

ORIGINAL

**BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION**

**DOCKET NO. 991462-EU
Florida Power & Light Company**

**Petition for Determination of Need
For an Electrical Power Plant
In Okeechobee County by
Okeechobee Generating Company, L.L.C.**

**Supplemental Testimony
John H. Landon**

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SUPPLEMENTAL TESTIMONY

OF

JOHN H. LANDON

ON BEHALF OF FLORIDA POWER & LIGHT COMPANY

ANALYSIS GROUP/ECONOMICS

MARCH 9, 2000

1 **I. INTRODUCTION & QUALIFICATIONS**

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

3 A. My name is John H. Landon, and my business address is Two Embarcadero
4 Center, Suite 1160, San Francisco, California, 94111.

5 **Q. Are you the same John Landon who testified earlier in this proceeding?**

6 A. Yes, I am.

7 **Q. What is the purpose of your testimony?**

8 A. As was indicated in my prior testimony, as of that date, I had been unable to
9 review the model underlying witness Nesbitt's testimony regarding his
10 estimate of the Okeechobee Generating Project's (OGC Project) economic
11 benefits to Florida consumers. The current testimony is based on my
12 colleague Dr. David Sosa's work attempting to replicate and test the sensitivity
13 of Dr. Nesbitt's results. I will use his results to evaluate the reasonableness of
14 the Dr. Nesbitt's estimate of the Project's price suppression effect and his
15 quantification of its economic benefits.

16 **Q. What are your conclusions?**

17 A. My conclusions are as follows:

18 1. Dr. Sosa has been unable to run Dr. Nesbitt's model satisfactorily. This
19 is, in part, due to Dr. Nesbitt's failure to supply appropriate documentation and
20 input files to the model in the course of discovery. It is also due to the
21 instability (failure to converge to a result) of the model itself. Thus, Dr. Sosa

1 has been unable either to duplicate Dr. Nesbitt's results or to test their
2 sensitivity to changes in input assumptions. Independent validation of an
3 investigator's results is fundamental to establishing their credibility. It is only
4 way to ensure that an investigator has been forthright and correct in describing
5 his inputs and results. Because they cannot be duplicated, Dr. Nesbitt's results
6 cannot be relied upon to represent the world that the model supposedly
7 describes.

8 2. Although we have not been able to evaluate fully Dr. Nesbitt's results,
9 Dr. Sosa and I have reviewed some of his input assumptions. From our
10 review, it is clear that Dr. Nesbitt failed to include the OGC Project in his
11 modeling runs used to calculate his price suppression effect. Instead of using
12 one run with OGC and another run without OGC to quantify OGC's price
13 suppression effect, Dr. Nesbitt ran one run with existing utility combined
14 cycle units and another run with 550MW of utility combined cycle units
15 removed. Since Dr. Nesbitt uses his results to quantify the purported benefit
16 to consumers of constructing the proposed OGC Project, his estimate of
17 consumer benefits from construction of the Project is incorrect both
18 procedurally and substantially. Dr. Nesbitt has not quantified any price
19 suppression effect of the OGC unit.

20 3. Dr. Nesbitt's modeling input assumptions, in many cases, are not
21 verifiable from independent sources, do not reflect reasonable approximations

1 of actual conditions, and lead to results that are not reliable, even if the model
2 itself were stable, the results could be replicated, and the OGC project had
3 been included.

4 4. Dr. Nesbitt calculates his price suppression effect for a single year and
5 extrapolates that calculated price suppression effect for a hypothetical ten-year
6 period. The extrapolation is arbitrary and unsupported by modeling results or
7 other information. This method is clearly not reasonable for the purpose of
8 developing an accurate estimate of consumer benefits. His ten-year period
9 and total effect are underlying assumptions rather than the product of his
10 modeling effort. This approach is not reasonable for correctly estimating
11 consumer benefits. In addition, Dr. Nesbitt excludes some plants that he
12 expects to be operational prior to 2003 from his calculation, which biases his
13 consumer benefits calculation.

14 **II. ALTOS MODEL**

15 **Q. How does Dr. Nesbitt construct his estimate of consumer benefits arising**
16 **from the OGC Project?**

17 A. Dr. Nesbitt utilizes at least five models to simulate market conditions in the
18 State of Florida. These are the North American Regional Electricity model
19 (NARE), the GE Maps model, and the North American Regional Gas model
20 (NARG), GEMS and the MarketPoint model. He also appears to utilize some
21 post-processing of his modeling results to develop the price suppression effect

1 that he actually uses to estimate consumer benefits. My colleague, Dr. Sosa
2 has reviewed MarketPoint 3.0 and the North American Regional Electricity
3 Model. The GE Maps and GEMS models were not supplied to us, and he has
4 therefore not reviewed them. In order to validate Dr. Nesbitt's results, it is
5 necessary to review all inputs and analyses relied upon by Dr. Nesbitt in this
6 proceeding, that were not prepared by an independent party. We have
7 evaluated the natural gas price series produced by the NARG model, but he
8 has not reviewed the NARG model itself. Dr. Sosa's testimony also contains
9 an explanation of Dr. Nesbitt's technique of post-processing his modeling
10 results.

11
12 **Q. Please describe the energy market that Dr. Nesbitt appears to model to**
13 **establish the benefits of the Project.**

14 A. Let me begin by noting that the competitive world that Dr. Nesbitt attempts to
15 model does not presently exist in Florida, thus Dr. Nesbitt attempts to model
16 an environment based on assumptions that are purely speculative at this time.
17 The major features of Dr. Nesbitt's efforts are that he establishes twelve nodes
18 within the state of Florida and sets transmission capacity between nodes;
19 transmission charges between adjacent nodes appears to be at a cost of one
20 mill. Transmission charges between utility regions appear to be set at one mil.
21 He then models plant dispatch within the state of Florida and sets market

1 prices for generation at the incremental cost of the last unit in the dispatch that
2 would supply each node, given the costs of transmission service and the
3 capacity of the transmission lines between nodes. Dr. Nesbitt's incremental
4 cost calculation includes plant fuel and variable cost as well as fixed O&M.

5 **Q. Please describe your concerns with Dr. Nesbitt's model for estimating a**
6 **price suppression effect that would redound to Florida ratepayers.**

7 A. I have two fundamental concerns, one is that the type of model that Dr.
8 Nesbitt uses is not appropriate to the task at hand, and its use necessarily
9 results in errors in identifying the consumer benefits from the Project. The
10 second fundamental concern is that, in addition to my overriding reservations
11 regarding the use of Dr. Nesbitt's model, he has made important omissions in
12 specifying the market conditions that the model is simulating. His supply
13 curve appears to omit the OGC Project itself, as well as a significant amount
14 of planned capacity additions that do not require "need certification" and that
15 will serve peak and reduce peak prices prior to the entry of the OGC Project.
16 In addition, there appear to be several errors in the model specification.

17 **Q. Please explain your concern with Dr. Nesbitt's model.**

18 A. The task at hand is to evaluate the cost-effectiveness of the Project in the
19 context of OGC's petition for a determination of need by evaluating its benefit
20 to Florida ratepayers relative to other options in the present, regulatory
21 environment. Dr. Nesbitt's model represents Florida's electricity market as a

1 degregulated competitive wholesale market in its entirety, which it is not.
2 Most of the electricity sold in Florida never enters the wholesale market. It is
3 generated by retail load serving utilities and sold at retail. Moreover, most of
4 the wholesale power transactions in Florida are pursuant to firm contracts.
5 Short term, economy energy sales comprise a very small portion of the Florida
6 electricity market, yet Dr. Nesbitt models the entire Florida electricity market
7 as if all sales were short term wholesale energy sales at market-based rates.
8 Not all producers in Florida can sell at market-based rates. Two of the three
9 largest utilities in the state are required to sell wholesale and retail energy on a
10 cost-of-service basis. Determination of sale volumes and prices in the
11 wholesale market in Florida is, therefore, a different conceptual question than
12 the one that Dr. Nesbitt models. Even if we were confident in his result,
13 which we are not, Dr. Nesbitt's representation of a market that does not exist
14 cannot tell us what the actual effect of the OGC Project will be on wholesale
15 prices and therefore on utility ratepayers under the existing, largely regulated
16 regime.

17 **Q. Please describe the problems that you have identified with the Altos**
18 **model's specification.**

19 A. We have identified problems with the Altos model's specification in two areas:
20 first, transmission capacity between nodes and transmission charges between
21 nodes are not based on publicly available information and are not susceptible

1 to verification; second, Dr. Nesbitt calculates the long term consumer benefits
2 of the OGC Project by extrapolating his price suppression effect over ten
3 years, a period which he sets externally to his modeling exercise. Given the
4 assumption of competitive market conditions underlying his model, we don't
5 understand the rationale for assuming that the OGC plant will continue to earn
6 rents for ten years. Moreover, we have concerns regarding portions of Dr.
7 Nesbitt's work in several areas. For example, transmission capacity between
8 nodes is based on GE Maps runs, which were not supplied to us.

9 **Q. Please discuss your concern with Dr. Nesbitt's transmission inputs to the**
10 **Altos model.**

11 A. It appears that Dr. Nesbitt relied upon information supplied to him by his
12 client to establish parameters for his transmission capacities and charges. This
13 information was, in turn, the output of a GE Maps run which, we understand,
14 was not supplied to Dr. Nesbitt. It was likewise not available to Dr. Sosa for
15 his review. We have no evidence of Dr. Nesbitt's contribution to the
16 assumptions underlying the GE Maps modeling or even what those
17 assumptions were. We thus have no support for the information that Dr.
18 Nesbitt relied upon to set his transmission inputs.

19 **Q. Are there any errors in the model's specification?**

20 A. Yes. I believe that the model inputs contain errors that have a significant
21 impact on its results. Dr. Nesbitt appears to account improperly for new entry.

1 He disregards FPL's schedule for 2002 and 2003, he fails to capture efficiency
2 gains for existing steam capacity due to the Ft. Myers and Sanford
3 repowerings, and he fails to reflect other significantly sized combustion
4 turbine merchant entrants. These omissions have the effect of distorting Dr.
5 Nesbitt's supply curve and of increasing the size of Dr. Nesbitt's price
6 suppression effect.

7 **Q. Please discuss why the level of and timing of entry is an important**
8 **element in the determination of Dr. Nesbitt's price suppression effect.**

9 A. Dr. Nesbitt's price suppression effect derives from a reduction in his computed
10 "market price" due to the OGC Project's indirect displacement of what would
11 otherwise be the marginal unit in the market. Dr. Nesbitt is correct that the
12 plants at the margin in Florida are relatively expensive, this is especially true
13 during the peak periods which is why most of Dr. Nesbitt's calculated
14 consumer benefits occur during his estimated peak periods. Because the costs
15 of the marginal generating unit at peak are so high, building virtually any new
16 plant in Florida will have the effect of displacing marginal units at peak,
17 establishing a new, lower cost marginal unit, and reducing the computed peak
18 period "market price".

19 Measuring from this new, lower "market price" would result in a
20 reduction in the price suppression effect attributable to the OGC Project once
21 it is added to the supply curve.

1 **Q. Why is that?**

2 A. As can be seen from Dr. Nesbitt's Exhibit 5, the slope of the supply curve
3 becomes progressively steeper, i.e., each of the last units in the supply curve
4 are more expensive than the prior unit by an increasing amount. This means
5 that the greatest initial price suppression effect will accrue to the first plant to
6 enter the market, since it will displace, albeit indirectly, the most expensive
7 plants available. Thereafter, the price suppression effect associated with
8 additional plants will be progressively smaller as the displaced generation is
9 progressively less expensive until a new equilibrium is reached in which entry
10 is no longer economic. By excluding entry prior to the OGC plant, Dr. Nesbitt
11 captures a larger, first bite as the OGC price suppression effect. Dr. Nesbitt's
12 work papers appear to indicate that several hundred megawatts of scheduled
13 capacity additions prior to the entry of OGC plant have been deliberately
14 excluded from his model.

15 **Q. Does Dr. Nesbitt's technique of extrapolating the price suppression effect**
16 **over a ten year period remedy these distortions?**

17 A. Dr. Nesbitt's technique of extrapolating the level of the price suppression
18 effect over time only partially offsets the distortions from excluding entry
19 scheduled prior to the OGC plant. Instead of programming entry to occur in a
20 dynamic, economically-appropriate manner, Dr. Nesbitt deliberately sets the
21 rate of entry to conform to a ten-year scenario. While I have been unable to

1 test his result, properly modeling entry likely would greatly accelerate the
2 erosion of the price suppression effects of the OGC plant. Instead, Dr. Nesbitt
3 extrapolates his price suppression for 2003 for each year over a ten year period
4 by multiplying it by a ratio based upon average OGC Project sales price in a
5 year relative to the average OGC Project sales price in 2003, the year of
6 OGC's entry. Each plant entering the market after the OGC Project will have a
7 progressively smaller price suppression effect which will be reflected in the
8 average OGC Project sales price. Thus, his ratio will show a relatively slower
9 rate of decay of the price suppression effect attributable to the OGC Project
10 than would likely be the case.

11 **Q. How does Dr. Nesbitt account for new entry?**

12 A. Dr. Nesbitt has added the plants enumerated in Florida's "1999 Regional Load
13 and Resource Plan," except he excludes FPL's Sanford unit repowering and
14 efficiency gains at existing steam units at both Ft. Myers and Sanford due to
15 scheduled repowerings. He disregards announced merchant plants scheduled
16 before OGC, except the Duke New Symrna plant Dr. Sosa's testimony
17 discusses how Dr. Nesbitt structured entry over a ten year period.

18 **Q. Do you agree with Dr. Nesbitt's approach?**

19 A. No. There are a number of additional plants that will come on line in Florida
20 before 2003, while some of these are listed in Dr. Nesbitt's source files as
21 scheduled to come on line, they are not incorporated in his model. Others are

1 combustion turbines that do not require a certificate of need to be built.
2 Excluding these plants will have the effect of exaggerating the price
3 suppression effect due to the OGC Project for the reasons that I explained
4 earlier. The correct approach to modeling entry would be to add scheduled
5 new generation and to evaluate the profitability of additional candidate plants
6 through time. Plants would enter only when their likely level of cost recovery
7 would render them profitable. However, Dr. Nesbitt did not add all known
8 capacity additions or “estimate” the amount of new capacity that is
9 economically justified. Due to the limitations mentioned above, we have been
10 unable to test the results from the Altos model for sensitivity to accounting
11 properly for new entry. As a result, while we can indicate the likely direction
12 of the error, we can only speculate as to its magnitude.

13 **Q. Did Dr. Nesbitt include the OGC Project in computing his price**
14 **suppression effect?**

15 A. Oddly enough, he did not. The price suppression effect that Dr. Nesbitt
16 calculates is the result of removing 550 megawatts of capacity from the
17 existing portfolio of plants in Florida, not the result of adding the OGC
18 Project. Dr. Nesbitt did not calculate the price suppression effect of the OGC
19 Project.

1 **Q. How does the failure to include the OGC Project affect the likely level of**
2 **the price suppression effect?**

3 A. Substantially. It invalidates the entire wholesale price suppression analysis.
4 At most, Dr. Nesbitt quantifies the wholesale price suppression effect of
5 existing omitted combined cycle units, not OGC. Even if we set aside for the
6 moment, the issue of whether the Dr. Nesbitt's modeling exercise can be used
7 by the Commission to evaluate the cost-effectiveness of a plant that is not
8 even modeled and we also ignore the level of diligence and reliability
9 demonstrated by the failure to include OGC, there is a clear quantitative error.
10 If the change in price as load is added were relatively constant, the omission
11 probably would not make a large difference in computing the price
12 suppression effect. However, given that the price effect of adding generation
13 is greater for earlier plants as illustrated in Dr. Nesbitt's Exhibit 5, taking away
14 a plant has a greater effect than adding a plant. Thus this "proxy" method (if
15 that is what was intended) is both inaccurate and biased toward finding a
16 greater price suppression effect. The problems I have discussed in this
17 testimony are in addition to those identified in my original testimony in this
18 docket. Even if the price suppression had been correctly identified, it should
19 be applied only to the wholesale market, not the combined wholesale and
20 retail markets.

1 **Q. What is your overall assessment of Dr. Nesbitt's work?**

2 A. We have demonstrated that the Nesbitt analysis does not support the alleged
3 benefits of the plant. Moreover, even after extraordinary efforts in discovery,
4 it has not been possible to replicate his results or to fully understand and test
5 his assumptions. In 22 years of doing the kind of work, I have never
6 encountered a consultant so unwilling to subject his analysis to independent
7 scrutiny.

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

9 A. Yes it does.