

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In Re: Joint petition for determination of need for an electrical power plant in Volusia County by the Utilities Commission, City of New Smyrna Beach, Florida, and Duke Energy New Smyrna Beach Power Company Ltd., L.L.P.

) DOCKET NO.
) 981042-EM
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VOLUME 5
Pages 683 through 755

PROCEEDINGS: HEARING

BEFORE: CHAIRMAN JULIA L. JOHNSON
COMMISSIONER J. TERRY DEASON
COMMISSIONER SUSAN F. CLARK
COMMISSIONER JOE GARCIA
COMMISSIONER E. LEON JACOBS

DATE: Wednesday, December 3, 1998

TIME: Commenced at 9:30 a.m.

PLACE: Betty Easley Conference Center
Room 148
4075 Esplanade Way
Tallahassee, Florida

REPORTED BY: NANCY S. METZKE, RPR, CCR

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(APPEARANCES AS HERETOFORE NOTED)

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1 P R O C E E D I N G S

2 (Transcript Continues in Sequence from Volume 4)

3 Whereupon,

4 DALE M. NESBITT

5 was called as a witness by the Joint Petitioners and, after
6 being first duly sworn, testified as follows:

7
8 DIRECT EXAMINATION

9 BY MR. MCGLOTHLIN:

10 Q Please state your name and business address, sir.

11 A My name is Dale M. Nesbitt. My business address
12 is Altos Management Partners, 1250 Aviation Avenue, Suite
13 200-C, San Jose, with a J, California, 95110.

14 Q By whom are you employed?

15 A I'm employed with Altos -- by Altos Management
16 Partners.

17 Q And for whom do you appear in this proceeding?

18 A I appear for the Utilities Commission of New
19 Smyrna Beach and the Duke New Smyrna Beach L.L.P.

20 Q Doctor Nesbitt, did you prepare and submit
21 prefiled direct testimony in this proceeding?

22 A I did.

23 Q Do you have it before you, sir?

24 A I do.

25 Q Do you have any changes, corrections or additions

1 to the prefiled testimony?

2 A Yes, I do have several changes to the prefiled
3 testimony.

4 Q Would you identify those, please?

5 A Yes. The first such change occurs on Page 13,
6 Line 25. Note six thousand megawatts, that six thousand
7 should be 54 hundred megawatts, five thousand four
8 hundred.

9 And on Page 14, line 5, the same six thousand
10 megawatt number should read five thousand four hundred
11 megawatts.

12 Q With those changes, sir, do you adopt the
13 prefiled testimony as your testimony given today?

14 A Excuse me. No, I have a couple more changes,
15 please.

16 On Page 39, Line 3, the number 69 should be
17 replaced by the number 83. And on line 4, same page, Page
18 39, the number 92 should be replaced by the number 94. And
19 I have a third change in the exhibit DMN-15.

20 Q We'll get to those separately, Doctor Nesbitt.
21 With respect to the prefiled direct testimony, do you have
22 any other changes?

23 A No, that concludes the changes.

24 Q As corrected or modified, do you accept the --
25 adopt the prefiled direct testimony as your testimony here

1 today?

2 A I do.

3 Q Now did you also prepare or supervise the
4 preparation of exhibits identified as DMN-1 through 16?

5 A Yes, I did.

6 MR. McGLOTHLIN: I ask that an exhibit number be
7 assigned to the exhibits attached to the prefiled
8 testimony.

9 CHAIRMAN JOHNSON: 19. And what's the short
10 title?

11 MR. McGLOTHLIN: It's composite exhibits of
12 Doctor Dale Nesbitt's direct testimony.

13 CHAIRMAN JOHNSON: Okay.

14 MR. GUYTON: Madam Chairman, I have only 17.
15 Have I missed an exhibit here?

16 CHAIRMAN JOHNSON: I think that's the one that
17 might have been the question. I marked as 18 -- is
18 Mr. Wright here? -- in Mr. Green's testimony the Figures 1
19 and 2 in the exhibits filed from August 19th, 1998, as well
20 as Sections 2.A, 2.3, 2.D that he identified in his
21 particular testimony. I thought that Scheff wanted those
22 identified separately.

23 MR. WRIGHT: Madam Chairman, that is my confusion
24 for which I apologize that I have created. I meant to
25 identify them as part of what had already identified as 16.

1 CHAIRMAN JOHNSON: So you wanted all that to come
2 in in 16?

3 MR. WRIGHT: Yes, ma'am.

4 CHAIRMAN JOHNSON: The whole filing?

5 MR. WRIGHT: Yes, ma'am, so it can stay together.

6 CHAIRMAN JOHNSON: Okay. I thought --

7 MR. WRIGHT: And I apologize for the confusion.

8 I was actually in my car to see if we had an extra
9 unwritten on copy that I could provide right now.

10 CHAIRMAN JOHNSON: Okay.

11 MR. WRIGHT: Everybody has had it. We filed it
12 on August 19th.

13 CHAIRMAN JOHNSON: Sure. Okay. So --

14 MR. WRIGHT: So?

15 CHAIRMAN JOHNSON: That's fine. I'll treat that
16 then as -- So you didn't need to identify it again; it
17 had already been admitted?

18 MR. WRIGHT: It has been identified as Exhibit 16
19 with respect to those parts thereof that Mr. Vaden
20 sponsored through his testimony.

21 CHAIRMAN JOHNSON: I see. I think I'm following
22 you. What I was following you -- I thought you had said
23 was Vaden -- you wanted to identify certain excerpts and
24 they had been admitted, those excerpts had been admitted.

25 MR. WRIGHT: Right. I --

1 CHAIRMAN JOHNSON: And now you just want to admit
2 the other ones?

3 MR. WRIGHT: I had been thinking to do it the way
4 I conceive of it as being by the book, Madam Chairman; and
5 that is, to identify those parts sponsored by each witness
6 and go forward with them, identify them at the outset of
7 each witness's testimony and move them at the conclusion of
8 each witness's the testimony. My colleague to my right,
9 Mr. Moyle, obviously had the very good and efficient idea
10 of just moving the whole thing all at once were there to be
11 no objection, and so I was trying to facilitate that as I
12 was running out to my car.

13 CHAIRMAN JOHNSON: Okay. Very good.

14 MR. WRIGHT: And we might be able to just ask --
15 we might be able to just ask right now if everybody knows.
16 The filing document has been -- it's been here and been in
17 all parties' possession since August 19th. I think, be it
18 without objection, I'll furnish a clean copy to the court
19 reporter by tomorrow morning.

20 CHAIRMAN JOHNSON: Any objections to admitting
21 the filing document?

22 MR. GUYTON: Commissioners, Florida Power & Light
23 is going to raise an objection to at least part of it.

24 CHAIRMAN JOHNSON: Okay. So we'll have to go
25 segment by segment.

1 MR. WRIGHT: Okay.

2 CHAIRMAN JOHNSON: Now did we admit the portions
3 that were sponsored by Green?

4 MR. WRIGHT: Yes, ma'am, I believe so.

5 CHAIRMAN JOHNSON: Okay. I understand. So
6 then -- so that the record is clear, there is no separate
7 Exhibit 18 that relate to the filing document; and,
8 therefore, the next exhibit will be Exhibit 18, and that is
9 the composite exhibit.

10 MR. MCGLOTHLIN: And while we are on that
11 subject, Chairman Johnson: Doctor Nesbitt, did you also
12 prepare or supervise the preparation of what has been
13 identified as Table 10 and Part 1 of Table 15 which is
14 attached to the August 19th exhibits?

15 WITNESS NESBITT: Yes, I did.

16 MR. MCGLOTHLIN: And that would be part of what
17 has been identified as 16 as I understand your ruling?

18 CHAIRMAN JOHNSON: Uh-huh.

19 MR. MCGLOTHLIN: I ask that the prefiled direct
20 testimony be inserted into the record as though read at
21 this point.

22 CHAIRMAN JOHNSON: It will be inserted into the
23 record as though read.

24

25

**IN RE: JOINT PETITION FOR DETERMINATION OF NEED
BY THE UTILITIES COMMISSION, CITY OF NEW SMYRNA BEACH, FLORIDA
AND DUKE ENERGY NEW SMYRNA BEACH POWER COMPANY,
FPSC DOCKET NO. 981042-EM**

DIRECT TESTIMONY OF DALE M. NESBITT, Ph.D.

1 **Q: Please state your name and business address.**

2 A: My name is Dale M. Nesbitt and my business address is Altos
3 Management Partners Inc., 1250 Aviation Avenue, Suite 200C,
4 San Jose, CA 95110.

5

6 **Q: By whom are you employed and in what positions?**

7 A: I am presently Chief Executive Officer and President of Altos
8 Management Partners Inc. 1250 Aviation Avenue, Suite 200C,
9 San Jose, CA 95110. Altos Management Partners Inc. is a
10 Management Consulting firm. I am also a Director, President
11 and Chief Executive Officer of MarketPoint Inc., 27121 Adonna
12 Ct., Los Altos Hills, CA 94022. MarketPoint Inc. is a
13 software development and support firm. I am also a Director
14 and Vice President of Reticle Inc., 27121 Adonna Ct., Los
15 Altos Hills, CA 94022. Reticle is a chemical and mineral
16 technology company.

17

18 **Q: Please describe your duties with Altos Management Partners.**

19 A: I helped found Altos Management Partners Inc. in 1995 and
20 assumed the position of Chief Executive Officer and President
21 of Altos Management Partners in January 1998. I am
22 responsible for business development, leadership, technology

DIRECT TESTIMONY OF DR. DALE M. NESBITT

1 and technique development, communication, strategic
2 direction, project supervision, staff development, and other
3 fiduciary and management roles at Altos. My duties include
4 working on client projects in addition to the foregoing
5 roles. I founded MarketPoint Inc. in 1996 and assumed the
6 position of President and Chief Executive Officer at that
7 time. I am responsible for business development, leadership,
8 software development, training, documentation, communication,
9 staff development, project supervision, and other fiduciary
10 and management roles at MarketPoint. In 1998, I founded
11 Reticle Inc. and presently serve as a director and Vice
12 President. My duties include marketing and business
13 development.

14

15

PROFESSIONAL QUALIFICATIONS AND EXPERIENCE

16 **Q: Please summarize your educational background and experience.**

17 **A:** I earned a B.S. degree in Engineering Science from the
18 University of Nevada, Reno with high honors in 1969. I
19 earned an M.S. degree in Mechanical Engineering from Stanford
20 University in 1970, another M.S. degree in Engineering-
21 Economic Systems from Stanford University in 1972, and a
22 Ph.D. degree in Engineering-Economic Systems from Stanford
23 University in 1975. My doctoral dissertation was accepted
24 with honors from Stanford. I am a member of Phi Kappa Phi
25 (national honorary society) and Sigma Tau (national honorary
26 engineering society).

DIRECT TESTIMONY OF DR. DALE M. NESBITT

1 **Q: Please summarize your employment history and work experience.**

2 **A:** I joined Xerox Corporation at their Palo Alto Research Center
3 in 1972 as an analyst in the management systems group. In
4 1974, I left Xerox to join Stanford Research Institute (SRI)
5 as a Decision Analyst in its Decision Analysis Group. When
6 I left SRI in 1977, I was Manager, Decision Analysis—Energy.
7 In 1977, I co-founded Decision Focus Incorporated (DFI), a
8 private management consulting firm practicing in the oil,
9 gas, electricity, telecommunications, air transportation,
10 leisure services, environment, and high technology
11 industries. I later helped found and later joined Altos
12 Management Partners, originally as a Senior Consultant and
13 now as Chief Executive Officer, and President, where I have
14 helped consolidate Altos' oil, gas, and electricity modeling
15 and management consulting practice. Altos' services now
16 include short and long run models of North American gas
17 (NARG), North American electricity, world and North American
18 oil markets, a World Gas Trade program, a Western European
19 gas program, a Southern Cone of South America Gas Model, a
20 Southeast Australia Gas Model, an Electric Asset Operational
21 Model, an asset valuation model, and a risk management and
22 probabilistic analysis model. I recently founded MarketPoint
23 Inc., which develops, sells, and supports economic modeling
24 software, and Reticle, Inc., a chemical and mineral
25 technology company. During my time in the consulting
26 business, which has been continuous since 1974, I have served

DIRECT TESTIMONY OF DR. DALE M. NESBITT

1 most of the multinational oil companies based in North
2 America, most of the North American natural gas pipelines,
3 and a number of North American electric companies.

4

5 **Q: Have you previously testified before regulatory authorities**
6 **or courts?**

7 **A:** Yes. I have provided testimony to a number of different
8 state and national regulatory bodies. For example, I have
9 testified before the Economic Regulatory Administration of
10 the United States government in support of the TransAlaska
11 Gas Pipeline System. I provided testimony before the
12 National Energy Board of Canada in support of the McKenzie
13 Delta pipeline (in behalf of Gulf, Exxon, and Shell) and in
14 a different proceeding provided testimony in behalf of
15 TransCanada's application for eastward expansion. I
16 testified before the Federal Energy Regulatory Commission in
17 support of Pacific Gas Transmission Company's ("PGT") roll-in
18 application. I provided testimony before the British
19 Columbia Utilities Commission (BCUC) in behalf of BC Gas'
20 application for the Southern Crossing pipeline project. I
21 provided testimony before the California Public Utilities
22 Commission in support of Pacific Gas and Electric's
23 application for rate relief and roll-in regarding Lines 400
24 and 401. I have provided testimony before the California
25 Energy Commission on a number of issues ranging from Southern
26 California Edison's application for a firm transportation

DIRECT TESTIMONY OF DR. DALE M. NESBITT

1 agreement on PGT to offering information regarding
2 appropriate discount rates and rates of return to ascribe to
3 private companies who endeavor to enter California.
4

PURPOSE AND SUMMARY OF TESTIMONY

5
6 **Q: What is the purpose of your testimony in this proceeding?**

7 **A:** I am testifying on behalf of the Utilities Commission of New
8 Smyrna Beach, Florida ("UCNSB"), and Duke Energy New Smyrna
9 Beach Power Company Ltd., L.L.P. ("Duke New Smyrna"), the
10 joint applicants for the Commission's determination of need
11 for the New Smyrna Beach Power Project (or "the Project").
12

13 **Q: What are the key questions addressed by your testimony?**

14 **A:** My testimony addresses several questions related to the New
15 Smyrna Beach Power Project, including the following:

16 1. Is there a need for 500 MW of electric generation
17 capacity and associated energy production in the
18 Peninsular Florida market? The answer is yes, and the
19 need is immediate.

20 2. Is the proposed New Smyrna Beach Power Project the most
21 cost-effective option to provide this capacity and
22 energy? The answer is yes; the natural gas combined
23 cycle technology of the New Smyrna Beach Power Project
24 is the most cost-effective option for capacity and
25 energy in the Peninsular Florida market. It is better
26 than gas simple cycle, coal, oil, or other technologies.

DIRECT TESTIMONY OF DR. DALE M. NESBITT

1 3. Will the Duke New Smyrna Beach project be economically
2 viable? The answer is yes. It will impose zero risk on
3 Florida ratepayers because it is a merchant plant,
4 reduce prices in the Florida market by virtue of its
5 entry, and make money for its owners.

6 4. Will energy from the Duke New Smyrna Beach project be
7 sold out of state? The answer is no, but even if it
8 were, it would be strictly excess with regard to the
9 Florida market.

10 5. What benefits, if any, will the Duke New Smyrna Beach
11 project provide to Florida ratepayers? It will increase
12 energy supply, decreasing Peninsular Florida energy
13 prices relative to where they would otherwise be as a
14 result. It will impose zero risk on Florida ratepayers.
15 Florida ratepayers will not be obliged to buy energy or
16 capacity from the project unless it is cheaper than all
17 competing alternatives. It will reduce environmental
18 emissions relative to what otherwise would occur because
19 it is based on a low heat rate gas combined cycle
20 configuration.

21

22 **Q: Are you sponsoring any exhibits to your testimony?**

23 A. Yes. I am sponsoring the following exhibits to my testimony.

24

25 DMN-1. Altos North American Regional Electric Model
26 (graphic).

DIRECT TESTIMONY OF DR. DALE M. NESBITT

- 1 DMN-2. Altos North American Regional Gas Model ("NARG
2 Model) (graphic).
- 3 DMN-3. 1998 Florida Load Duration Curve.
- 4 DMN-4. 1998 SERC/Southern Load Duration Curve.
- 5 DMN-5. Florida Capacity per NERC
- 6 DMN-6. Southern Capacity per NERC.
- 7 DMN-7. New Smyrna Beach Power Project, Projected
8 Operations and Fuel Savings.
- 9 DMN-8. Florida - 1998 Baseload (40%).
- 10 DMN-9. Florida Dispatch - 1998 High Load Factor
11 Intermediate (25%).
- 12 DMN-10. Florida Dispatch - 1998 Low Load Factor
13 Intermediate (15%).
- 14 DMN-11. Florida Dispatch - 1998 High Load Factor Peak
15 (15%).
- 16 DMN-12. Florida Dispatch - 1998 SuperPeak (5%).
- 17 DMN-13. Comparative Electricity Production Costs, SERC &
18 FRCC, 1995-1998.
- 19 DMN-14. Benefits of Duke New Smyrna Beach Power Project
20 (graphic).
- 21 DMN-15. Achieving Competitive Advantage Through
22 Quantitative Electric Asset Valuation Using the
23 Altos North American Regional Electricity Model.
- 24 DMN-16. Overview of the North American Regional Gas (NARG)
25 Model.

26 I am also sponsoring Table 10 and Part I of Table 15

DIRECT TESTIMONY OF DR. DALE M. NESBITT

1 contained in the Exhibits submitted on August 19, 1998.

METHODOLOGY

2
3
4 **Q. How have you addressed the foregoing questions regarding the**
5 **New Smyrna Beach Power Project?**

6 **A:** I have developed the information necessary to answer the
7 foregoing questions by combining my company's (Altos's) North
8 American Regional Electricity Model ("the Altos Model" or
9 "the Altos Electric Model") illustrated in Exhibit ____ (DMN-
10 1) and described more fully in Exhibit ____ (DMN-15), the
11 associated Altos data base for that model, the North American
12 Regional Gas (NARG) Model illustrated in Exhibit ____ (DMN-2)
13 and described more fully in Exhibit ____ (DMN-16), and
14 Altos's experience in the gas and electricity businesses.

15
16 **Q: Please provide a brief history and methodology of the Altos**
17 **North American Regional Electricity Model.**

18 **A:** The Altos North American Regional Electricity Model is a 32-
19 region integrated model of the North American electricity
20 system that includes generation, transmission, consumption,
21 fuels, and fuel competition. The Altos Electric Model
22 includes all of the generation regions, all of the existing
23 and prospective transmission interconnections, and all of the
24 demand regions of North America. Generally speaking, the
25 Altos Model includes all of the reliability coordinating
26 regions in the U.S., Canada, and Mexico, plus numerous sub-

DIRECT TESTIMONY OF DR. DALE M. NESBITT

1 regions. For example, the model treats the Southern Electric
2 Reliability Council region ("SERC") as four separate sub-
3 regions: the Southern Company system, TVA, VCR (Virginia and
4 the Carolinas), and Entergy, which was formerly designated as
5 the southeastern component of the Southwestern Power Pool.

6 The Altos Electricity Model includes transmission system
7 integration and interconnection, consideration of multiple
8 fuels and energy products, existing capacity and its cost
9 structure, future changes in the cost structure of existing
10 plants, retirements and decommissioning, new generation plant
11 entry, inbound and outbound transmission capabilities,
12 transmission entry, and demands and load shapes that vary
13 over time within each region. In evaluating future capacity
14 energy needs, the Altos Model considers the following
15 generating technologies: gas/oil combustion turbine, gas
16 combined cycle, oil combined cycle, pulverized coal, coal
17 gasification combined cycle, nuclear, gas/oil steam, and
18 waste-to-energy.

19 The North American Regional Gas Model (the "NARG Model")
20 includes all gas supply basins, all existing and prospective
21 interconnecting pipelines, and all of the gas demand regions
22 of North American. In the NARG Model, each category of
23 resource in each supply region is characterized by a detailed
24 supply sub-model, each pipeline is characterized by a
25 detailed transportation sub-model, and each demand region is
26 characterized by a detailed demand sub-model. The NARG Model

DIRECT TESTIMONY OF DR. DALE M. NESBITT

1 estimates, over time, the set of regional prices that
2 simultaneously clear the markets in every wellhead,
3 wholesale, and other market in North America.

4 Exhibits ____ (DMN-15) and ____ (DMN-16) to my testimony
5 summarize the history and methodology of the Altos North
6 American Regional Electricity Model and the NARG Model.

7
8 **Q: Who uses the Altos North American Regional Electricity Model**
9 **and the NARG Model?**

10 **A:** Many of the major producers and pipelines and a number of the
11 electric companies in North America have used my NARG and
12 North American Electricity Models. I am allowed to disclose
13 nothing other than the names of those users, the list of
14 which includes Amoco, Arco, Associated Electric Cooperative,
15 Inc., BC Gas, BHP Petroleum (Broken Hills), BP, British Gas
16 Corporation, California Energy Commission, Canadian Energy
17 Research Institute, Chase Manhattan Bank, CIA,
18 Coastal/Colorado Interstate Gas, Conoco/DuPont, DOE/EIA, Duke
19 Energy/Panhandle Eastern, El Paso, Enron, Exxon, LLL, LBL,
20 Argonne, Oak Ridge, Los Alamos, MidCon/Occidental Petroleum,
21 Mobil, National Energy Board of Canada, Nova Corporation,
22 Oklahoma Gas and Electric, PanCanadian, Pennsylvania Power
23 and Light, Petro-Canada, PG&E/PGT, Shell, So Cal Edison (SCE
24 Corp.), Sonat, Texas Utilities Corporation, TransCanada
25 Pipeline Corporation, TVA, and the Williams Companies. I can
26 disclose what the foregoing users might have chosen to put

DIRECT TESTIMONY OF DR. DALE M. NESBITT

1 into the public domain.

2

3 **Q: Has the model been independently validated by a third party?**

4 **A:** Yes. The Energy Information Administration ("EIA") of the
5 United States government decided in 1980-1 to independently
6 validate the GEMS model (GEMS was the tradename of our model
7 at that time.) EIA expended in excess of \$1 million (in 1981
8 dollars) with Oak Ridge National Laboratories to validate our
9 GEMS. In particular, EIA endeavored to verify and validate
10 the software, data, results, underlying economic theory,
11 suitability and completeness of documentation, accuracy of
12 forecasts, proper program implementation, sensitivity
13 analysis, and other relevant attributes of the program. In
14 effect, EIA subjected GEMS to a severe and comprehensive
15 professional peer review in order to ensure that it was
16 operating correctly and was appropriate for EIA's intended
17 needs. (In EIA's judgment, Oak Ridge was an independent
18 third party who could perform an objective, disinterested,
19 credible, independent, third party validation.) As part of
20 the validation, Oak Ridge made a number of suggestions (which
21 were ultimately incorporated into our model and software),
22 and they gave the GEMS approach and software a clean bill of
23 health. To my knowledge, our GEMS is the only model in
24 existence that has been independently validated to such a
25 degree.

26

DIRECT TESTIMONY OF DR. DALE M. NESBITT

1 **Q: Before leading us through your detailed results, could you**
2 **summarize the cost structure and performance you have assumed**
3 **for the New Smyrna Beach Power Project?**

4 **A:** I have assumed that the heat rate of the New Smyrna Beach
5 Power Project will be 6,832 Btu per KWh at full load.
6 Because the Altos Electric Model projects substantial run
7 times for the New Smyrna Beach Power Project, I have not
8 considered partial load heat rate performance of the facility
9 (i.e., heat rate curves). I have assumed that the fully
10 commoditized, variable, all-in, forward operating and
11 maintenance cost of the New Smyrna Beach Power Project will
12 be \$2.30/MWH. This is consistent with what at least one
13 vendor is offering in new combined cycle equipment it
14 proposes to build. I understand from Duke New Smyrna that
15 the projected in-service cost of the 500 MW New Smyrna Beach
16 Project, including the transmission interconnection to the
17 Smyrna Substation of the UCNSB, is approximately \$160
18 million. This cost estimate includes permitting costs but
19 does not include the costs of downstream transmission
20 upgrades.

21

22 **Q: Have you used Duke New Smyrna or UCNSB proprietary or**
23 **confidential assumptions, data, or analysis in preparing your**
24 **testimony?**

25 **A:** Not to my knowledge. My testimony is based on my own work
26 and assumptions and that of my Altos colleagues, particularly

DIRECT TESTIMONY OF DR. DALE M. NESBITT

1 Michael C. Blaha, with whom I have collaborated in preparing
2 this testimony. While the work underlying this testimony was
3 done under sponsorship by Duke New Smyrna, the work
4 represents my and Altos's best judgment. To wit, the forward
5 price calculations and their implications for the project are
6 drawn from Altos's models, data, analyses, and personnel.
7 They are not drawn from proprietary or confidential data from
8 Duke New Smyrna, the UCNSB, or any of their affiliates, nor
9 are they drawn from analysis or data provided by Duke New
10 Smyrna or the UCNSB. My objective has been to apply and put
11 forth my and Altos' best professional analysis and judgment
12 based on our best available technology, experience, and data,
13 not to mirror Duke New Smyrna's or the UCNSB's analyses or
14 projections.

NEED FOR THE NEW SMYRNA BEACH POWER PROJECT

15
16
17 **Q: Is there a need for 500 MW of new electric generation**
18 **capacity and associated energy production in the Peninsular**
19 **Florida market?**

20 **A:** Yes, there is a need for more than 500 MW of new electric
21 generation capacity and associated energy production in the
22 Peninsular Florida market, the need is immediate, and the
23 need is growing over time. The Altos North American Regional
24 Electricity Model projects economically viable and profitable
25 new additions of up to 6,000 MW of new gas-fired combined
26 cycle ("CC") power plants in Peninsular Florida, which I use

DIRECT TESTIMONY OF DR. DALE M. NESBITT

1 synonymously with the Florida Reliability Coordinating
2 Council ("FRCC") region, and several tens of thousands of MW
3 of new gas CC entry elsewhere throughout North America. Our
4 predicted substantial quantity of new installed capacity in
5 Peninsular Florida--6,000 MW--is approximately twice the
6 quantity of new capacity that FRCC itself reported to NERC in
7 FRCC's 1997 OE411 Annual Report. This is a strong statement
8 in favor of the viability, need, and strong positive
9 contribution of new gas CC capacity entry into the Florida
10 market of the type Duke New Smyrna is proposing. In summary,
11 there is a need for more than the 500 MW proposed by Duke New
12 Smyrna.

13 I should emphasize that I have not approached the
14 question of "need" simplistically by measuring peak Florida
15 demand (expressed in GW); adding up available installed
16 capacity (expressed in GW), and comparing the two using some
17 criterion such as reserve margin or loss-of-load-probability.
18 (I should add, however, that even this simplistic comparison
19 would underscore the need for projects such as the New Smyrna
20 Beach Power Project). A simplistic "add up the installed
21 capacity and compare against peak demand" notion of "need"
22 such as the forgoing misses the fundamental reality that some
23 of the old installed capacity in Florida is higher in cost
24 than what new capacity could be installed for. Installing
25 new capacity will eliminate old, uneconomic capacity, obviate
26 the requirement to preserve and/or run it, and reduce the

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1 intrinsic cost to generate electricity in Florida. A
2 critically important element of the need for new capacity is
3 the need to retire old, uneconomic, and usually pollution-
4 intensive capacity. (By analogy, the "need" for a new car is
5 a need to retire your old 1972 Chevy Vega you would otherwise
6 have to maintain and drive, thereby avoiding the much higher
7 operating and maintenance cost and downtime of the Vega.)

8 The Altos Electric Model predicts that there are few
9 places in North American where the need for new gas CC
10 generation is more acute and more immediate than in
11 Peninsular Florida. Florida is growing, and Florida
12 electricity is expensive. New capacity such as the New
13 Smyrna Beach Power Project is needed to meet inevitable
14 growth in the state, ameliorate the current and future market
15 price, and provide economic benefits via reduced market
16 prices to the state of Florida.

17
18 **Q: What is the historical and projected future load situation in**
19 **Florida?**

20 **A:** Altos has assembled hourly reported data for every hour in
21 the past five years (including 1997) for every reporting
22 entity in Florida (and elsewhere in the United States). This
23 data has allowed us to assemble average daily load shapes,
24 maximum daily load shapes, monthly load duration curves, and
25 annual load duration curves for the Peninsular Florida
26 market. Exhibit ___ (DMN-3) depicts the load situation in

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1 Peninsular Florida inferred from reported hourly loads during
2 every hour of the past five years. Exhibit ____ (DMN-3)
3 indicates within each monthly time interval the average daily
4 load shape for days in that month, the maximum daily load
5 shape, and the minimum daily load shape. (The daily curves
6 are the up-down-up-down curves shown for each month in the
7 figure.) The hourly loads are ordered by hour in the month
8 from highest load hour in the month down to lowest load hour
9 in the month. This process of ordering from highest to
10 lowest produces the monthly load duration curves, which are
11 the downward sloping curves in the exhibit beginning at the
12 start of each indicated month and ending at the end of that
13 month. The exhibit also indicates the annual load duration
14 curve beginning at the upper left and dropping to the lower
15 right of the entire diagram. The annual load duration curve
16 is the ordered set of annual loads from highest to lowest in
17 descending order. These are the fundamental historical
18 demand data that characterizes the Peninsular Florida market
19 in aggregate. (Altos has undertaken this task for every one
20 of the 32 regions of North America that are represented in
21 the Altos Model so that we can understand the hourly, weekly,
22 monthly, and annual demand profiles over the past five years
23 and can reliably extrapolate it to the future.)

24 As seen in the monthly load duration curves in Exhibit
25 ____ (DMN-3), peak demand in the FRCC/Florida market occurs
26 in the summer, just as it does throughout most of the

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1 southern United States. However, unlike the rest of the
2 southeastern United States, particularly SERC/Southern, the
3 demand in Peninsular Florida during the winter months is more
4 volatile. Interestingly, the observed winter peak is almost
5 as high as the observed summer peak; however, the load
6 variability during the winter is higher than the variability
7 during the summer. The SERC/Southern region has been served
8 by large gas pipelines over the years (e.g., Sonat,
9 Transcontinental), and gas has penetrated the winter heating
10 market there. A larger proportion of Florida customers rely
11 on resistance heat during cold winter days, owing in part to
12 the historical paucity of natural gas in Florida, rendering
13 winter electricity demand volatility higher in Florida. The
14 higher winter price volatility in Florida has consequences
15 for the price differentials between the SERC/Southern region
16 and Peninsular Florida during the winter and for the
17 propensity to move power from Southern to Peninsular Florida
18 during the winter.

19 As seen in the monthly load duration curves in Exhibit
20 ____ (DMN-3), Florida is a dual peaking market. The peak-to-
21 base ratio during the summer is calculated to be
22 approximately 2.5:1, larger than the corresponding ratio in
23 SERC/Southern and elsewhere in SERC. Obviously, Florida
24 experiences strong peaks in the summer. However, the winter
25 peak-to-base ratio in Peninsular Florida is nearly 3:1,
26 presaging higher volatility of demand in the winter than in

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1 the summer. A plant such as the New Smyrna Beach Power
2 Project built in Florida can take advantage of two peaks, but
3 a plant built in SERC/Southern or other southern United
4 States locations often can take advantage of only one.

5 The ability of Florida generators to capture two peak
6 markets presents an interesting advantage for building new
7 capacity in Florida as Duke New Smyrna and the UCNSB are
8 proposing. It also raises the possibility, however, that
9 during the winter, inbound transmission from SERC/Southern
10 (which might be somewhat slack during the winter) will make
11 up the Florida winter peak deficit. The Altos Model tells
12 which is the better winter alternative -- new generation from
13 the New Smyrna Beach Power Project versus more inbound
14 transmission from Southern. (The Altos Model shows that
15 indigenous combined cycle generation in Florida such as the
16 New Smyrna Beach Power Project is better.) Referring back to
17 Exhibit ____ (DMN-3), it is unlikely that there will be
18 summer energy or capacity available to be imported into
19 Peninsular Florida from points north. During the summer, the
20 New Smyrna Beach Power Project will pay substantial benefits
21 to Florida ratepayers by simply directly producing into the
22 Florida market. The exhibit further suggests that prices
23 will be firm for a substantial portion of the summer and
24 winter, but not necessarily during spring and fall, months.
25 The Altos Model will verify that fact as well, but the spring
26 and fall prices will not fall low enough to knock the Project

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1 out of the mix very frequently. The model confirms that the
2 Project will evolve rather quickly to become a baseload
3 plant.

4 It is also important to consider and understand the role
5 of the SERC/Southern region in these analyses of the Project.
6 Exhibit ____ (DMN-4) illustrates the comparable load
7 information for SERC/Southern as was presented for Peninsular
8 Florida in Exhibit ____ (DMN-3). The magnitude of the winter
9 peak in the SERC/Southern region is smaller, in relative
10 terms, than the winter peak in Florida. This means that
11 there will be excess energy exportability from Southern to
12 Florida at all times except the summer peak. Furthermore, it
13 is possible that the value of surplus exportability from
14 Southern to Florida during the winter will be attractive in
15 Florida (which should have substantially higher prices than
16 Southern in the winter.) This is not a trivial insight, and
17 it is explicitly accounted for in the Altos Model. The Model
18 calculate the fair market value of energy in Southern during
19 every month of the year and consider its prospective
20 competitiveness against energy from other sources in Florida
21 during every month of the year. This is critical to proper
22 valuation of the New Smyrna Beach Power Project.

23 I should point out that I have subdivided each of the 12
24 monthly load duration curves in Exhibits ____ (DMN-3) and
25 ____ (DMN-4) into five discrete blocks for every region in
26 the Altos Electric Model. The five blocks, which range

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1 successively from base load to peak, are designated as
2 follows.

3 1. Baseload (P1) - 40 percent of the hours in the month,
4 i.e., those 40 percent of the hours with the lowest average
5 load. This category represents the 0th to the 40th percentile
6 of load.

7 2. High Load Factor Intermediate (P2) - those 25 percent of
8 the hours in the month with the next higher average load.
9 This category represents the 40th percentile to the 65th
10 percentile of load.

11 3. Low Load Factor Intermediate (P3) - those 15 percent of
12 the hours in the month with the next higher average load.
13 This category represents the 65th percentile to the 80th
14 percentile of load.

15 4. High Load Factor Peak (P4) - those 15 percent of the
16 hours in the month with the next higher average load. This
17 category represents the 80th percentile to the 95th percentile
18 of load.

19 5. Low Load Factor Peak or Superpeak (P5) - those 5 percent
20 of the hours in the month with the highest average load.
21 This category represents the 95th percentile to the 100th
22 percentile of the load.

23 The Altos North American Regional Electricity Model will
24 calculate market clearing prices for each of these categories
25 of load for each month of the year, thereby dividing annual
26 load into 60 time increments.

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1 Q: What is the installed capacity in Peninsular Florida and
2 Southern as compared with the foregoing daily, monthly, and
3 annual load information?

4 A: The capacity situation in the Florida market according to
5 NERC is summarized in Exhibit ____ (DMN-5), and the capacity
6 situation in the Southern market according to NERC is
7 summarized in Exhibit ____ (DMN-6). If we compare installed
8 capacity in Peninsular Florida against the load duration
9 curves in Exhibit ____ (DMN-3) that describe the present
10 situation, Florida is short of baseload capacity, having a
11 total of only 13,000 MW of existing base load capacity (coal,
12 nuclear, and hydro). It is apparent from the curves in
13 Exhibit ____ (DMN-3) that Florida is short of on-peak
14 capacity as well. In fact, there is not enough installed
15 indigenous base load capacity (13,000 MW) to meet hourly
16 demand during most of the hours of the year. The "bottoms"
17 of the monthly load duration curves in Exhibit ____ (DMN-3)
18 are chronically above the 13,000 MW level, meaning that
19 Peninsular Florida is and will remain for the foreseeable
20 future chronically underserved in baseload energy. New power
21 plants such as the New Smyrna Beach Power Project are
22 critical if Florida is to relieve itself from the shortage of
23 baseload capacity that presently faces the state. The model
24 results will show that the New Smyrna Beach Power Project
25 will initially run as an intermediate load plant but after a
26 very few years will operate in baseload and will make up part

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1 of the difference between presently installed capacity and
2 the bottoms of the monthly load duration curve. In short,
3 Peninsular Florida is in a base load deficit condition, one
4 that has traditionally been supplemented by baseload
5 transmission imports from Southern.

6 Note further in Exhibit ____ (DMN-5) that Peninsular
7 Florida is anticipating adding combined cycle units
8 (approximately 3,000 MW by 2006) and buying more power from
9 out-of-state providers. It is instructive to note in the
10 Southern projection in Exhibit ____ (DMN-6), which is the
11 Southern analog of Exhibit ____ (DMN-5), that those very out-
12 of-state buyers are not planning to add capacity to sell in
13 Florida. In fact, they are projecting reduced, not
14 increased, electric sales to Florida. There is an intrinsic
15 mismatch here. The Project will fill part of this mismatch
16 and shelter Florida electric customers from higher prices.
17 The Altos Electric Model tells us how this mismatch will be
18 resolved both in terms of price and energy flows.

19 Returning to Exhibit ____ (DMN-5), almost all the
20 indicated 23,000 MW of existing Florida oil-and-gas-fired
21 steam-turbines, combustion-turbines and combined-cycle units
22 have heat rates in excess of that of the proposed New Smyrna
23 Beach Power Project (projected at 6,832 Btu/KWh). This means
24 that the Project will be inframarginal relative to virtually
25 all of the existing oil and gas power plants in Florida and
26 will operate in preference to them. The majority of existing

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1 Florida units are old and are not state-of-the-art. The
2 presently existing Florida peaking units will continue to be
3 run when inbound transmission is constrained or when
4 Southern's coal facilities are fully dispatched and diverted
5 elsewhere (to an increasing degree staying right at home in
6 Southern to meet their growing indigenous peak demand).
7 Introducing inframarginal sources of the type Duke New Smyrna
8 and the UCNSB are proposing will pay immediate and
9 substantial benefits not only to the owners of the new
10 inframarginal Florida plants but also to the market as a
11 whole through price softening, particularly during time of
12 peak.

13

14 COST-EFFECTIVENESS OF THE NEW SMYRNA BEACH POWER PROJECT

15 **Q: Is the proposed power plant the most cost-effective**
16 **alternative available to provide additional power supply**
17 **resources in Peninsular Florida?**

18 **A:** Yes. The Altos Electric Model confirms that gas-fired
19 combined cycle technology, like that of the proposed Project,
20 is the most cost-effective generation technology to add in
21 Peninsular Florida. The fact that the Project is the most
22 cost-effective alternative is underscored by the fact that
23 gas CC technology is currently the technology of choice for
24 Florida utilities and for many utilities throughout the
25 United States. (The Altos Electric Model indicates that new
26 entry of gas CC capacity will be one of the most important

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1 contributors to future energy flows as well as a key driver
2 of future energy prices.) For example, the proposed Cane
3 Island 3 plant of the Florida Municipal Power Agency and the
4 Kissimmee Utilities Authority, FPL's proposed repowering
5 projects, Lakeland's planned "phased" combined cycle unit,
6 and the City of Tallahassee's approved Purdom 8 unit, are all
7 projected to use this same gas CC technology.

8

9 **Q: Is the proposed power plant the most cost-effective**
10 **alternative available for Duke New Smyrna in order to meet**
11 **its obligations to the UCNSB and as a merchant power provider**
12 **in Peninsular Florida?**

13 **A:** Yes. The proposed Project is not only the most cost-
14 effective alternative for the FRCC/Peninsular Florida market,
15 it is also the most cost-effective alternative for Duke New
16 Smyrna to meet its obligations to the UCNSB and as a merchant
17 power provider in the Peninsular Florida market. This result
18 follows directly from the above observations: if the best
19 technology for the overall market is gas-fired CC capacity,
20 then the best technology for an individual supplier, such as
21 Duke New Smyrna, is that same technology. Again, this result
22 is also confirmed by the observed fact that gas-fired CC
23 capacity is the technology of choice for new capacity in
24 Florida and across the U.S.

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1 **Q: What alternative generation technologies does the Altos North**
2 **American Regional Electric Model consider in evaluating**
3 **whether a proposed power plant is the most cost-effective**
4 **alternative for a given situation?**

5 **A: The Altos Model considers gas-fired and oil-fired combustion**
6 **turbines, gas-fired and oil-fired combined cycle units, gas-**
7 **fueled steam generation units, oil-fueled steam generation**
8 **units, pulverized coal units, integrated coal gasification**
9 **combined cycle ("IGCC") units, nuclear units, and waste-to-**
10 **energy technologies.**

11

ECONOMIC VIABILITY OF THE NEW SMYRNA BEACH POWER PROJECT

12
13 **Q: Please comment on the economic viability of the New Smyrna**
14 **Beach Power Project.**

15 **A: In a competitive environment, a cost-effective facility is by**
16 **definition economically viable. Indeed, merchantization and**
17 **commoditization of a market favor the low cost provider. I**
18 **have discussed and demonstrated that the gas CC technology is**
19 **inframarginal in Florida, meaning that new plants such as the**
20 **Project are economically viable and profitable The New**
21 **Smyrna Beach Power Project is clearly economically and**
22 **competitively viable.**

23

24 **Q: Are there any key market uncertainties that could depress**
25 **Peninsular Florida/FRCC prices and spark spreads and hurt the**
26 **Project's viability?**

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1 A: Not to my knowledge. The foregoing results certainly suggest
2 that increasing transmission capability into Peninsular
3 Florida from Southern and points north could put strong
4 downward competitive pressure on Florida prices. I have run
5 a case in which the inbound transmission capability from
6 Southern is nearly doubled from its first contingency
7 capability today of 3,600 MW up to 7,000 MW. This case
8 depresses Florida prices and spark spreads a bit, but not
9 enough to eliminate gas CC entry from Florida. The reason is
10 that the coal units will be just as constrained in SERC and
11 FRCC with or without new transmission capability into
12 Florida. By opening up the market, new gas CC capacity moves
13 more quickly and more completely to the margin in the whole
14 region. New gas CC in Southern is actually less attractive
15 to Florida than new gas CC in Florida. Almost doubling
16 inbound transmission capability into Florida does not kill or
17 daunt the need for new gas CC entry into Florida.

18 I have also run a completely unlimited and unconstrained
19 inbound transmission case from every region into every other
20 region shown in the model in Exhibit ____ (DMN-1). Our
21 intention was to represent a case in which any incremental
22 transmission project that experienced a high enough price
23 differential across that project would be immediately and
24 completely built. This unlimited transmission case, which
25 incidentally carried a uniform \$3/MWH inter-regional wheeling
26 charge from every region to every contiguous region in

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1 Exhibit ____ (DMN-1), did indeed daunt gas CC entry into
2 Florida. In this case of unlimited low cost transmission,
3 the gas CC business shifted en masse to Entergy (Louisiana)
4 in order to be close to the cheapest natural gas on the
5 continent. Because electric transmission is so cheap and so
6 ubiquitous by assumption in this case, the cycling and
7 peaking generation industry in the eastern and southern
8 United States shifts quite quickly and dramatically into
9 Louisiana and Texas, and a huge outbound electric
10 transmission business is built to serve them. While this
11 case might not represent the future configuration of the
12 electric system, it clearly implies that the more
13 transmission that becomes available into Florida, the more
14 the gas CC industry shifts upstream to the lower gas price
15 regions and away from the higher gas price regions. This
16 makes good intuitive sense.

17 Over a broad range of alternative scenarios constructed
18 in the past with the Altos Model, we have seen the Florida
19 spark spreads remain quite robust, and we have seen the
20 propensity for a substantial amount of gas CC entry into
21 Florida. No reasonable sensitivity case changes the fact
22 that Florida is short of capacity, baseload as well as
23 peaking capacity. No reasonable sensitivity case changes the
24 fact that Florida must either install needed capacity or
25 purchase it over transmission lines from afar.

DIRECT TESTIMONY OF DR. DALE M. NESBITT**1 PROJECTED OPERATIONS OF THE NEW SMYRNA BEACH POWER PROJECT**

2 **Q: Please summarize the projected operations of the Project.**

3 **A:** Exhibit ____ (DMN-7) summarizes the projected operations of
4 the New Smyrna Beach Power Project for the period 2002
5 through 2012. This table shows that the Project is expected
6 to operate at Capacity Factors ranging from approximately 83
7 percent in 2002, its first full year of operation, when its
8 projected generation is 3,719,550 MWH, to approximately 94
9 percent in 2012, when it is expected to produce more than
10 4,200,000 MWH.

11
12 **Q: Can you discuss the plant operation predictions from the**
13 **model? More specifically, what plants will dispatch to what**
14 **degree in what hours in what months?**

15 **A:** Let me answer that question by proceeding through the Florida
16 market in order: baseload (40% of the time), high load factor
17 intermediate load (25% of the time), low load factor
18 intermediate load (15% of the time), high load factor peak
19 (15% of the time), and low load factor peak (superpeak, 5% of
20 the time). I have assembled the Exhibits ____ (DMN-8)
21 through ____ (DMN-12) from the Altos Electric Model run to
22 depict plant dispatch in Florida for base (P1), high load
23 factor intermediate (P2), low load factor intermediate (P3),
24 high load factor peak (P4), and superpeak (P5).

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1 Q: Does the Altos Electric Model indicate whether Duke New
2 Smyrna is likely to sell any power outside Peninsular
3 Florida?

4 A: Yes. My analyses indicate that very little, if any, power
5 generated by the New Smyrna Beach Power Project will be sold
6 outside Peninsular Florida, i.e., outside the FRCC region.
7 In fact, my analyses indicate that, for a limited number of
8 hours each year, the Project may actually decrease imports of
9 coal-fired power from the SERC region. The economic success
10 of the project does not depend on the project selling any
11 power outside Peninsular Florida. Indeed, the project does
12 not anticipate selling power outside Peninsular Florida.

13
14 Q: Are you aware of other evidence to support your conclusion
15 that the output of the New Smyrna Beach Power Project will be
16 sold entirely, or almost entirely, within Peninsular Florida?

17 A: Yes. The PowerDAT generation cost data published by Public
18 Utilities Fortnightly shows that the raw generation costs of
19 power generated within the FRCC is significantly, even
20 dramatically, higher than the comparable raw generation cost
21 of electricity produced in the SERC region. For example,
22 Exhibit ____ (DMN-13) presents summary data for FRCC and SERC
23 for 1997 and also for January through March 1998. (These are
24 the most current and complete data available.) These data
25 show that for 1997, and for the first quarter of 1998, the
26 average generation cost (fuel plus variable operation and

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1 maintenance cost) in FRCC was more than 50 percent greater
2 than the comparable average generation cost in the SERC
3 region. For 1996, the difference was even greater. This
4 demonstrates conclusively that the primary wholesale market
5 for the output of the New Smyrna Beach Power Project is
6 within Peninsular Florida.
7

BENEFITS PROVIDED BY THE NEW SMYRNA BEACH POWER PROJECT

8
9 **Q: What benefits, if any, is the New Smyrna Beach Power Project**
10 **likely to provide to Florida and its electric ratepayers?**

11 **A:** The Project will increase energy supply, decreasing Florida
12 energy prices relative to where they would otherwise be as a
13 result. It will also limit or dampen market power, while
14 imposing zero financial and operating risk on Florida
15 ratepayers. Florida ratepayers will not be obliged to buy
16 energy or capacity from the Project unless it is cheaper than
17 all competing alternatives. It will reduce the quantity of
18 fuel consumed for electricity generation, including both oil
19 and gas that would otherwise be burned in much less efficient
20 power plants, and will also reduce environmental emissions
21 relative to what otherwise would occur because it is based on
22 a low heat rate gas combined cycle configuration.
23

24 **Q: Market power and market concentration among resident**
25 **generators might become an issue in Florida. Would the entry**
26 **of the New Smyrna Beach Power Project increase or decrease**

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1 **market power and concentration relative to the level that**
2 **would otherwise exist?**

3 A: The Project's entry and presence would decrease whatever
4 market power and market concentration would otherwise exist
5 in Florida. I have not attempted for this analysis to
6 quantify whether market power exists or is being exerted in
7 Florida by any of the players individually or collectively.
8 It is clear, however, that the entry of new facilities that
9 are small in the overall scheme of the market and are owned
10 by independent entities without any prospect of market power
11 reduces whatever market concentration and market power might
12 now or in the future exist in Florida. The entry and
13 presence of the Project is at worst neutral and at best
14 dilutive of market power and market concentration problems
15 that might otherwise exist in Florida. The Commission should
16 keep in mind that Peninsular Florida is dominated by three
17 investor-owned utilities that individually and collectively
18 own a significant proportion of the installed generating
19 capacity in Peninsular Florida. With regard to market
20 concentration, Florida Power & Light Company ("FPL") controls
21 more than 40% of Peninsular Florida's generation capacity.
22 Two-thirds of Peninsular Florida's generation capability
23 resides collectively in the hands of FPL, Florida Power
24 Corporation, and Tampa Electric Company.

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1 Q: What, if any, effect would the presence of merchant capacity
2 have on potential price spikes due to short-term capacity
3 shortfalls?

4 A: During the summer of 1998, we have witnessed the explosion of
5 the wholesale energy market with spot prices reaching as high
6 as \$7,000/MWH. Prospects for spot prices this astronomical
7 during peak lie at the heart of the issue of the market power
8 issue. Can some key Florida player withhold capacity and
9 drive up price during peak and thereby garner monopoly rents?
10 The prospect for the existence and exercise of market power
11 appears to be at least as large in Florida as it could be in
12 other jurisdictions. To cite a contrasting example, ERCOT
13 (which comprises the majority of Texas) has a peak demand of
14 approximately 50,000 MW, and the majority of its indigenous
15 generation is in the control of three investor-owned
16 utilities just like Florida. However, ERCOT also has roughly
17 7,500 MW of generation capacity owned by cogenerators,
18 industrial self-generators, and other entities not affiliated
19 with retail-serving utilities. Of this 7,500 MW, nearly
20 3,000 MW is industrial self generation. Of the remaining
21 4,500 MW capacity, some 3,000 MW have historically been
22 contracted to supply firm capacity and associated energy.
23 The remaining 1,500 MW of capacity sells only as-available
24 energy. This as-available energy represents a price buffer
25 in the ERCOT system, one that restrains whatever market power
26 might exist. It is significant to note that the price

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1 explosions seen recently elsewhere in North America have not
2 affected ERCOT. There is an argument to be made that the
3 existence of a 7,500 MW merchant capacity "buffer" moderates
4 within ERCOT the type of price flyup seen elsewhere.

5 It would seem to me that Florida would be well advised
6 to encourage a "merchant fringe" to limit prospects for
7 market power and price flyup. The New Smyrna Beach Power
8 Project represents an effective start building such a
9 "merchant fringe" for Florida. I emphasize, I am not arguing
10 that there is or is not any effective market power enjoyed or
11 exercised by any individual or collective entity in Florida.
12 I have not done the analysis. Rather, I am simply arguing
13 that the existence of a "merchant fringe" of generation
14 capacity ensures against the existence or exercise of such
15 market power. The existence of a "merchant fringe" is an
16 insurance policy against market power and market
17 concentration.

18 I should point out that a decrease in market power and
19 market concentration normally manifests itself in terms of
20 lower market prices (because of less restrictions in capacity
21 and energy production) to Florida customers. Florida
22 electric customers are the direct beneficiaries of whatever
23 dilution of market power might occur as the result of the
24 entry of the New Smyrna Beach Power Project.

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1 **Q: What, if any, economic benefits is the New Smyrna Beach**
2 **Project likely to provide to the State of Florida and to**
3 **Florida electric customers?**

4 **A:** The analysis herein of the Florida and contiguous markets
5 demonstrates that the Project and gas CC projects like it
6 will provide direct economic benefits in the form of lower-
7 cost electricity to Florida utilities than would otherwise
8 occur and more profits to low cost producers than would
9 otherwise occur.

10 Exhibit ____ (DMN-14) indicates how to quantify and
11 think about the economic welfare benefits of the Project.
12 The entry of the New Smyrna Beach Power Project shifts the
13 original supply curve for Florida outward and to the right.
14 In particular, the entry of the Project will move the supply
15 curve from the leftmost supply curve in the figure to the
16 rightmost supply curve in the figure. As this occurs, the
17 market clearing price moves from the higher horizontal price
18 line in the figure to the lower horizontal price line in the
19 figure, and the quantity of electric energy consumed shifts
20 from the leftmost vertical quantity line in the figure to the
21 rightmost vertical quantity line. Price is depressed because
22 of the increased capacity chasing a fixed demand, and
23 quantity is stimulated because lower price attracts new
24 customers and/or new uses. The shift from the upper left
25 market clearing dot to the lower right market clearing dot in
26 the exhibit makes both the price depression and the quantity

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1 stimulation clear.

2 The figure quantifies the economic benefit that the
3 consumers in Florida get because of the entry of the Project
4 (the sum of areas $A + B + C$), which represents the price
5 reduction that is enjoyed by existing customers ($A + B$) plus
6 new customers (C). The figure further quantifies the
7 economic benefit that the producers in Florida get because of
8 the entry of the Project (areas $E + F - A$), which represents
9 the increased profit from serving old customers at the new
10 lower cost (E) plus the increased profit from serving new
11 customers at the new lower cost (F) minus the profits that
12 were formerly realized (before the entry of the Project) by
13 running old plants to serve old customers. It is well known
14 that the total economic benefit is the algebraic sum of the
15 consumers plus producers surplus calculations, which is the
16 shaded area in the figure ($B + C + E + F$).

17 I have not quantified all the individual areas in the
18 exhibit, but it would not be difficult to do so. If
19 electricity demand in Florida were rather inelastic (i.e.,
20 steep demand curve), the benefits to Florida consumers would
21 be equal to the volume of production from the Project in each
22 hour of the year in which it is economic times the price
23 depression the entry of the Project induces in the Florida
24 market. It is clear from the exhibit that there must and
25 will be a reduction in the price in the Florida market
26 because of the entry of any inframarginal capacity such as

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1 the New Smyrna Beach Power Project. Florida consumers will
2 not go empty handed because of the entry of the Project; some
3 of the benefit of the entry will accrue to them through cost
4 competition and market arbitrage. This is a critically
5 important point. Entry of a new, merchant unit such as the
6 New Smyrna Beach Power Project increases the quantity of
7 capacity chasing the same market that would have been there
8 with or without the new project. More supply chasing the
9 same market necessarily means lower market price for a
10 merchant producer. Merchant producers do not have the luxury
11 of being able to impose their costs on downstream customers,
12 and their entry therefore necessarily depresses market
13 prices.

14 To summarize, as I mentioned previously, the existence
15 of the New Smyrna Beach Power Project has the prospect of
16 providing direct economic benefits in the form of a
17 competitive check against market power and market
18 concentration that a monopolistic or oligopolistic supplier
19 might otherwise extract from its capacity and/or energy. The
20 Project, like other gas CC projects, provides environmental
21 benefits in the form of reduced environmental emissions that
22 would otherwise occur if coal, steam turbines, or other
23 baseload and/or peaking assets would have to be used instead.

24

25 **Q: Will the Project result in primary fuel savings in Florida?**

26 **A:** Yes. As shown in Exhibit ____ (DMN-7), the Project's

DIRECT TESTIMONY OF DR. DALE M. NESBITT

1 operation is expected to result in significant savings in the
2 consumption of primary fuel that would otherwise be burned to
3 generate electricity. These savings are projected to be
4 between 13 Trillion Btu and 15.5 Trillion Btu per year over
5 the Project's first ten years of operation. If the Project
6 displaces generation from heavy-oil-fired units, the gross
7 oil savings can be expected to be on the order of 6 million
8 to 7 million barrels of oil per year. Even if it only
9 displaces gas burned in less efficient units, savings will be
10 substantial.

11

12 **Q: Please describe and discuss any other benefits that the**
13 **Project will provide.**

14 **A:** As discussed in the testimony of Mr. Meling, the New Smyrna
15 Beach Project will be a state-of-the-art, high-efficiency
16 generating unit with low air emissions. While environmental
17 economists and others may argue about the costs caused by air
18 pollution, it is not seriously argued that pollution is cost-
19 free. Thus, to the extent that the New Smyrna Beach Power
20 Project produces power with less pollution than the
21 generation it displaces, the Project reduces the external
22 costs imposed on society in general (everyone who breathes
23 and maintains property) due to electricity generation. The
24 fact that it may be difficult to quantify such external costs
25 in dollar terms does not diminish their real effects.

26

DIRECT TESTIMONY OF DR. DALE M. NESBITT

1

CONCLUSION

2 **Q: Please summarize the key conclusions of your testimony.**

3 A: 1. There is an immediate and growing need for much more
4 than the 500 MW of electric generation capacity proposed by
5 Duke New Smyrna and the UCNSB and for the electric energy it
6 will produce over its life.

7 2. The gas CC configuration proposed by Duke New Smyrna and
8 the UCNSB is the most cost-effective option to provide the
9 needed Florida capacity and energy. It is better than gas
10 simple cycle, coal, oil, or other technologies.

11 3. The New Smyrna Beach Power Project is definitely
12 economically viable. Its cost is lower than the marginal
13 unit in Florida in an increasing number of hours, it will
14 generate profits for its owners, it will depress wholesale
15 electricity prices in Florida relative to what they would
16 otherwise be, and it will be very clean and environmentally
17 benign. As a merchant facility, it will impose zero cost
18 risks on Florida ratepayers and electricity customers.

19 4. At most, an inconsequential amount of energy from the
20 Project would ever be sold out of state. The Project
21 requires no out of state sales to be profitable and
22 economically viable.

23 5. The Project will provide a number of important benefits
24 to Florida ratepayers. It will increase energy supply,
25 decreasing Florida energy prices relative to where they would
26 otherwise be as a result. It imposes zero risk on Florida

DIRECT TESTIMONY OF DR. DALE M. NESBITT

1 ratepayers. Florida ratepayers will not be obliged to buy
2 energy or capacity from the project unless it is cheaper than
3 all competing alternatives (which it is in initially 69
4 percent of the hours of the year rising to 92 percent of the
5 hours of the year). It will reduce environmental emissions
6 relative to what otherwise would occur because it is based on
7 a low heat rate gas combined cycle configuration. Finally,
8 it will ameliorate any market power or market concentration
9 issues that might be present in Florida, reducing ratepayer
10 prices as it does so.

11

12 **Q: Does this conclude your direct testimony?**

13 **A:** Yes. The foregoing testimony, together with the referenced
14 Exhibits, concludes my testimony.

15

1 BY MR. McGLOTHLIN (Continuing):

2 Q Doctor Nesbitt, have you prepared a summary of
3 your testimony?

4 A Yes.

5 MR. GUYTON: Madam Chairman, may I take the
6 witness on voir dire, please?

7 CHAIRMAN JOHNSON: Sure.

8 MR. GUYTON: I have concern about an exhibit in
9 this witness's testimony and part of his testimony, and I
10 think we would be well served to get that resolved before
11 he testifies and perhaps relies on it because I intend to
12 move to strike part of it.

13 CHAIRMAN JOHNSON: Okay.

14 MR. MOYLE: Madam Chair, I'm sorry to interrupt
15 Mr. Guyton, but just so that my notes are clear. With
16 respect to -- it was my suggestion about moving in a
17 Composite Exhibit 16 which constituted all of the exhibits,
18 as I understand it, that were filed along with the petition
19 with the Commission. Mr. Guyton has said he has an
20 objection to doing that. I was wondering whether we could
21 identify what that objection is and then move everything in
22 except the thing he objected to, unless he has a whole
23 series of objections to that. It would help with my record
24 keeping.

25 MR. GUYTON: We are about to address the portion

1 of Exhibit 16 with which we take issue as well as a portion
2 of Mr. -- Doctor Nesbitt's testimony and exhibits through
3 the voir dire.

4 CHAIRMAN JOHNSON: Okay.

5 MR. MOYLE: Is that the only thing then as to
6 what you are about to do? In other words, you wouldn't
7 have an objection --

8 MR. GUYTON: It's all I've identified right now,
9 John.

10 VOIR DIRE EXAMINATION

11 BY MR. GUYTON:

12 Q Doctor Nesbitt, would you turn to page 8 of your
13 testimony, please?

14 A Page 8?

15 Q Yes, sir.

16 A Okay, I'm on Page 8.

17 Q And there at Lines 4 through 14, you tell the
18 Commission about the two models that you use to draw your
19 conclusions in your testimony, don't you?

20 A Yes, my testimony describes the North American
21 Regional Electric and the North American Regional Gas
22 models, yes.

23 Q And then you provide more detailed descriptions
24 of those two models in your DMN-15 and your DMN-16,
25 correct?

1 A Yes, I do.

2 Q Would you turn to your DMN-7, please?

3 A I have it.

4 Q The column on DMN-7 entitled "Capacity Factor" --

5 A Yes.

6 Q -- that is not an output from your North American
7 Regional Electricity model, is it, sir?

8 A That is derived from outputs from the North
9 American Regional Electricity model based on a statistical
10 fitting technique thereafter, so it is an output of that
11 model.

12 Q Well, sir, let's be clear. Those capacity
13 factors were not calculated in your model run from the
14 North American Regional Electricity model, instead they
15 were calculated from a third model, your operating model,
16 correct?

17 A They were calculated based on outputs from the
18 North American Regional Electricity model. They were
19 calculated based on outputs from the North American
20 Regional Electric Model.

21 Q And what model did you use to calculate those
22 capacity factors?

23 A The model that was used was the operating model
24 in the statistical fitting portion that I just alluded to
25 thereof.

1 Q Now in your prefiled testimony, you've not
2 described the operating model, have you?

3 A I don't believe the operating model was described
4 in the prefiled testimony, no.

5 MR. MCGLOTHLIN: Commissioners, I'm going to
6 object to a continuation of this line of questioning. When
7 Mr. Guyton said he wanted to voir dire the witness, I
8 thought he had some questions about the witness's
9 qualifications, but instead, it seems to be premature cross
10 examination. The witness has not sponsored his direct
11 testimony. Mr. Guyton will have an opportunity at that
12 time to cross examine on the witness's exhibits.

13 CHAIRMAN JOHNSON: Mr. Guyton.

14 MR. GUYTON: Commissioner, I ask for a little
15 leeway. I think it will become clear in a matter of
16 minutes that we are going to see whether or not this
17 witness has disclosed information which he should have
18 disclosed. If we allow him to proceed with his summary and
19 we wait until cross examination, this witness is going to
20 make additional comments based upon evidence that we think
21 is inappropriate. The only way to address that is through
22 voir dire. The purpose of the voir dire is simply to show
23 that it's inappropriate for him to be able to rely on some
24 of these exhibits.

25 CHAIRMAN JOHNSON: Go ahead.

1 BY MR. GUYTON (Continuing):

2 Q Now in your operating model, you estimate the
3 profitability and performance of an individual unit, create
4 projections of operating hours, create price duration
5 curves and profitability, correct?

6 A We have the capability to do that in the
7 operating model, yes.

8 Q And one of the purposes of your DMN-7 is to
9 quantify projected fuel displacement benefits of the Duke
10 New Smyrna unit, isn't it?

11 A One of the purposes, indeed, is to calculate the
12 degree of fuel displacement that occurs because of the Duke
13 New Smyrna unit, yes.

14 Q Are your Exhibit DMN-7 and the operating model
15 run from which the capacity factors on DMN-7 were
16 developed, are they documents or analyses in which it is
17 assumed that the project will displace oil fired
18 generation?

19 A Could I get you to read the question back,
20 please?

21 Q Yes, sir. Are DMN-7 and the operating model run
22 from which the capacity factors on DMN-7 were developed,
23 are those documents or analyses in which it is assumed that
24 the project will displace oil fired generation?

25 A No.

1 Q Are DMN-7 and the operating model run from which
2 the capacity factors on DMN-7 were developed, documents and
3 analyses in which it is assumed that the project with its
4 high heat rate of 6832 BTU per kilowatt hour will displace
5 generation from less efficient gas fired steam boiler units
6 or even from less efficient CTGs.

7 MR. McGLOTHLIN: Excuse me Mr. Guyton, did you
8 say high heat rate?

9 MR. GUYTON: Yes.

10 MR. McGLOTHLIN: Object to the characterization.

11 MR. MOYLE: Madam Chairman, this sounds an awful
12 lot like cross examination, Number 1. Number 2, if there
13 is an error with respect to the exhibit and he's relying on
14 it, I think the appropriate time to do that is during cross
15 when you can attack his credibility. You know, it seems
16 you've given him some additional leeway in time, and --

17 MR. McGLOTHLIN: I would second that, Madam
18 Chairman. The witness is here ready to defend his exhibits
19 and is ready to sponsor his testimony and defend cross
20 examination, and Mr. Guyton has the cart way before the
21 horse.

22 MR. GUYTON: Commissioner, I only have about
23 three more questions.

24 MR. McGLOTHLIN: Well, that is three too many.

25 CHAIRMAN JOHNSON: Go ahead.

1 BY MR. GUYTON (Continuing):

2 Q Can we get a response to this? Are DMN-7 and the
3 operating model run from which the capacity factors on
4 DMN-7 were developed, are those documents and analyses in
5 which it is assumed that the project with its high heat
6 rate of 6832 BTU per kilowatt hour will displace generation
7 from less efficient gas fired steam boiler units or even
8 from less efficient CTGs?

9 A I'm having some difficulty answering that yes or
10 no. Let me tell you what DMN-7 is, and maybe that will
11 help you, Mr. Guyton. In table DM -- excuse me, in Exhibit
12 DMN-7, if you refer to the third column, the capacity
13 factor calculation that's summarized there is based on
14 interplant and interregional competition around the entire
15 United States, including but not limited to Florida and
16 SERC. So Column 3 is not based on any assumption of any
17 individual plant entering anywhere at any time. It's a
18 full continental market equilibrium that gives us those
19 numbers.

20 Armed with those numbers in Column 3, we've
21 simply made a very simple calculation that is very apparent
22 on this table. We have said how much primary energy
23 savings would that imply of whatever type assuming the heat
24 rates, i.e., the thermal efficiencies that are clearly
25 articulated on the page. What if that were all oil and

1 what if that were all gas?

2 Q That assumes the heat rate for the Duke New
3 Smyrna unit of 6832 BTU per kilowatt hour?

4 A That assumes a heat rate of the Duke New Smyrna
5 under of 6832 BTUs per kilowatt hour, yes.

6 Q And this analysis shows displacement of
7 generation from less efficient gas fired steam boiler units
8 or even from less efficient CTGs, does it not?

9 A I'm sorry, I missed the question.

10 Q This exhibit shows displacement of generation by
11 the Duke New Smyrna unit from less efficient gas fired
12 steam boiler units or even from less efficient CTGs, does
13 it not?

14 A Yes, it does.

15 Q Now are DMN-7 and the operating model run from
16 which the capacity factors on DMN-7 were developed
17 documents and analyses supporting the project's capacity
18 factor ranging from 83% in 2002 to 94% or more in 2012?

19 A I'm not sure I understand what the question is.

20 Q All right. Is your DMN-7 and the underlying
21 model run a document and an underlying analysis that
22 supports the project's capacity factor running from
23 approximately 83% in 2002 to 94% or more in 2012?

24 A Mr. Guyton, the analysis that supports the
25 capacity factor is not exhibits DMN-7. It's the North

1 American Regional Electricity model and the subsequent
2 operation of the operating model on the results thereof.
3 DMN-7 is an illustration of what the answers from that
4 model tell us about substitution of high heat rate
5 inefficient capacity caused by the entry of low -- a heat
6 rate highly efficient, Duke New Smyrna Beach like
7 capacity.

8 Q Doctor Nesbitt, you or some of your associates at
9 Altos assisted Duke New Smyrna in their response to Florida
10 Power & Light Company's first request for production to
11 Duke New Smyrna, did you not?

12 A I don't remember what the first request was right
13 offhand.

14 Q You do recall providing some assistance to Duke
15 New Smyrna in providing a response to a document
16 production, don't you?

17 A I remember providing assistance to my attorneys.

18 Q All right, sir. I'm going to ask you to take a
19 look, if you would --

20 CHAIRMAN JOHNSON: Mr. Guyton, how much more do
21 you have because you are -- you are going into cross, and
22 it may be more appropriate for you to handle this on a case
23 by case basis as -- after he testifies because I don't see
24 where you are getting anywhere either.

25 MR. McGLOTHLIN: I renew my objection.

1 CHAIRMAN JOHNSON: He is answering the questions
2 accurately.

3 MR. McGLOTHLIN: I renew my objection and point
4 out that you've given Mr. Guyton quite more latitude than
5 he said he needed and we're not home yet, and this is
6 simply inappropriate and prejudicial to the witness's
7 opportunity to present his testimony.

8 MR. GUYTON: Madam Chairman, may I ask him simply
9 to take a look at the first three requests and ask him if,
10 indeed, the operating model run is not --

11 MR. McGLOTHLIN: Madam chairman, I object.
12 You've given Mr. Guyton that opportunity before, and we are
13 still working on it. I would like for a ruling on my
14 objection.

15 CHAIRMAN JOHNSON: Mr. Guyton, I'm going to stop
16 the line of questioning because I think we are going far
17 beyond what voir dire is generally designed to accomplish.
18 I was trying to, when you first stated what you were trying
19 to achieve, I thought perhaps if you could achieve it
20 expeditiously. Additionally, I believe his answers, even
21 if you went through all of this -- well, I'm not going to
22 tell you how I'm going to rule because it hasn't been moved
23 yet, but I want to end the line of questioning. If you
24 want to offer something at this point, go ahead and make
25 the point, but I'm not going to allow us to spend any more

1 time through this process cross examining this witness.

2 MR. GUYTON: All right. I will go ahead and move
3 it. Doctor Nesbitt's testimony is largely a blackbox,
4 Commissioners. He tells -- he starts off by telling you
5 that he has two models, and he gives you some detailed
6 expression of what those models are. What he doesn't tell
7 you is that he uses a third model, the operating model,
8 and it's the only model in which he used to develop DMN-7,
9 the run from it was. He used output from his North
10 American Regional model as input to his operating model
11 run; but the only model he used for this particular one was
12 his operations model. We --

13 MR. McGLOTHLIN: Excuse me, I'm going to object,
14 Mr. Guyton. Not only are we into cross examination, now we
15 are making a motion and making oral argument before we have
16 a chance to redirect. Not only has he not presented his
17 direct testimony, we haven't had a chance to elicit
18 responses to -- based on Mr. Guyton's question. We've got
19 the cart before the horse again. I suggest the appropriate
20 time to do this is at the conclusion of the testimony,
21 after redirect and when I move the evidence.

22 MR. GUYTON: Commissioner, if we wait that long,
23 the horse literally will be out of the barn. This witness
24 will have testified relying on this, and I will have no
25 hope of going back and identifying specific passages in his

1 testimony that are inappropriate and should be stricken.
2 That's the reason that I asked to do this up front.

3 MR. MCGLOTHLIN: I object to that argument
4 occurring before I have a full opportunity for redirect on
5 what has amounted to significant cross examination.

6 CHAIRMAN JOHNSON: And I understand the dilemma
7 that you are in, but I don't think we are going to be able
8 to cure that; and to the extent that there are objections
9 made, if we need to strike, if we need to give you the
10 opportunity to go back through and determine what needs to
11 be stricken, we'll have to handle it in that manner.

12 MR. GUYTON: So I won't be allowed to proceed
13 even to say what I have an objection to here?

14 CHAIRMAN JOHNSON: I think you did. Well, you
15 need say what you have an objection to and not go through
16 the testimony and the background information.

17 MR. GUYTON: We object to the admission of DMN-7
18 or any discussion of it, table 10 of the Joint Petition,
19 the first full paragraph on Page 56 of the Joint Petition
20 exhibit -- I'm sorry, I said Table 10 of the Joint
21 Petition. I meant Table 10 of Exhibit 16, the Joint
22 Petition exhibit. The paragraph at the bottom of Page 73
23 of the Joint Petition --

24 CHAIRMAN JOHNSON: I'm going to write down the
25 things that you said. You said Table 10?

1 MR. GUYTON: Of the Joint Petition exhibit. The
2 first full paragraph on Page 56 of the Joint Petition
3 exhibit, the paragraph at the bottom of Page 73 of the
4 Joint Petition exhibit and continuing on to the top of Page
5 74. We object to the insertion into the record of Page 28,
6 Lines 2 through 10 of Doctor Nesbitt's prefiled direct
7 testimony. And if you'll bear with me, I have one other
8 passage I'm looking for where he relied on DMN-7. And the
9 passage that begins at the bottom of Page 36, Line 25
10 through Page 37, Line 10.

11 CHAIRMAN JOHNSON: And you said 73, the last
12 paragraph, 74 -- Was there --

13 MR. GUYTON: The paragraph continues between 73
14 and 74.

15 CHAIRMAN JOHNSON: Okay.

16 MR. GUYTON: Commissioners, I appreciate your
17 indulgence. I thank you for the opportunity. We'll take
18 the matter up further in cross, but that's the motion.

19 MR. McGLOTHLIN: Of course, Chairman Johnson --

20 CHAIRMAN JOHNSON: Let me be clear. I understand
21 what you're objecting to at this point. I'm going to
22 overrule that, but at the appropriate time, if you want to
23 renew your objections as the issues are raised, I will
24 entertain those arguments.

25 MR. GUYTON: Thank you.

1 MR. McGLOTHLIN: Of course, we had no prior
2 notice of the objection and motion, Chairman Johnson, so
3 we'll have to use a break to see exactly what the scope of
4 it is and we'll respond at the appropriate time.

5 I do have one more house cleaning matter, if
6 you'll allow me.

7 BY MR. McGLOTHLIN (Continuing):

8 Q Doctor Nesbitt, I think you indicated that you
9 had a correction on some exhibits as well. Would you
10 identify those at this time?

11 A Yes, I'd like to. Thank you very much. DMN-5
12 and 6 were corrected and resubmitted late following my
13 deposition. I believe, Mr. McGlothlin, you have corrected
14 and distribute copies of those. I would like to substitute
15 those for what was in the original direct testimony.

16 And then in DMN Number 15, there are a number of
17 references to 30 regions in the Altos North American
18 Regional model. There are actually 32. Please make note
19 of that and substitute that every time that's in there, and
20 that concludes it.

21 MR. McGLOTHLIN: Commissioners, I've distributed
22 the revised DMN-5 and 6 to the parties, and I have copies
23 for you at this time. We also distributed a handout of
24 some bullet points and some visuals taken from -- distilled
25 from and taken from the prefiled direct as an outline and

1 visual aid for the summary. The parties have also received
2 this earlier today.

3 BY MR. MCGLOTHLIN (Continuing):

4 Q Doctor Nesbitt, would you proceed to provide your
5 summary, please?

6 A Yes. Beginning on Page 1 we can see that the
7 title here is the need for and the viability of the Duke
8 New Smyrna Beach project. Flipping over to Page 2, I'd
9 like to start out with the key conclusion, really the key
10 reality; and that is, that the Duke New Smyrna Beach -- and
11 I'm going to abbreviate that throughout the remainder of
12 this package, DNSB; and if I mispronounce it, it's because
13 I don't read acronyms all that well -- project is needed
14 now. Now. And it's economically viable now.

15 And what I want to talk about a little bit is the
16 methodology that my colleagues and I at Altos have used to
17 demonstrate that, and that's the model or models, the data
18 that supports those models and the analysis that follows
19 from those models, and I think paints a clear picture of
20 the economic viability of this project.

21 If we flip to Page Number 3, this is a picture
22 from my prefiled testimony of the model, and it indicates
23 that the philosophy that we've used here embodies an
24 approach that we want to -- we want to consider Florida not
25 as an island in and of itself but is independently

1 interconnected prospectively to the rest of North America.

2 Okay, what we want to do is look at supply,
3 demand, transportation, entry, operation, and exit in each
4 of those 32 regions that's articulated there. We want to
5 lay out prospective and existing transmission between and
6 among every contiguous pair of regions. We want to look at
7 generation and consumption and in-bound transmission and
8 out-bound transmission within every region; and that's,
9 indeed, what we have done.

10 If we flip over to Page Number 4, I think it's
11 important to point out in a little bit of detail how that's
12 been done here. Let me point you to the circle in the
13 middle that's called "indigenous generation." What
14 "indigenous generation" simply means is generation in any
15 of the given regions in the model on the previous page. In
16 this case, let's say Florida.

17 Now the model, as it's laid out here, does the
18 kind of simulations that I believe Commissioner Jacobs
19 talked about yesterday, ascending cost dispatch. You lay
20 the plants out in ascending order of cost, so have an
21 existing mix of capacity that will, indeed, run right on up
22 the capacity -- or the energy supply curve until you get to
23 demand, and then it will stop running up. So in many
24 regards, for existing capacity it's no different from the
25 utility planning methods that I've seen over the last two

1 decades, the Pro Mods, the Henwoods (phonetics), the rather
2 standard planning techniques. I don't want you to be
3 confused and say, oh, this is just a free market merchant
4 model because it's not. It simulates the world you have
5 here. It also simulates, in an important sense, the FERC
6 888 world as well.

7 In indigenous generation we've gone through a lot
8 of pain and I think got a lot of success at putting in
9 investment. How many new plants will the market bring in?
10 And it will bring them in until they are no longer
11 profitable to bring them in, and then it will stop; that's
12 what the model does. And I think in an important sense
13 that responds to a number of questions that were raised
14 yesterday from the various commissioners. It also retires
15 or stops running plants. It idles plants that are not
16 economic and not competitive.

17 Okay, important, indigenous consumption is
18 represented in each region at the other left. Fuel
19 substitution is represented at the bottom, and it's
20 represented in the most aggressive possible way so that we
21 can have the most conservative estimate -- credible
22 estimate that we can think of for fuel price relative to
23 power price in each of the regions. We don't want to
24 inadvertently have too optimistic or too wide a spread
25 between those prices.

1 And then finally, importantly, we represent
2 intercourse between the various regions, and this is
3 articulated in great detail in DMN-15.

4 Moving on quickly to Page Number 35, we've worked
5 equally assiduously to represent natural gas price by
6 supply basin, by existing and prospective transmission
7 link, and by demand region throughout North America. Why
8 have we done this? We want to have a consistent and proper
9 and correct representation of gas price and basis
10 differential so that we don't overstate or understate
11 things inadvertently.

12 Moving to Page Number 6, when you boil it down,
13 there is a picture of the methodology. Supply demand
14 balancing, market clearing, fair market value of every
15 commodity at every point in North America; that's the basic
16 assumption. Note in this simple diagram there is a price
17 there. Every plant is a little tiny piece of that supply
18 function. Every plant sees and gets the same price. The
19 plant runs when its production cost is lower than the
20 price. The plant doesn't run when its production cost is
21 above the price; it's idle.

22 Moving to Number 7, and I'm talking about the key
23 results. It's very important, number 1, the Duke New
24 Smyrna Beach project because there's -- or excuse me, there
25 is a direct and an immediate economic need. The project

1 displaces generation from high cost plants that would
2 otherwise have to be maintained -- if you want to run them,
3 you have to maintain them -- and run; and it displaces them
4 with a newer, lower cost, cleaner plant. Duke New Smyrna
5 Beach project is a high efficiency lower cost plant than
6 what it displaces, very important.

7 Corollary to that, Florida ratepayers' need, the
8 lower prices that are going to result from the entry of
9 that plant; and lower prices will result from the entry of
10 that plant. We will see why in a minute.

11 Now displacement of high cost plants by low cost
12 plants, so what? Well, it's not so what. As indicated in
13 my testimony on Page 35, Line 14, it creates what
14 economists call producers plus consumer surplus. Okay, in
15 the lexicon we heard yesterday, this is economic wealth.
16 This is GDP for the State of Florida. This is investment.
17 This is jobs. This is manna from heaven.

18 COMMISSIONER GARCIA: What about the stranded
19 investment.

20 DOCTOR NESBITT: Can I defer that for a minute?
21 I have plenty to say about that.

22 COMMISSIONER GARCIA: Sure.

23 DOCTOR NESBITT: Page Number 8 -- Actually let
24 me not defer that, Commissioner Garcia, I would like to
25 address that; and that was why I emphasized the word

1 "maintained," if we go back to the first item.

2 There is a lot of -- a lot of fixed O&M costs
3 that you have to plow into a plant to keep it alive, okay?
4 So if we look at one of these high cost units, I pointed
5 out in any testimony, a 1972 Chevrolet Vega. Anybody still
6 drive one of those? Do you drive one of those? I don't
7 drive one of those. But they do have a high O&M cost.
8 Okay, it would cost you a lot of money to maintain it, just
9 to keep it in your garage if you didn't drive it. That
10 cost is totally avoidable if you don't run the plant. That
11 is not a stranded cost.

12 Ongoing maintenance cost to keep a plant alive is
13 not rate-based cost. There is no entitlement to run it.
14 That's cost that's strictly avoidable by introducing
15 efficient, new high heat rate, low cost plants. How much
16 is left on the books? How much is truly sunk, truly
17 embedded, return of and return on rate base in these old
18 plants? I don't know the answer to that. My conjecture is
19 not much. My conjecture is that the plants you are going
20 to see displaced out Florida plants you want to see
21 displaced. The embedded costs are very low, and the
22 go-forward maintenance costs of those 1972 Chevy Vegas is
23 very high; you want them out. And as you take them out,
24 you create wealth for the citizens of Florida; and you
25 create low prices unilaterally for the citizens of

1 Florida.

2 Sir, does that answer the question?

3 COMMISSIONER GARCIA: Pretty much.

4 A Okay, moving over to page number 8, one of the
5 points that's very important to make here is that the Duke
6 New Smyrna Beach project doesn't have to beat the next
7 competitive entrant; it has to beat the last dog in the
8 stack. It's not a race against prospective new entrants
9 that matters. It's a race between the brand new plant, the
10 Duke New Smyrna Beach plant and the last plant out on the
11 stack, the highest cost plant out there. And it's the cost
12 differential between the first plant in, the Duke New
13 Smyrna Beach plant, the one with the low heat rate and the
14 low O&M cost, and the first plant out, which is the one
15 with the high O&M cost and typically the lousy heat rate
16 that sets the benefits. Benefits are high. They are
17 irrefutable. The last cost -- the last plant in the
18 Florida stack is a very expensive plant, and I would agree
19 with Mr. Green that the first plant into the stack is a
20 very low cost plant, that's the Duke New Smyrna Beach
21 plant. So it's very important that you understand, very
22 important. The benefits are set by the difference between
23 DNSB and the marginal unit that is displaced. And
24 displaced doesn't mean shut down; it means you don't have
25 to run it as much or it's shut down.

1 Okay, the other thing, and we are going to show
2 this on a diagram in a minute, is Point Number 3. When
3 Duke New Smyrna Beach enters, wholesale energy prices in
4 Florida are directly reduced as the set of such entry,
5 directly reduced as a causal relationship. How do you know
6 this? I grew up in Nevada. We are pretty dumb out in
7 Nevada. We know when there are more cows put in the stock
8 yard, the price of beef goes down. When there's more
9 plants put into the supply stack, the price of power has to
10 go down. You've got more supply chasing a fixed demand.

11 Okay. So if you put 500 megawatts, admittedly
12 not a lot of incremental supply into the Florida market,
13 the price of power in Florida has to go down. What does
14 that mean? That means by allowing Duke New Smyrna Beach to
15 go forward you've reduced the price to every consumer in
16 Florida; price signals proliferate throughout Florida.

17 Let's look at Page Number 9.

18 COMMISSIONER DEASON: Let me ask a question on
19 your beef analogy there.

20 DOCTOR NESBITT: Certainly.

21 COMMISSIONER DEASON: It may very well happen in
22 Nevada, I certainly don't know, but is there a commission
23 in Nevada that determines the number of cows needed in
24 Nevada and then says who can grow that number of cows?

25 DOCTOR NESBITT: Not that I know of, Commissioner

1 Deason.

2 COMMISSIONER DEASON: Okay.

3 DOCTOR NESBITT: That's not the point though.
4 The point I wanted to make, and it's a good question, is
5 when you introduce one more unit of supply into a fixed
6 market, price has to go down, so everybody has to benefit
7 because electricity may move at the speed of light, but
8 price certainly moves at the speed of light in the lexicon.
9 More supply chasing fixed demand means lower price. It
10 means better price, better electric price in the wholesale
11 markets in Florida.

12 Let me skip over Page Number 9 and go to -- well,
13 let me not skip over Page Number 9.

14 Page Number 9 which is taken from my direct
15 testimony is a picture of the supply stack in the State of
16 California. A lot of people say, oh, California has a big
17 problem. Well, the supply stack in California as you're
18 about to see doesn't look too different from the supply
19 stack in the State of Florida. Why? Well, the supply
20 stack in the State of California has a whole bunch of
21 must-run units, and hydro and NUGs and IPPs that are
22 sitting out to the left, 20 thousand megawatts worth. And
23 you move up to nukes, and then you move up to some coals, a
24 tiny bit of gas combined cycle in California, and an
25 extremely wide traunch of relatively high cost capacity:

1 Old steam turbines in California that are all gas.

2 If you flip over to the next page, which is the
3 supply stack for Florida my colleagues and I have put
4 together, a very similar qualitative picture, and we've --

5 COMMISSIONER GARCIA: Explain your California,
6 what you were trying to get at with your California. I
7 didn't -- I wasn't listening, I'm sorry.

8 DOCTOR NESBITT: Okay, what I'm trying to get out
9 of that is simply this notion that you have some fairly low
10 cost capacity, fairly low cost energy at the left and then
11 you get up on a long traunch, 20 gigawatts, 20 thousand
12 megawatts of relatively much more costly steam turbine
13 capacity. Demand is almost always out on that flat
14 traunch. Most of the hours of the year demand is over
15 there on that big flat traunch, so you don't see a lot of
16 volatility in price during those hours. So you lull
17 yourself into a set of complacency if you're a Californian,
18 hey, I've got a good deal going here. You don't have a
19 good deal going here in California. Because if you put a
20 lot of gas combined cycle units in there and push that
21 whole supply stack out to the right, you've reduced that
22 large traunch and reduced the volatility, or at least left
23 the volatility the same, very similar situation here in
24 Florida as you see by the next picture.

25 (Whereupon, the transcript continues in sequence

1 in Volume 6)

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