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March 9, 2000

Ms. Blanca S. Bayó, Director  
Division of Records and Reporting  
Florida Public Service Commission  
4075 Esplanade Way, Room 110  
Tallahassee, FL 32399

Re: Docket No. 991462-EU

Dear Ms. Bayó:

Enclosed for filing please find an original and twenty (20) copies of Florida Power & Light Company's Direct Testimony of David W. Sosa and Supplemental Testimony of Samuel S. Waters and John H. Landon in the above referenced docket.

Very truly yours,

Charles A. Guyton

MMC:ml

cc: Parties of Record

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**CERTIFICATE OF SERVICE  
DOCKET NO. 991462-EU**

**I HEREBY CERTIFY** that a true and correct copy of Florida Power & Light Company's Direct Testimony of David H. Sosa and Supplemental Testimony of Samuel S. Waters and John H. Landon has been furnished by Hand Delivery\* or Federal Express this 9<sup>th</sup> day of March, 2000 to the following:

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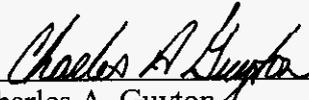
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ORIGINAL

**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.**

**Testimony of  
David W. Sosa**

DOCUMENT FILED DATE

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TESTIMONY

OF

DAVID W. SOSA

ON BEHALF OF FLORIDA POWER & LIGHT COMPANY

ANALYSIS GROUP/ECONOMICS

MARCH 9, 2000

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1 **I. INTRODUCTION & QUALIFICATIONS**

2

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

4

5 A. My name is David W. Sosa, and my business address is Two Embarcadero  
6 Center, Suite 1160, San Francisco, California, 94111.

7

8 **Q. What is your current position?**

9

10 A. I am a Senior Associate with Analysis Group/Economics, an economic  
11 consulting firm. My resume is attached to this testimony as Exhibit DWS-1.

12

13 **Q. Please outline your educational background.**

14

15 A. I earned a Ph.D. in agricultural & resource economics at the University of  
16 California, Davis.

17

18 **Q. When did you join Analysis Group/Economics?**

19

20 A. I joined Analysis Group/Economics in May of 1998.

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**Q. What experience do you have that is relevant to your testimony in this proceeding?**

A. Much of my work in the past three years has involved the application of economic principles to complex public policy and market questions in the electric utility industry. I also have developed several complex models to evaluate issues such as the effect of federal regulation on firms' production decisions, consumer response to new products, and patterns in technical standardization. I have authored several journal articles and a book chapter. My articles have appeared in leading journals such as the *Journal of Legal Studies* and the *Michigan Telecommunications and Technology Law Review*.

**II. PURPOSE OF TESTIMONY**

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

A. I have been asked by Florida Power & Light Company ("FPL" or "Company") to review calculations that the Okeechobee Generating Company ("OGC") witness Dr. Dale Nesbitt relied upon in the production of his testimony. FPL has requested that I replicate the results that Dr. Nesbitt

1 reports in his testimony, particularly his estimate of the Project's price  
2 suppression effect and his quantification of its economic benefits. I also have  
3 been asked to determine how these estimates change when assumptions about  
4 the inputs to the calculations are changed.

5  
6 **Q. What results did Dr. Nesbitt report in his testimony that you have**  
7 **attempted to reproduce?**

8  
9 A. In his testimony Dr. Nesbitt reported an estimate of the effect that the  
10 Okeechobee Generating Project ("Project") would have on wholesale, non-  
11 firm energy prices in Florida. Dr. Nesbitt labeled this a wholesale "price  
12 suppression effect". For 2003, Dr. Nesbitt reported an average, load-weighted  
13 price suppression estimate of \$0.85/MWh that he attributes to the OGC  
14 Project (p. 103). Dr. Nesbitt also reported an estimate of the economic  
15 benefits to Florida consumers. Dr. Nesbitt reported an estimate of \$764  
16 million in economic benefits for the period 2003 through 2012 that he  
17 attributed to the Project (p. 103).

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**Q. Have you been able to reproduce Dr. Nesbitt's results?**

A. No. I have been unable to reproduce Dr. Nesbitt's results. As a consequence of not being able to reproduce his results, I have not been able to test the sensitivity of the price suppression and economic benefits estimates he reports in his testimony to changes in the inputs to his calculations.

**Q. Why are you unable to reproduce Dr. Nesbitt's results?**

A. There are several steps to reproducing estimates such as those Dr. Nesbitt reports. First, I would require access to the inputs that Dr. Nesbitt relied upon. Second, Dr. Nesbitt would have to reveal the methodologies and calculations he relied upon to produce these estimates. Finally, Dr. Nesbitt would have to demonstrate the outputs of these calculations and reveal any "post-processing" that he relied upon to produce the final estimates.

Dr. Nesbitt relied upon several computer programs to estimate the price suppression effect and economic benefits he has sponsored in this proceeding. In the course of discovery, counsel for FPL asked OGC to produce all of the computer files containing the inputs and outputs to the computer programs that Dr. Nesbitt relied upon to develop these estimates.

1           However, not all inputs and outputs were produced in response to those  
2 requests.

3           Dr. Nesbitt has delayed my access to the models he relied upon  
4 through unreasonable and changing demands and guarantees. This delay has  
5 reduced significantly the window of opportunity to evaluate the model. Dr.  
6 Nesbitt and his colleague, Mr. Blaha, have repeatedly misstated or failed to  
7 disclose details about the computer models that were eventually provided.  
8 Many of these details were critical to the proper and efficient operation of the  
9 models. To the extent the time allowed for my review has been compressed,  
10 the lack of information about how to operate the models has further hampered  
11 my review.

12           The models that have been provided to me are "very unstable", as Mr.  
13 Blaha has stated to me. At present, neither Dr. Nesbitt nor Mr. Blaha have  
14 been able to replicate the results reported in Dr. Nesbitt's testimony. I have  
15 been unable either to duplicate Dr. Nesbitt's results or to test their sensitivity  
16 to changes in his input assumptions.

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**Q. In spite of being unable to replicate Dr. Nesbitt's results, have you observed any noteworthy features of his model?**

A. Yes. Although I have not been able to replicate Dr. Nesbitt's results, I have reviewed some of the inputs and outputs that he has relied upon. Dr. Nesbitt estimated a price suppression effect for 2003 and economic benefits that he attributed to entry of the OGC Project into the Florida wholesale energy market. However, none of the evidence that I have reviewed indicates that Dr. Nesbitt actually included the OGC Project in his modeling runs to calculate the price suppression effect. That is, the OGC Project was not among the generators that Dr. Nesbitt modeled to produce the price suppression effect or economic benefits that he attributed to the OGC Project.

In addition to this omission, I have observed a number of other irregularities in Dr. Nesbitt's inputs and outputs that were not reported in his testimony.

1 **III. SOME FUNDAMENTAL ASPECTS OF THE ALTOS MODELS**

2

3 **Q. Please describe some of the key points of the Altos models that were**  
4 **necessary for you to understand to duplicate and test Dr. Nesbitt's**  
5 **estimates.**

6

7 **A. Characteristics of the Altos models that were important to my understanding**  
8 **of how Dr. Nesbitt estimated wholesale price suppression and economic**  
9 **benefits include:**

- 10 • An understanding of the inputs required by the model and how Dr. Nesbitt  
11 produced them;
- 12 • An understanding of the techniques required to run the model;
- 13 • An understanding of the fundamental economic problem that the model  
14 attempts to solve; and
- 15 • An understanding of the outputs that Dr. Nesbitt's model produces and  
16 how he has manipulated ("post processed") these results.

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**Q. How did you compile this list of necessary considerations in running the Altos model?**

A. I have compiled this list based on my review of the material OGC has provided in response to discovery requests, the training seminar that Dr. Nesbitt and Mr. Blaha conducted, subsequent conversations with Dr. Nesbitt and Mr. Blaha, and my own experiences running the MarketPoint model.

**Q. Please describe the basic structure of the Altos model used in this proceeding.**

A. Dr. Nesbitt has modeled Peninsular Florida as twelve regions or nodes. He applied a Peninsular Florida load forecast to these regions. He also compiled generation resources by region. He modeled transmission capabilities, costs, and losses between regions. For each month in each year, he divided load into ten non-chronological periods or tranches ordered from highest demand to lowest demand. He assumed all generating resources in a region were available to serve that region's load, regardless of who owned the units or who had responsibility for serving that load. He assigned costs to various types of generating units and then used his models to determine which types of units

1 would dispatch to meet load, the energy that would be transferred between  
2 nodes, and the market-clearing price of energy for each demand period or  
3 tranche. He performed a separate model run for every year from 2003 through  
4 2012.

5  
6 **Q. Please describe what data inputs are required to run the Altos model for**  
7 **this proceeding.**

8  
9 A. The data inputs required by the model include:

- 10 • Forecast demand at each of the 12 nodes for each demand tranche for each  
11 month for the ten-year modeling period;
- 12 • The transfer capabilities of the transmission system linking the twelve  
13 nodes in Dr. Nesbitt's model of Peninsular Florida;
- 14 • Levels of imports and exports into and out of the State for each month for  
15 the ten-year modeling period;
- 16 • Various generating plant operating characteristics, including the cost  
17 structure associated with operation of each generating plant, forecasted  
18 fuel prices and availability; and
- 19 • Entry of new generators over the period 2000 through 2012.

1

2 **Q. What is the significance of this list of data inputs to your efforts?**

3

4 A. In the course of duplicating and testing Dr. Nesbitt's model results, these  
5 inputs should be verified. One of my tasks was to have been to determine  
6 how sensitive Dr. Nesbitt's results are to changes in key inputs.

7

8 **Q. Please describe the criteria necessary to direct the Altos model to a  
9 solution.**

10

11 A. Version 3.0 of the MarketPoint model requires that several parameters be set  
12 prior to running. These parameters are a "price relaxation coefficient", a  
13 "quantity relaxation coefficient", and the number of iterations the model will  
14 perform. The price relaxation coefficient controls the amount that prices are  
15 allowed to change between iterations. The quantity relaxation coefficient  
16 controls the amount that energy flows are allowed to change between  
17 iterations. In each iteration the model attempts to match available supply of  
18 energy with demand given the prices that generators "bid" to supply energy.

1

2 **Q. What is the fundamental economic problem that the model is attempting**  
3 **to solve?**

4

5 A. According to Dr. Nesbitt, the model attempts to balance supply and demand at  
6 each of the twelve nodes within Florida given local and remote generation  
7 within Florida, plant operating characteristics and costs, transmission capacity  
8 and transmission charges. Florida is modeled in isolation except for imports  
9 that are a data input, exports are set at zero.

10

11 **Q. How does the model reach a solution as to the appropriate balance of**  
12 **demand with supply at each node?**

13

14 A. I don't know how the model reaches a solution or what the criteria are for a  
15 solution. Dr. Nesbitt has refused to explain the algorithms that lead to his  
16 solution. I do know that in several hundred thousand iterations I have been  
17 unable to achieve a feasible solution. That is, in my attempts to replicate Dr.  
18 Nesbitt's results, I have not been able to use his model to balance supply and  
19 demand for all regions in all time periods.

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**Q. What criteria are used to achieve convergence in the Altos model?**

A. I do not know. Although we would expect convergence to mean settling on the least-cost dispatch pattern, Dr. Nesbitt and his associate Mr. Blaha have indicated in conversations with me that the model does not have any convergence criteria. That is, it will not stop unless it is told to do so.

**IV. DR. NESBITT'S MODEL COULD NOT REPRODUCE HIS RESULTS**

**Q. How many scenarios did Dr. Nesbitt rely upon in his testimony?**

A. I have determined that Dr. Nesbitt relied upon at least eleven scenarios to estimate the price suppression effect and economic benefits that he reported. The inputs and outputs he supplied suggest that Dr. Nesbitt modeled ten annual scenarios for the years 2003 through 2012 that he characterized as "with OGC". Dr. Nesbitt also modeled a scenario for 2003 that he characterized as "without OGC". In addition, computer files provided in discovery suggest that he modeled at least eight other scenarios.

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**Q. For how many of these scenarios have you been able to reproduce Dr. Nesbitt's original results?**

A. None. The eight days that I have had access to the models before filing my testimony were spent trying to replicate one scenario—Dr. Nesbitt's "with OGC" case for the year 2003. I have not been able to reproduce Dr. Nesbitt's results for this scenario nor have I had an opportunity to replicate any of the other scenarios that he relied upon.

**Q. Please describe how you attempted to replicate Dr. Nesbitt's model scenarios and outputs.**

A. Because Dr. Nesbitt used his model to estimate a price suppression effect only for the year 2003, I began my review by trying to reproduce the scenario for 2003 that is characterized as "with OGC". In the course of this effort the model has performed more than 200,000 iterations. However, I have been unable to reproduce the results that Dr. Nesbitt relied upon in his testimony. Moreover, the model has produced infeasible solutions. That is, the demand for electricity in one or more regions exceeds the supply of electricity.

1

2 **Q. Prior to your access to the models, were you trained on the MarketPoint**  
3 **and Altos NARE models?**

4

5 A. Yes. A training session was held in Tallahassee on February 21 and 22, 2000.  
6 Both Dr. Nesbitt and his partner in Altos, Mr. Blaha, were present. Dr.  
7 Nesbitt and Mr. Blaha represented that following this training we would be  
8 able to duplicate and test Dr. Nesbitt's results.

9

10 **Q. During the training session, did Dr. Nesbitt and Mr. Blaha indicate how**  
11 **long they expected it would take you to reproduce Dr. Nesbitt's results?**

12

13 A. Yes. During the training seminar Dr. Nesbitt and Mr. Blaha indicated that we  
14 could expect it to take four to six hours to reproduce Dr. Nesbitt's results for  
15 one year—that is, one run.

1

2 **Q. Did Dr. Nesbitt or Mr. Blaha make any subsequent remarks indicating**  
3 **that replication might take longer or be more difficult than initially**  
4 **represented?**

5

6 A. Yes. In conversations following the completion of the training session, Dr.  
7 Nesbitt and Mr. Blaha indicated that they had frequently set the MarketPoint  
8 model to hundreds of thousands or even millions of iterations in an attempt to  
9 solve a scenario. Given that MarketPoint 3.0 requires two hours to complete  
10 5,000 iterations, one hundred thousand iterations would require 40 continuous  
11 hours of operation to complete. One million iterations would require 400  
12 hours, more than sixteen days, to complete.

13

14 **Q. Did you have any trouble with the model other than the time required to**  
15 **complete a run?**

16

17 A. Yes. Version 3.0 of MarketPoint is "very unstable". As I mentioned earlier,  
18 the results we produced were infeasible. Furthermore, several successive  
19 attempts to run the model produced very different results.

20

21 I had several telephone conversations with Mr. Blaha on Friday March  
3, 2000 to discuss whether he should come to California on Monday March 6,

1 2000 to try to help us reproduce Dr. Nesbitt's results. In the course of these  
2 conversations Mr. Blaha acknowledged the instability of MarketPoint 3.0. He  
3 characterized running the model as an "art" and told me that "I am the only  
4 one who can get [MarketPoint] 3.0 to converge".

5  
6 **Q. How closely did you work with Mr. Blaha as you tried to reproduce Dr.**  
7 **Nesbitt's results?**

8  
9 A. I worked very closely with Mr. Blaha. I spoke to Mr. Blaha almost every day  
10 between February 28, 2000 and March 7, 2000 about model-related issues.  
11 Some days I spoke to Mr. Blaha several times. On Monday March 6, 2000  
12 and Tuesday March 7, 2000 Mr. Blaha was in the PG&E Generating office to  
13 answer questions and make suggestions about how to run the model to  
14 replicate Dr. Nesbitt's results.

15  
16 **V. DR. NESBITT DID NOT INCLUDE THE OGC PLANT IN HIS SCENARIOS**

17  
18 **Q. How did Dr. Nesbitt characterize the scenarios that he modeled?**

19  
20 A. Dr. Nesbitt relied upon two scenarios for the year 2003 to estimate a  
21 wholesale price suppression effect. One he characterized as including the

1 OGC Project (“with OGC”), and the other he characterized as without the  
2 OGC Project (“without OGC”). Dr. Nesbitt also relied upon nine annual  
3 scenarios for 2004 through 2012 “with OGC”.

4  
5 **Q. Did the “with OGC” scenarios include the OGC Project?**

6  
7 A. No. They do not include the OGC project.

8  
9 **Q. Does the “without OGC” scenario include the OGC plant?**

10  
11 A. No. Rather than removing the OGC Project, the “without OGC” scenario  
12 represents a withdrawal of 550 MW of existing, utility-owned combined cycle  
13 capacity from the FPLE region. The 550 MW that Dr. Nesbitt removed in this  
14 scenario represents a portion of the combined cycle capacity that is currently  
15 operating in the counties of Orange, Indian River, Martin, Palm Beach, and St.  
16 Lucie.

1

2 **Q. How would you characterize Dr. Nesbitt's estimate of a change in**  
3 **wholesale price?**

4

5 A. The event that Dr. Nesbitt actually models is the withdrawal of 550 MW of  
6 existing combined cycle capacity from the FPLE regions. This would be  
7 roughly equivalent to the withdrawal of one of the FPL Martin CC units from  
8 the set of available generators. Thus, Dr. Nesbitt's reported price suppression  
9 effect and economic benefits represent an attempt to estimate the withdrawal  
10 of 550 MW of existing combined cycle capacity from the Florida market, not  
11 a reduction in wholesale price attributable to the entry of the OGC Project.  
12 Dr. Nesbitt has not performed an analysis of the effect the OGC Project would  
13 have on wholesale energy prices in Florida.

14

15 **Q. Do you agree with Dr. Nesbitt's characterization of the price suppression**  
16 **effect that he reports in his testimony?**

17

18 A. No. Dr. Nesbitt characterizes his price suppression effect in the following  
19 manner.

20 The first run ['with OGC'] has the Project in the market, and the  
21 second run ['without OGC'] has the Project not in the market. The

1 difference, obviously, represents the downward price impact  
2 Okeechobee will have on its own local node (FPL East), in Florida in  
3 general, and in fact through the entire Southeast. (pp. 102-103)

4 A careful review of Dr. Nesbitt's modeling efforts demonstrates that  
5 the bold statement that Dr. Nesbitt makes regarding his price suppression  
6 effect is unsubstantiated. The estimate he reports in his testimony is not based  
7 on a model that includes a representation of the OGC Project. The event that  
8 Dr. Nesbitt has captured in his model is very different from the entry of the  
9 Okeechobee Project.

10  
11 **VI. OGC DID NOT PRODUCE ALL OF THE INPUTS AND OUTPUTS THAT DR.**  
12 **NESBITT RELIED UPON**

13  
14 **Q. How did Dr. Nesbitt construct his estimate of consumer benefits arising**  
15 **from the OGC Project?**

16  
17 **A.** Dr. Nesbitt utilized or relied upon at least five computer models. These are  
18 the North American Regional Electricity model (NARE), the GE Maps model,  
19 the North American Regional Gas model (NARG), GEMS, and version 3.0 of  
20 the MarketPoint model.

1

2 **Q. Have you reviewed these models?**

3

4 A. I have reviewed MarketPoint 3.0 and the North American Regional Electricity  
5 Model. The GE Maps and GEMS models were not supplied to intervenors  
6 and I have therefore not reviewed them. I have reviewed the natural gas price  
7 series produced by the NARG model, but I have not reviewed the NARG  
8 model itself.

9

10 **Q. Please indicate what actions you have taken to review these models.**

11

12 A. During the discovery phase of this proceeding, counsel for FPL asked OGC to  
13 produce all input and output files that Dr. Nesbitt relied up on to estimate a  
14 change in the wholesale price of energy attributable to the OGC Project. In  
15 October 1999 I received from counsel for FPL several computer files that  
16 constituted OGC's response this request. I reviewed these files. I also attended  
17 an OGC-sponsored training seminar for Commission Staff and intervenors in  
18 the determination of need proceeding at the FPSC on February 21 and 22,  
19 2000.

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**Q. Were the files supplied by Dr. Nesbitt in his October 1999 discovery response complete?**

A. No. During the training seminar it became apparent that Dr. Nesbitt had not produced all of the input and output files that he relied upon to estimate a price suppression effect and consumer benefits. A list of Microsoft Excel files that Dr Nesbitt failed to produce in his discovery response include:

1. ElModDefn.xls
2. outdata.xls
3. HydrAlloc.xls
4. Ldcdata.xls
5. Loadfcst.xls
6. MPElecMod.xls
7. FRCCBD.xls
8. opsummary.xls
9. opsummary1.xls
10. plntfull.xls

These files contain information that is critical to an independent review of Dr. Nesbitt's price suppression estimate, such as unit-level data for the generators in Peninsular Florida market, data regarding Dr. Nesbitt's

1 assumptions about imports across the Florida Georgia border during the  
2 period 2003-2012, transmission system data, and the calculations that Dr.  
3 Nesbitt performed to estimate the consumer benefits that he attributed to the  
4 OGC Project. Dr. Nesbitt also failed to include several MarketPoint files that  
5 are crucial to understanding how he estimated a price suppression effect.

6 It also became apparent during the course of the training seminar that,  
7 in addition to the aforementioned files, Dr. Nesbitt had also failed to provide  
8 information regarding certain transmission and import assumptions that he  
9 relied upon. Specifically, during the training Dr. Nesbitt revealed that the  
10 transmission capacities in his model were derived from the output of a  
11 previous modeling effort using a program called GE Maps. The import flows  
12 that Dr. Nesbitt relied upon in his estimation were produced by another  
13 modeling effort related to the Duke-New Smyrna Beach proceeding. Dr.  
14 Nesbitt did not supply any inputs or outputs associated with these modeling  
15 efforts. Dr. Nesbitt did not provide any information about how the  
16 transmission capabilities and the energy import flows he relied upon were  
17 developed, what assumptions were relied upon, or how the results of these  
18 other undisclosed modeling efforts comport with the actual transmission  
19 network and actual energy import patterns.

1

2 **Q. Were the Microsoft Excel files you have listed provided at a later time?**

3

4 A. Yes. At the request of the intervenors, nine of the ten files I have mentioned  
5 were provided during the training session in February. An agreed upon edited  
6 version of the plntfull.xls file was made available during our review of the  
7 models.

8

9 **Q. Has Dr. Nesbitt's failure to supply this information in a timely manner**  
10 **affected your ability to evaluate the price suppression and consumer**  
11 **benefits estimates he has presented in his model?**

12

13 A. My independent review of Dr. Nesbitt's estimation of a price suppression  
14 effect has been severely restricted because I have not had timely access to  
15 many critical inputs, assumptions, and methodologies that he relied upon.

16

1 **VII. DR. NESBITT AND OGC UNNECESSARILY DELAYED ACCESS TO THE MODEL**  
2 **BY REQUIRING ONEROUS PERSONAL AND CORPORATE GUARANTIES**

3  
4 **Q. You mentioned earlier that Dr. Nesbitt's requirements for guaranties**  
5 **delayed your access to the model. Please explain.**

6  
7 A. Immediately following the training seminar at the Commission, the  
8 intervenors were to have access to the MarketPoint and NARE models at the  
9 FPSC and in a secure room at PG&E Generating Company's office in San  
10 Francisco. However, Dr. Nesbitt and OGC delayed the intervenors' access to  
11 the models by insisting upon signed personal and corporate guaranties. Dr.  
12 Nesbitt initially required that the intervenors' consultants wishing to access  
13 the models provide him with personal information such as a home address,  
14 drivers license number, and social security number. Dr. Nesbitt required that  
15 the intervenors' consultants sign a seven page personal guaranty and that their  
16 employer sign a four page corporate guaranty.

17 Dr. Nesbitt or OGC initially presented draft versions of the personal  
18 guaranties to intervenors on Tuesday February 21, 2000 and negotiations on  
19 the content of the guaranties continued through Friday February 25, 2000. I  
20 signed a personal agreement on Friday February 25, 2000 and was first able to  
21 access the models on Monday February 28, 2000, the day after Dr. Nesbitt

1 signed the guaranties. The delay associated with the guaranty language  
2 insisted upon by Dr. Nesbitt totaled three business days. I was prepared to  
3 begin my review of Dr. Nesbitt's models on Wednesday February 23, 2000.

4  
5 **Q. Is it your understanding that these guaranties were necessary to protect**  
6 **Dr. Nesbitt's commercial interests in his model?**

7  
8 A. No. I understand from an attorney representing AG/E that Dr. Nesbitt could  
9 have secured the same protections by requiring intervenors to sign a standard  
10 copyright agreement.

11  
12 **VIII. THE VERSION OF MARKETPOINT USED IN THE TRAINING SEMINAR WAS NOT**  
13 **THE SAME VERSION PRODUCED IN CALIFORNIA**

14  
15 **Q. Once you received access to the Altos model, were you able to proceed to**  
16 **attempt to replicate Dr. Nesbitt's results?**

17  
18 A. No. Dr. Nesbitt and his colleague, Mr. Blaha, conducted a training seminar  
19 the purpose of which was for Staff and intervenors to learn how to run  
20 MarketPoint 3.0. However, the version of MarketPoint used in the training  
21 differed from the version of MarketPoint installed on the computer at the

1 PG&E Generating office in San Francisco. Subsequent discussions with Dr.  
2 Nesbitt's colleague, Mr. Blaha, revealed that whereas MarketPoint 3.0 was  
3 installed on the computer in San Francisco, either MarketPoint 4.0 or  
4 MarketPoint 5.0 had been used in the training seminar in Florida. Mr. Blaha  
5 was uncertain which version had been used in the training seminar.

6 Although Dr. Nesbitt and his colleague, Mr. Blaha, used versions of  
7 MarketPoint other than 3.0 at the training seminar for demonstration and  
8 training, the purpose of the seminar was to train Staff and intervenors to be  
9 able to use MarketPoint 3.0, the version of MarketPoint that Dr. Nesbitt relied  
10 upon to prepare his testimony. The fact that the training seminar was  
11 conducted with a version of the MarketPoint model different from the one  
12 made available to intervenors has impaired my ability to replicate Dr.  
13 Nesbitt's results. This is because there are several important differences  
14 between the model versions. For example, the model version used in the  
15 training seminar requires the user to specify two variables that govern the  
16 model's convergence process, a "price relaxation coefficient" and the number  
17 of iterations required. MarketPoint 3.0 requires the user to specify, in addition  
18 to the two aforementioned variables, a third variable governing convergence.  
19 This is called the "quantity relaxation coefficient". When Dr. Nesbitt arrived  
20 at the office of PG&E Generating on Monday February 28, 2000 to deliver a  
21 manual for MarketPoint, his instruction regarding the quantity relaxation

1 coefficient was to "set it to zero or one". I was unable to resolve the correct  
2 value for this input until Wednesday, when Mr. Blaha informed me that the  
3 correct value is one. He informed me that the model would not run properly  
4 with any other value.

5  
6 **IX. THE MARKETPOINT MANUAL PROVIDED DOES NOT MATCH THE SOFTWARE**  
7 **PROVIDED**

8  
9 **Q. Did the manual that you received from Dr. Nesbitt help to resolve the**  
10 **outstanding issues in running the Altos model?**

11  
12 **A.** No. The MarketPoint manual that Dr. Nesbitt provided at the PG&E  
13 Generating office in San Francisco does not correspond to the version of  
14 MarketPoint that is installed on the computer at the PG&E Generating office  
15 or to the version of MarketPoint used at the training seminar in Florida. For  
16 example, the manual provided at the San Francisco office has no discussion of  
17 a quantity relaxation coefficient.

18

1 X. DR. NESBITT AND MR. BLAHA MISSTATED THE TIME REQUIRED TO  
2 REPLICATE DR. NESBITT'S RESULTS

3  
4 Q. How long does it take to run the Altos model?

5  
6 A. During the training session Dr. Nesbitt and Mr. Blaha indicated that the  
7 version of MarketPoint provided to intervenors would take four to six hours to  
8 replicate Dr. Nesbitt's results for one year. However, my experience has been  
9 that computer run time, following Dr. Nesbitt's and Mr. Blaha's instructions  
10 precisely, is much longer than what was represented in the training session.

11 During the training seminar, Mr. Blaha suggested that if we ran the  
12 model for 15,000 to 30,000 iterations, we would reproduce Dr. Nesbitt's  
13 results. However, my experience has been that the version of the model that  
14 was provided will not reproduce Dr. Nesbitt's results in several hundred  
15 thousand iterations. I have determined that version 3.0 of MarketPoint  
16 running on the computer provided to us at the PG&E Generating office  
17 requires approximately between one and one half hours and two hours to  
18 complete 5,000 iterations. Thus, 100,000 iterations may take up to twenty  
19 hours to complete. After 100,000 iterations, I was unable to reproduce Dr.  
20 Nesbitt's results for one year—the 2003 with OGC scenario.

1           Because access to the model at the PG&E Generating office was  
2 limited to normal business hours—Monday to Friday, 9 AM to 5 PM—I was  
3 limited to running one scenario per day at most. Given that I did not have  
4 access to the model until Monday February 28, 2000 and supplemental  
5 testimony regarding Dr. Nesbitt's testimony must be filed by Thursday March  
6 9, 2000, the maximum number of model scenarios I could have completed  
7 would have been nine, under the best of circumstances. My actual experience,  
8 as a consequence of the problems that I have encountered, is that I have not  
9 been able to replicate one of Dr. Nesbitt's model scenarios. Dr. Nesbitt relied  
10 upon at least twelve model runs in his testimony. Two scenarios were  
11 required to estimate a price suppression effect and an additional ten scenarios  
12 were required to estimate economic benefits over the period 2003 through  
13 20013. In addition, documents provided in discovery include the results of  
14 nine additional model scenarios, suggesting that Dr. Nesbitt may have relied  
15 upon as many as nineteen model runs. Given the amount of time allowed for  
16 review and the facilities and conditions under which this review took place,  
17 testing the sensitivity of Dr. Nesbitt's results to changes in assumptions  
18 regarding the inputs, which is a critical component of an independent review,  
19 was not possible with MarketPoint 3.0.

1

2 **Q. Have you had sufficient time to reproduce and test Dr. Nesbitt's**  
3 **estimates?**

4

5 A. No. My access to the model has been limited to normal business hours. Thus,  
6 I have had only eight days to examine the model and run scenarios. Mr. Blaha  
7 indicated to me on Monday March 6, 2000 that he and Dr. Nesbitt had been  
8 limited to running their scenarios for ten to fourteen hours to produce Dr.  
9 Nesbitt's estimates. Thus, the minimum amount of time required to reproduce  
10 Dr. Nesbitt's results, given restricted access to the model, would be one day  
11 for each scenario or twelve days, assuming that model runs could be  
12 completed in ten to fourteen hours rather than the eight business days  
13 experienced so far. Running sensitivity tests on Dr. Nesbitt's results would  
14 increase the amount of time required to over three weeks.

15

16 **Q. Were you at any time offered a more recent version of MarketPoint than**  
17 **MarketPoint 3.0?**

18

19 A. At the time of the training seminar, Dr. Nesbitt indicated that the most current  
20 version of his model was MarketPoint 6.0. However, Dr. Nesbitt had relied  
21 upon version 3.0 in his testimony. Furthermore, Dr. Nesbitt indicated that

1 version 6.0 would not be able to reproduce his results. Because my task was  
2 to independently verify Dr. Nesbitt's estimates using the same inputs and  
3 techniques he relied upon, it was agreed that we would attempt to reproduce  
4 and test his results using version 3.0.

5 On Friday March 3, 2000 we were offered access to version 6.0 of  
6 MarketPoint. On Monday March 6, 2000 we were told that there was a "bug"  
7 in version 6.0 and that Altos would make version 7.0 available to us if (1) we  
8 would attest that version 3.0 was in the process of converging to the results  
9 Dr. Nesbitt reported in his testimony, (2) we would be trained on version 7.0,  
10 and (3) we signed new guaranty agreements.

11  
12 **Q. Did you agree to those terms?**

13  
14 **A.** No. I could not attest that version 3.0, running the 2003 "with OGC"  
15 scenario, was converging to Dr. Nesbitt's results. I agree with Mr. Blaha's  
16 characterization that MarketPoint 3.0 is a "very unstable model". Mr. Blaha  
17 made himself available at the PG&E Generating office on March 6 and 7,  
18 2000 in an attempt to expedite our efforts to reproduce Dr. Nesbitt's results.  
19 With Mr. Blaha's guidance we ran the model for more than 50,000 iterations  
20 between March 6 and 7, 2000. However, we were no closer to reproducing

1 Dr. Nesbitt's results on Tuesday March 7, 2000, and in many ways farther  
2 from his results, than we had been on Monday March 6, 2000.

3  
4 **Q. Would it have been appropriate to duplicate and test Dr. Nesbitt's price  
5 estimates using version 7.0 of MarketPoint?**

6  
7 A. No. Dr. Nesbitt and Mr. Blaha indicated that version 6.0 and version 7.0 of  
8 MarketPoint differ substantially from version 3.0 of MarketPoint. They have  
9 indicated that among other differences, versions 6.0 and 7.0 rely on a  
10 completely different methodology to match energy supply with energy  
11 demand than the methodology version 3.0 relies upon. Dr. Nesbitt and Mr.  
12 Blaha have repeatedly indicated that one consequence of the different  
13 modeling approaches between versions is that versions 6.0 and 7.0 are not  
14 capable of reproducing the price suppression and economic benefit estimates  
15 that Dr. Nesbitt produced with version 3.0.

16 Because Dr. Nesbitt and Mr. Blaha have insisted that versions 6.0 and  
17 7.0 of MarketPoint cannot reproduce the estimates Dr. Nesbitt reports in his  
18 testimony, it would not be appropriate to use these models in an effort to  
19 duplicate or test his estimates. MarketPoint 7.0 would not provide us with any  
20 useful information about Dr. Nesbitt's price suppression and consumer benefit  
21 estimates.

1

2

3 **XI. THE OFFICE IN SAN FRANCISCO AT WHICH MARKETPOINT HAS BEEN MADE**  
4 **AVAILABLE IS NOT SECURE**

5

6 **Q. In addition to the problems you have already discussed, is there any other**  
7 **difficulty that impeded your ability to replicate and test Dr. Nesbitt's**  
8 **results?**

9

10 A. Yes. One other difficulty has been security. The terms under which  
11 intervenors were granted access to the Altos model provided that the computer  
12 on which the software was installed be located in a secure room. The room at  
13 the office of PG&E Generating in San Francisco is not secure. At some point  
14 between Monday afternoon (February 28, 2000) and Tuesday morning  
15 (February 29, 2000), during which period the model should have been running  
16 to replicate Dr. Nesbitt's results, someone unplugged the computer. Because  
17 the room was not secure, my efforts to replicate Dr. Nesbitt's results were  
18 delayed by a day.

19

1 **XII. ENTRY OF NEW GENERATORS**

2

3 **Q. Do Dr. Nesbitt's scenarios account for entry of new generators?**

4

5 A. Yes. Based on my review of Dr. Nesbitt's input files, it appears that he has  
6 made the following assumptions regarding new capacity located in Peninsular  
7 Florida:

8 • Approximately 4,000 MW of new capacity added between 2000 and 2003  
9 for which the data source is not identified;

10 • Approximately 3,300 MW of new capacity added between 2004 and 2008  
11 for which the data source is identified as the "1999 Regional Load &  
12 Resource Plan"; and

13 • Approximately 5,200 MW of new capacity added between 2004 and 2012  
14 for which the source is identified as "Additional Units Determined by  
15 Altos".

16

17 **Q. What criteria does Dr. Nesbitt use to determine how much new entry will**  
18 **occur and when?**

19

20 A. It is unclear whether Dr. Nesbitt used any systematic rule to determine when  
21 entry should occur and how much. Although Mr. Blaha indicated in the

1 course of the training seminar that entry patterns had been developed with the  
2 objective of reducing the profitability of the OGC plant over the period of  
3 analysis, he did not indicate what measure of profitability he relied upon or  
4 how the Project's profitability was affected over time as a result of the  
5 assumed entry pattern or alternative plausible entry patterns. Furthermore,  
6 Mr. Blaha has indicated that the profitability of entrants has not been  
7 examined.

8  
9 **Q. Did Dr. Nesbitt exclude any resources from his model that we may**  
10 **reasonably expect to enter the Florida market?**

11  
12 **A.** Yes. Dr. Nesbitt did not include the additional capacity that will be available  
13 after the FPL Sanford units 3 and 4 are repowered. This incremental capacity  
14 of approximately 1000 MW is reflected in FPL's ten-year site plan and the  
15 FRCC "1999 Regional Load & Resource Plan". In addition, Dr. Nesbitt's  
16 workpapers indicate that he was aware of a large (approximately 850 MW)  
17 merchant plant that is scheduled to be in service before 2003. Dr. Nesbitt  
18 excluded this plant from his analysis without explanation.

19

1 **XIII. DR. NESBITT'S "POST-PROCESSING" CALCULATIONS INCLUDE ERRORS AND**  
2 **IRREGULARITIES**

3  
4 **Q. Do you have any other concerns as a result of your review of Dr. Nesbitt's**  
5 **calculations?**

6  
7 A. Yes. I have detected an irregularity in the way Dr. Nesbitt calculates price  
8 suppression that leads him to overstate this effect. Generally, the price  
9 suppression effect is calculated based on the difference between energy prices  
10 estimated in the 2003 "with OGC" scenario and energy prices estimated in the  
11 2003 "without OGC" scenario. However, for the peak period ("P1") in  
12 August 2003, Dr. Nesbitt does not rely on the price estimated by his model  
13 under the "without OGC" scenario. Rather than rely on his model output for  
14 the August 2003 peak period, Dr. Nesbitt substitutes a figure that he has  
15 calculated independent of his model. For the August 2003 peak period, the  
16 table below outlines the difference between the lower prices that his model  
17 output reports and the higher prices that he used.

18

Zone	Model determined price	August peak period (P1) prices	
		Dr. Nesbitt's "substitute" price	Percent increase relative to model output
MNT	\$ 76.62	\$ 132.20	73%
FPLN	\$ 73.34	\$ 131.00	79%
OCA	\$ 76.62	\$ 135.93	77%
DEL	\$ 79.06	\$ 140.22	77%
OUC	\$ 56.48	\$ 61.56	9%
STP	\$ 79.04	\$ 140.14	77%
TEC	\$ 75.64	\$ 134.94	78%
LKW	\$ 53.80	\$ 58.73	9%
FPLW	\$ 78.99	\$ 130.53	65%
FPLP	\$ 75.61	\$ 127.07	68%
FPLE	\$ 76.57	\$ 123.27	61%
FPLS	\$ 78.96	\$ 127.11	61%

1

2

3 **Q. Have you determined how this affects his calculation of a price**  
 4 **suppression effect?**

5

6 **A.** Yes. By using higher prices during the August peak, Dr. Nesbitt has increased  
 7 his price suppression effect by approximately 7.38 cents/MWh relative to the  
 8 effect estimated by his model. Increasing the price suppression effect by 7.38  
 9 cents/MWh results in an overstatement of the total economic benefits estimate  
 10 by nine percent or \$66.5 million. Dr. Nesbitt has not explained his rationale  
 11 for using higher prices during the August peak than his model reports to  
 12 calculate a price suppression effect.

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19

**Q. Do you have any other concerns about Dr. Nesbitt’s “post processing” adjustments?**

A. Yes. There is a calculation error in Dr. Nesbitt’s estimation of the economic benefits that he attributes to the OGC Project. This error leads him to overstate total economic benefits by \$22.2 million.

Dr. Nesbitt does not estimate a price suppression effect for the years 2003 through 2012. Rather, he extrapolates the estimate for 2003 based on the relative change in a variable titled the “Average Sales Price”. Based on Mr. Blaha’s description during the training seminar, this variable appears to be Dr. Nesbitt’s estimate of the average price the OGC plant would receive for its output over a one-year period.

Based on Mr. Blaha’s description of the calculation, Dr. Nesbitt should have used an average sales price of \$30/MWh for 2003. This is the value reported by his post-processing model. Instead of \$30/MWh, Dr. Nesbitt inserts a value of \$29/MWh for the purpose of extrapolating the price suppression effect. This has the consequence of overstating his total economic benefits by three percent or \$22.2 million.

1

2 **Q. Does Dr. Nesbitt provide an explanation of these irregularities in his**  
3 **direct testimony?**

4

5 A. No.

6

7

8 **Q. Have you discussed all of your concerns with Dr. Nesbitt's estimates of**  
9 **wholesale price suppression and economic benefits associated with the**  
10 **OGC Project?**

11

12 A. No. Because of the compressed time frame of my review and the difficulties I  
13 have encountered in attempting to replicate Dr. Nesbitt's results, I have not  
14 had an opportunity to discuss all of the concerns that I have with respect to Dr.  
15 Nesbitt's estimates.

16

17 **XIV. CONCLUSIONS**

18

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

20

21 A. My conclusions are as follows:

- 1           1. Dr. Nesbitt did not calculate a price suppression effect or economic  
2           benefits attributable to the OGC Project. He did not include the OGC  
3           plant in any of the scenarios that he relied upon to estimate price  
4           suppression and economic benefits;
- 5           2. The price suppression and economic benefits that Dr. Nesbitt reports are  
6           related to changes in existing utility capacity, not the OGC Project ;
- 7           3. Version 3.0 of MarketPoint is difficult to run and unstable. Although we  
8           worked closely with Dr. Nesbitt and Mr. Blaha, the model could not be  
9           used to replicate Dr. Nesbitt's results in seven business days; and
- 10          4. There are several errors and irregularities in Dr. Nesbitt's calculations that  
11          are unexplained and may bias his estimates of price suppression and  
12          economic benefits, independent of the fact that the OGC Project was  
13          excluded from the analysis.

14  
15  
16  
17  
18

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

**A. Yes it does.**

## EXHIBITS

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David Sosa specializes in the economics of network industries, law and economics, and industrial organization. He has consulted to telecommunications and electric utility clients on a broad range of litigation and regulatory issues including industry restructuring, technical standardization, operational and financial benchmarking, mergers and acquisitions, market power analysis, and competitive strategy. He also has managed large commercial and employment litigation projects. Dr. Sosa has written on the economic analysis of public policy in the telecommunications and high-technology sectors. His articles have appeared in leading journals such as the *Journal of Legal Studies* and the *Michigan Telecommunications and Technology Law Review*.

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### EDUCATION

UNIVERSITY OF CALIFORNIA, DAVIS  
Ph.D., Agricultural & Resource Economics, 1999

UNIVERSITY OF CALIFORNIA, DAVIS  
M.S., Agricultural & Resource Economics, 1994

UNIVERSITÉ DE GRENOBLE, FRANCE  
DEUG, Economics, 1992

BUCKNELL UNIVERSITY  
B.S., 1987

### PROFESSIONAL EXPERIENCE

- 1997-present SENIOR ASSOCIATE – ANALYSIS GROUP/ECONOMICS, SAN FRANCISCO  
Provide complex economic and statistical analysis in a variety of business, litigation, and regulatory matters.
- 1997 ANALYST – DEMAND ANALYSIS OFFICE, CALIFORNIA ENERGY COMMISSION  
Responsible for analysis of 1993 Commercial Energy Use Survey.
- 1994 CURRICULUM EVALUATOR – BELLCORE TRAINING & EDUCATION CENTER, LISLE, IL  
Evaluated telecom training classes for marketability to academic and business audiences.
- 1992-1997 RESEARCHER & INSTRUCTOR – UNIVERSITY OF CALIFORNIA, DAVIS

## AWARDS

Henry A. Jastro Graduate Fellowship (1993)

## PUBLICATIONS AND MONOGRAPHS

“Economic Foreclosure Theories and Raising Rivals’ Costs,” in Antitrust and Telecommunications Practice Guide (Chicago: American Bar Association, forthcoming).

“Revisiting the AM Stereo Proceeding: The Wisdom of the ‘Marketplace’ Decision,” in Telephony, the Internet, and the Media: Selected Papers from the 1997 Telecom Policy Research Conference (New Jersey: Lawrence Erlbaum Associates, 1998).

“‘Chilling’ the Internet? Lessons from FCC Regulation of Radio Broadcasting,” (with Thomas W. Hazlett), *Michigan Telecommunications & Technology Law Review*, vol. 4 (September 25, 1997) <<http://www.law.umich.edu/mttl/volfour/Hazlettfr.html>>.

“‘Chilling’ the Internet? Lessons from FCC Regulation of Radio Broadcasting,” (with Thomas W. Hazlett), reprinted from *Michigan Telecommunications & Technology Law Review*, in *Policy Analysis*, (Cato Institute) March 19, 1997 <<http://www.cato.org/pubs/pas/pa-270es.html>>.

“Was the Fairness Doctrine a ‘Chilling Effect’? Evidence from the Postderegulation Radio Market,” (with Thomas W. Hazlett) *Journal of Legal Studies*, vol. 24 (January 1997) pp. 307-329.

## PRESENTED PAPERS

“Revisiting the AM Stereo Proceeding: The Wisdom of the ‘Marketplace’ Decision,” Presented at the 25<sup>th</sup> Annual Telecommunications Policy Research Conference, Alexandria, Virginia, September 1997.

“Consumer Demand and Technical Standards Setting: The Case of AM Stereo,” Presented at the Berkeley Symposium on Policy and Strategy for Converging Information Industries, Haas School of Business, University of California at Berkeley, June 1997.

“The Impact of Radio Deregulation on Format Diversity and Informational Programming,” (with Thomas W. Hazlett), Presented at the Southern Economic Association Meetings, November 1995.

## PROFESSIONAL ASSOCIATIONS

American Economic Association

Federal Communications Bar Association

## SELECTED CASEWORK

### ELECTRIC UTILITIES

*Electric industry restructuring:* Drafted expert witness testimony and consulted to clients on a variety of restructuring matters including market design, stranded cost recovery, affiliate relations, appropriate pricing of revenue cycle services.

*Strategy:* Consulted to clients on a variety of matters including identifying strategic bidding behavior in the California market for ancillary services, identifying core competencies, and developing entry strategies for deregulated retail markets.

*Antitrust:* Evaluated damages claims in a case alleging exclusionary practices and discriminatory access to transmission networks.

### TELECOMMUNICATIONS

*Mergers:* Benchmarked expense saving and merger cost estimates for the merger between GTE and Bell Atlantic.

*Antitrust:* Reviewed pricing strategies in market for digital loop carrier equipment. Evaluated claims of predatory pricing.

### BUSINESS LITIGATION

*Commercial litigation (air cargo):* Evaluated plaintiff's lost profits analysis in a breach of contract case.

*Commercial litigation (telecommunications equipment):* Evaluated plaintiff's allegation of predatory pricing in market for digital loop carrier equipment.

*Commercial litigation (electric utilities):* Evaluated plaintiff's claims and estimated damages in case alleging discriminatory access to transmission networks.