin requirement before approving new capacity at a cost of $5.7 billion.

FPL's analyses in support of FGPP do not comprehensively consider potential CO_2 prices and do not evaluate a full range of technically feasible alternatives. FPL's analyses do not even show that FGPP would be less expensive than building and operating new gas facilities.

Q. Does this complete your testimony?

A. Yes.

[6] I chose 15% as the example reserve margin since I understand that prior to 1999, that was the Commission ordered minimum reserve margin.

[7] FGPP Need Study, page 37.