



EARTHJUSTICE

ORIGINAL

BOZEMAN, MONTANA DENVER, COLORADO HONOLULU, HAWAII
INTERNATIONAL JUNEAU, ALASKA OAKLAND, CALIFORNIA
SEATTLE, WASHINGTON TALLAHASSEE, FLORIDA WASHINGTON, D.C.
ENVIRONMENTAL LAW CLINIC AT STANFORD UNIVERSITY

RECEIVED
MAR 16 PM 2:14
COMMISSION
CLERK

March 16, 2007

Blanca Bayo
Director, Office of the Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Blvd.
Tallahassee, FL 32399

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

Dear Ms. Bayo,

Please find enclosed an original and 15 copies each of the initial direct testimony of John J. Plunkett filed on behalf of Intervenor, The Sierra Club, Inc. (Sierra Club), Save Our Creeks (SOC), Florida Wildlife Federation (FWF), Environmental Confederation of Southwest Florida (ECOSWF), and Ellen Peterson.

Thank you for your attention to this matter.

CMP _____
COM 5
CTR Orig
ECR 1
GCL _____
OPC _____
RCA _____
SCR _____
SGA _____
SEC _____
JTH _____

Sincerely,

Michael Gross
Earthjustice
111 S. Martin Luther King Jr. Blvd.
Tallahassee, FL 32301
(850) 681-0031

CC: All Official and Interested Parties

RECEIVED & FILED

FPSC-BUREAU OF RECORDS

DOCUMENT NUMBER-DATE

111 S. MARTIN LUTHER KING JR. BLVD., TALLAHASSEE, FL 32301
T: 850.681.0031 F: 850.681.0020 E: eajusfl@earthjustice.org W: www.earthjustice.org

02414 MAR 16 5

FPSC-COMMISSION CLERK

ORIGINAL

BEFORE THE PUBLIC SERVICE COMMISSION

In re: Florida Power & Light Company's
Petition to Determine Need for FPL Glades
Power Park Units 1 and 2 Electrical Power
Plant

DOCKET NO.: 070098-EI

DIRECT TESTIMONY OF
JOHN J. PLUNKETT

ON BEHALF OF

THE SIERRA CLUB, INC.

SAVE OUR CREEKS

FLORIDA WILDLIFE FEDERATION

ENVIRONMENTAL CONFEDERATION OF SOUTHWEST FLORIDA

ELLEN PETERSON

MARCH 16, 2007

DOCUMENT NUMBER-DATE
02414 MAR 16 5
FPSC-COMMISSION CLERK

TABLE OF CONTENTS

I. Identification and Qualifications 1

II. Introduction and Summary 4

III. Energy-Efficiency and the Need for the Glades Generating Units 6

 A. FP&L’s Planned DSM Savings 6

 B. Energy-Efficiency Portfolios in Other Jurisdictions 7

 C. Additional Energy-Efficiency Resources for FP&L 10

 D. Effect of Additional FP&L Energy-Efficiency on the Need for the
 Glades Units 11

IV. Conclusions and Recommendations 13

TABLE OF EXHIBITS

Exhibit JJP-1 *Professional Qualifications of John Plunkett*

Exhibit JJP-2 *Energy Efficiency Portfolio Performance Comparison*

Exhibit JJP-3 *Pacific Gas & Electric Efficiency Spending and Savings*

Exhibit JJP-4 *DSM and the Need Date for the Glades Units*

1 **Q: State your name, occupation and business address.**

2 A: I am John J. Plunkett, a partner in Green Energy Economics Group. My address
3 is 1002 Jerusalem Road, Bristol, VT 05443.

4 **Q: Summarize your education and professional experience.**

5 A: I graduated Phi Beta Kappa with a B.A. in Economics, with Distinction, from
6 Swarthmore College. I have twenty-eight years of experience in energy utility
7 planning, concentrating on demand-side management as a resource and business
8 strategy for electric and gas service providers. I recently co-founded Green
9 Energy Economics Group, a consultancy specializing in energy efficiency and
10 renewable resource economics, with Francis Wyatt, my colleague since 1992.
11 We provide technical and strategic assistance with energy-efficiency and
12 distributed generation portfolio development, design, analysis, planning,
13 administration, implementation management support, oversight, performance
14 verification and evaluation, performance incentive mechanisms, and regulatory
15 and ratemaking treatment.

16 I have testified as an expert witness on energy efficiency as an
17 electricity and gas supply alternative in regulatory proceedings in the U.S. and
18 Canada, including New York, New Jersey, Connecticut, Indiana, Florida,
19 Ontario and Quebec. I have led several major studies of economically achievable
20 efficiency potential, including New York, Vermont, and Maine. I have also led
21 collaborative teams in the estimation of electric, economic, and environmental
22 impacts of energy-efficiency portfolios, including New Jersey, Maryland, and
23 two Chinese provinces.

24 For the past six years I have served on the senior management team of
25 Efficiency Vermont, the nation's first statewide electric efficiency utility, which

1 has been responsible for managing Vermont's \$70 million efficiency portfolio
2 through 2005 since its inception in 2000. Efficiency Vermont has exceeded its
3 energy and economic performance goals on or under budget during both its
4 three-year contracts, and has just entered a third contract through 2008. We are
5 in the midst of planning how to invest the 75% increase in annual efficiency
6 investment recently announced by the Public Service Board in 2007 and 2008.

7 Since July 2003 I have led the Natural Resources Defense Council
8 consulting team working with China's Jiangsu province to develop and
9 implement energy-efficiency programs as "Energy-Efficiency Power Plants"
10 ("EPP"). I am currently leading an Asian Development Bank consulting team to
11 analyze the energy, economic, financial, and environmental prospects of
12 launching an EPP in Guangdong province in 2007 funded through a \$100
13 million, 24-year loan to finance efficiency retrofit investments by nonresidential
14 customers.

15 Since April 2005, I have been leading the assessment and development
16 of demand-side alternatives to transmission and distribution investments in
17 Vermont's "southern loop" on behalf of Vermont Electric Power Company and
18 Central Vermont Public Service. In parallel, I am leading the development of
19 first-stage implementation plans for deployment of targeted demand-side
20 management programs on behalf of CVPS. In 2003 I led an analysis of
21 economically deliverable demand-side transmission capacity, submitted by the
22 Vermont Electric Power Company in its application for approval of a major
23 transmission upgrade, and testified in support of this analysis in 2004.

24 Over the last year and a half I submitted testimony before the
25 Pennsylvania Public Utilities Commission recommending energy-efficiency

1 portfolio investment and savings targets for three utilities in three proceedings. I
2 testified in January before the British Columbia Utilities Commission regarding
3 appropriate DSM spending and savings for BC Hydro's long-term resource
4 planning.

5 I testified in 2005 before the New York Public Service Commission supporting
6 the economic achievability of Con Edison's proposed \$250 million investment in
7 targeted DSM. In 2004 I testified on behalf of a variety of environmental groups
8 before the Quebec Energy Board on the potential for energy efficiency to help
9 displace the need for a planned combined-cycle generating facility, and again in
10 2005 on ways for Hydro Quebec to increase its acquisition of energy-efficiency
11 resources. I was lead author and witness in support of a comprehensive
12 assessment of utility administration of Connecticut's Conservation and Load
13 Management program on behalf of the Office of Consumer Counsel in 2003-
14 2004.

15 I led the economic analysis of the \$150 million, five-year Clean Energy
16 Initiative on behalf of the Long Island Power Authority in 1999; since 2002 I
17 have advised LIPA on future energy-efficiency spending and performance goals,
18 most recently involving long-term spending and savings goals for the next ten
19 years.

20 I have served as an economic advisor to Northeast Energy Efficiency
21 Partnerships since 1998, for which I have led several analyses of a variety of
22 regional utility energy-efficiency initiatives. In 2005 I served as NEEP's
23 technical advisor on regional protocols for interstate Energy-Efficiency portfolio
24 comparison. I have also been an economic advisor to the non-utility parties
25 engaged in energy-efficiency collaboratives with Massachusetts electric and gas

1 utilities since 1999, in New Jersey from 1996-2002, and in Maryland from 1990-
2 1997.

3 Exhibit JJP-1 provides my full resume.

4 **Q: In what area of expertise do you offer testimony in this case?**

5 A: I testify as an expert on energy-efficiency portfolio design, planning, costs and
6 performance.

7 **Q: Have you testified before this Commission previously?**

8 A: Yes. In 1992 I testified in Docket No. 920520-EG, In Re: Joint Petition of
9 Florida Power and Light and Cypress Energy Partners, Limited Partnership for
10 Determination of Need.

11 **I. Introduction and Summary**

12 **Q: On whose behalf are you testifying?**

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

16 **Q: What is the purpose of your direct testimony?**

17 A: I have been asked by my clients to assess the extent to which increased energy-
18 efficiency investments could affect the need for the Glades coal-fired generating
19 units.

20 **Q: What issues do you address?**

21 A: I address issues 1 through 6 regarding the need for the Glades generating units
22 from FP&L's preliminary list of issues in this case, dated March 12, 2007.

23 **Q: How does your testimony address the need for the proposed facility?**

1 A: My testimony addresses the amounts and costs of additional cost-effective
2 demand-side management (“DSM”) resources that FP&L could be expected to
3 acquire if the Company intensified, expanded and accelerated its planned
4 energy-efficiency portfolio. After reviewing energy-efficiency spending and
5 savings among northeastern utilities, I use recent experience of Massachusetts
6 utilities to scale up FP&L residential and nonresidential efficiency savings by
7 roughly half. I also use recent actual and planned expenditures and savings by
8 Pacific Gas and Electric (“PG&E”) to project annual budgets and electricity
9 savings if FP&L replicated its performance with and commitment to acquiring
10 all cost-effective DSM. Doing so would more than triple the peak-demand
11 reductions FP&L plans to realize over the long term from its DSM portfolio.

12 **Q: How would greater amounts of DSM affect the need for the Glades units?**

13 A: I found that increased DSM could defer the need for the two units. By cutting
14 load growth beyond what FP&L plans, additional DSM postpones the date at
15 which peak load reaches the level FP&L now forecasts for the in-service date of
16 the proposed Glades units. The greater the increase in DSM savings, the farther
17 into the future additional DSM postpones the need date.

18 If FP&L exhibited the same spending depth (dollar of program expenditure per
19 kWh sold) and savings yield (kWh per dollar of portfolio expenditure) as
20 Massachusetts did between 2002 and 2004, it would defer the need date for both
21 units by one year. If, however, FP&L were to follow in PG&E’s footsteps and
22 tripled its annual savings, additional DSM would postpone the need date beyond
23 2023. (See Exh. JJP-4 for details.)

24 **Q: What about the cost-effectiveness of these additional energy-efficiency**
25 **resources relative to the proposed Glades generating units?**

1 A: These additional efficiency savings would cost significantly less than the
2 levelized (life-cycle) costs of the units. For example, Massachusetts and PG&E
3 residential efficiency programs cost or are expected to cost between 5 and 6
4 cents/kWh; commercial/industrial savings cost in the range of 3 to 4 cents/kWh
5 levelized. By comparison, the Company projects that the Glades units will cost
6 between 8 and 10 cents/kWh, depending on the scenario.¹

7 **II. Energy-Efficiency and the Need for the Glades Generating Units**

8 **Q: What materials did you review to prepare this testimony?**

9 A: I reviewed the following:

- 10 • Florida Power & Light Company's Petition to Determine Need for FPL
11 Glades Power Park Units 1 and 2 Electrical Power Plant, February 1, 2007
- 12 • FPL's Need Study for Electrical Power
- 13 • Appendix D to FPL's Need Study for Electrical Power.
- 14 • Appendix G to FPL's Need Study for Electrical Power.
- 15 • Appendix L to FPL's Need Study for Electrical Power.
- 16 • Portions of Appendix M to FPL's Need Study for Electrical Power.
- 17 • Direct Testimony & Exhibit of: Leonardo E. Greenowing.

18
19 **A. *FP&L's Planned DSM Savings***

20
21 **Q: By how much does FP&L plan to reduce system peak load with DSM?**

¹ From FPL Need Study for Electrical Power, Appendix M, p. 7-6.

1 A: The Company plans to acquire roughly 120 MW each year between 2007 and
2 2020.² I understand that FP&L intends to pursue these savings in parallel with
3 the construction of the Glades units.

4 **Q: Are FP&L's planned DSM savings significant?**

5 A: Yes. Were it not for these planned savings, FP&L would reach between 2010
6 and 2011 the 24,391 peak load it forecasts for 2013 with its planned DSM. In
7 effect, FP&L's planned DSM will defer the need for the capacity from the new
8 units by 2-3 years. In fact, the Company's planned DSM savings add up to more
9 than FP&L's share of statewide efficiency potential recently estimated by the
10 American Council for an Energy-Efficient Economy.³

11 **B. Energy-Efficiency Portfolios in Other Jurisdictions**
12

13 **Q: Why did you look to energy-efficiency portfolios in other jurisdictions to
14 project additional DSM savings for FP&L?**

15 A: Some states have acquired and/or plan to acquire far less DSM savings (on a
16 proportional basis) than FP&L does. Others have a long track record of
17 acquiring considerably more. States in the Northeast and California both fall
18 into this latter category. Thus, they offer a basis for projecting additional DSM
19 spending and savings for FP&L based on actual spending depth and savings
20 yield achieved by DSM program administrators over the past few years.
21

22 Some states recently have made plans to increase DSM spending over the next
23 three years. Vermont regulators recently raised Efficiency Vermont's annual
24 portfolio budget by 75%. California utilities are in some cases tripling their

² From FPL Need Study for Electrical Power, p. 12, Table II.B.3.1.

³ I was unable to locate program budgets associated with DSM savings FP&L plans to achieve.

1 DSM investment to comply with state regulators' "first-order loading"
2 imperative for cost-effective DSM before pursuing more expensive supply.
3 These plans offer a basis for projecting spending and savings for FP&L

4 **Q: How can you reasonably compare spending and performance between**
5 **jurisdictions?**

6 A: DSM spending divided by electricity sales indicates the relative depth of DSM
7 investment. DSM savings divided by program expenditures indicates the kWh
8 yield per dollar invested. Because of diminishing returns, increasing spending
9 depth corresponds with decreasing yield.

10 Both figures of merit adjust for differences in scale between utilities or
11 jurisdictions. Calculating these values and making comparisons at the sector –
12 residential vs. nonresidential – level allows adjustment for differences in
13 customer mixes between utilities or jurisdictions when projecting total spending
14 and savings for FP&L.

15 **Q: What do the Northeastern states show in terms of actual DSM spending and**
16 **savings?**

17 A: Results for 7 states are presented in Exh. JJP-2. Page 1 provides data for
18 residential programs; page 2 provides comparable information on nonresidential
19 programs. Massachusetts and Vermont are at the upper end of the range for
20 residential DSM spending (\$3.3 and \$3.6 per retail MWh, respectively); they
21 also achieved similar yields per dollar spent. Massachusetts stands out with the
22 deepest nonresidential spending (\$3.4 per MWh of nonresidential sales) and the
23 deepest savings as a percent of sales. Massachusetts makes the best choice for
24 projecting additional spending and savings from the Northeast experience for
25 FP&L.

1 **Q: What is the levelized cost of electricity saved from the Massachusetts**
2 **portfolio?**

3 A: The answer depends on the average measure life for the yield in each sector. It
4 also depends on the discount rate. Assuming 10 years for residential and 15
5 years for nonresidential measure lives and the 10.05% nominal cost of capital
6 FP&L uses, levelized costs of saved electric energy from residential customers
7 has been 5.7 cents/kWh, and 4.2 cents/kWh (allowing for 2 years' inflation at
8 2.5% to adjust the 2005 constant dollars in the table).

9 **Q: Have some Northeastern states been saving less on a proportional basis than**
10 **FP&L plans to accomplish?**

11 A: Yes. Adjusting for differences in size, FP&L's 120 MW/year of planned DSM
12 savings is more than would be projected by applying New Jersey's spending and
13 savings for 2002-2004.

14 **Q: What do you find from reviewing DSM spending and savings plans in**
15 **California?**

16 A: Exh. JJP-3 presents spending and savings information from Pacific Gas &
17 Electric, including actual expenditures and savings for 2004 and projected values
18 for 2006-2008. Notice that PG&E plans to more than triple its \$107 million
19 2004 spending to \$332 million by 2008. These growing investments are
20 projected to acquire progressively deeper savings (e.g., from 1.2% in annual
21 residential savings in 2004 up to 2.7% of residential sales in 2008). Associated
22 with these deeper investments are significant declines in yield.

23
24 PG&E offers a good basis for projecting FP&L's performance if it matched one
25 of the industry's leaders.

1 **Q: What are the levelized costs for PG&E's historic and planned expansion in**
2 **DSM?**

3 A: Making the same assumptions as I did for the Massachusetts calculations,
4 levelized costs (in current dollars) per kWh saved in the residential sector will
5 rise from 3.5 cents/kWh in 2004 to 5.4 cents/kWh in 2008. In the nonresidential
6 sector, levelized costs would climb from 2.2 cents/kWh saved in 2004 to 3.4
7 cents/kWh by 2008.

8 *C. Additional Energy-Efficiency Resources for FP&L*
9

10 **Q: How did you estimate additional DSM procurement for FP&L?**

11 A: I applied the sectoral spending depths and savings yields from Massachusetts
12 and PG&E to FP&L's forecast residential and nonresidential sales to scale
13 sectoral DSM spending and savings for FP&L. I used Massachusetts historical
14 spending and performance over 2002-2004 to project scaled savings and
15 spending for FP&L. I used PG&E's 2006-2008 projected spending and savings,
16 incorporating planned substantial declines in savings yields accompanying the
17 deepening spending. The results of these calculations are presented in Exhibit
18 JJP-4.

19 **Q: How much more peak reduction would the Massachusetts and PG&E scaled**
20 **savings provide by 2013?**

21 A: Assuming FP&L begins in 2008 to acquire additional energy-efficiency, a
22 Massachusetts-scaled portfolio could be expected to produce an additional 445
23 MW (beyond the 1,199 MW FP&L plans to realize by 2013. PG&E-scaled
24 efforts would be expected to yield an additional 1,616 MW between 2008 and
25 2013.

1 **Q: Why should this Commission rely on DSM data from distant regions with**
2 **completely different climates, demographics, and economies to form**
3 **expectations about FP&L's future DSM savings?**

4 A: Absent detailed study of maximum efficiency potential or actual experience with
5 aggressive programs in Florida, mature DSM portfolio performance elsewhere is
6 the best information available for gauging how much more FP&L could
7 accomplish and how much this would cost.

8 Of course the efficiency opportunities in FP&L territory will vary widely from
9 those in Massachusetts and northern California. These differences do not
10 necessarily introduce bias into the comparisons or projections based on them.
11 For example, the saturation and annual hourly usage of air-conditioning is the
12 most obvious difference between Florida and these regions. Potential savings
13 from high-efficiency air-conditioning should be greater and more cost-effective
14 in FP&L territory than in Massachusetts or PG&E territory.

15 While I would not recommend that the Commission or FP&L use these
16 projections as the basis for DSM investment planning, they are sufficient for
17 establishing a credible if rough idea of how much DSM FP&L could be expected
18 to achieve if it pursued a more ambitious DSM portfolio.

19 ***D. Effect of Additional FP&L Energy-Efficiency on the Need for the Glades***
20 ***Units***
21

22 **Q: What effect would the additional DSM you examined have on the need for**
23 **the Glades generating units?**

24 A: If FP&L were to scale its DSM spending and savings to what Massachusetts
25 electric utilities were achieving between 2002 and 2004, system load would not

1 reach the 24,391 MW that FP&L forecasts for 2013, the in-service date of the
2 first Glades unit, until sometime between 2014 and 2015. But with DSM scaled
3 according to PG&E's 2006-2008 DSM plans, FP&L's load would not reach
4 24,391 MW at any time during the planning horizon (through 2023). For
5 example, FP&L summer peak load would only reach 23,777 MW by 2020 under
6 a PG&E-scaled DSM portfolio. In effect, such ambitious DSM would displace
7 the need for the capacity of the Glades units, at least as indicated by the system
8 load coinciding with Company's planned in-service date for the first unit.

9 **Q: Must FP&L commit to a PG&E-scaled DSM portfolio to substantially defer**
10 **the need for the Glades units?**

11 A: No. A portfolio scaled quite a bit smaller than PG&E's would be sufficient to
12 defer the need date by 5 years, for example.

13 **Q: Wouldn't FP&L need to establish through experience how much DSM it**
14 **could really acquire in its territory before deciding how long the Glades**
15 **units or other generation additions can be deferred?**

16 A: Yes. Gaining experience with best practices used in the most aggressive DSM
17 portfolios will enable FP&L to make more precise estimates of the future costs
18 and savings of additional DSM investment.

19 **Q: Earlier you testified that the additional DSM savings would be cost-effective**
20 **compared to the Glades units. Is that true under the Rate Impact Measure**
21 **(RIM) test for DSM as adopted by this Commission?**

22 A: I doubt it. I understand that FP&L's planned DSM does pass the RIM test. I
23 surmise that this is because levelized program costs must be less than the
24 difference between long-run avoided costs and marginal retail rates. The

1 levelized costs of PG&E and Massachusetts DSM portfolios almost certainly
2 exceed the difference between FP&L's avoided costs and rates.

3 **Q: Does this change your testimony about the relative cost-effectiveness of**
4 **additional DSM compared to the Glades units?**

5 A: No, it does not. The RIM (also known as the non-participant and no-losers) test
6 is a rough and inaccurate indicator of distributional equity between groups of
7 ratepayers. It is not a valid indicator of economic efficiency. If FP&L can truly
8 achieve additional DSM savings at half the costs of the Glades units, then the
9 Company's ratepayers and the economy in which they live and do business will
10 be far better off. While I am not an attorney, as an economist I can say that such
11 significant cost savings between one resource and another is the meaning of
12 "cost-effective" as I read it in Section 403.519, Florida Statutes.

13 **III. Conclusions and Recommendations**

14 **Q: What do you conclude about the need for the Glades units?**

15 A: I conclude that the Glades units are most probably not needed because of the
16 likely availability of additional DSM that would be cost-effective compared to
17 building and operating them. I base this conclusion on the well-established track
18 records and plans of some of the nation's leading energy-efficiency portfolio
19 managers.

20 **Q: Based on this conclusion, what are your recommendations?**

21 A: I recommend that the Commission not approve FP&L's application as filed.
22 Instead, I recommend that the Commission deny the Company's application. In
23 this case, I recommend that the Commission direct the Company to conduct a
24 thorough study of the economically achievable potential for energy-efficiency

1 investments in its territory based on best practices in program design and
2 implementation followed by the managers of the most aggressive U.S. DSM
3 portfolios. I further recommend that the Commission direct FP&L to proceed on
4 a parallel path to design and develop an aggressive DSM portfolio capable of
5 deferring the need for additional generation by at least five years (2018). This
6 will buy time for the Company and the Commission to develop and evaluate a
7 wider range of demand-side and supply-side alternatives to the proposed units.
8 The Company should be directed to include a revised DSM plan based on these
9 parallel DSM efforts with any future application submitted to this Commission
10 for a need determination for new generation resources. Such a resubmission
11 should constitute one of the conditions the Commission should impose if it
12 decides not to deny the application outright.

13 **Q: Does this complete your direct testimony?**

14 A: Yes, it does.

RESUME

John J. Plunkett
Partner, Green Energy Economics Group, Inc.
1002 Jerusalem Road, Bristol Vermont 05443
(802) 453-4960 (office)
(802) 238-2810 (mobile)
plunkett@gmavt.net

Trained as an economist, I have 28 years of experience in energy utility planning, concentrating on energy-efficiency as a resource and business strategy by energy service providers. I have played key advisory and negotiating roles for clients on virtually all aspects of electric and gas utility demand-side management, including residential, industrial and commercial program design, implementation, oversight, performance incentives, and monitoring and evaluation planning, and their respective roles in business, regulatory, ratemaking, resource planning and policy decisions. I have also led and/or prepared numerous analyses and reports on the achievable potential for cost-effective efficiency and renewable resources. I have testified as an expert witness in regulatory proceedings throughout North America.

PROFESSIONAL EXPERIENCE

November 2005-present

Partner, **Green Energy Economics Group, Inc.**, Bristol, VT

Consultancy specializing in energy-efficiency and renewable resource portfolios investing in electricity and gas savings, co-founded with Francis Wyatt, PE, my colleague since 1992. Technical and strategic assistance with portfolio development, design, analysis, planning, administration, implementation management support, oversight, performance verification and evaluation, performance incentive mechanisms, and regulatory and ratemaking treatment. Current assignments focus primarily on Vermont and China, with other projects elsewhere as time permits. They include:

- Vermont: Senior policy advisor to and senior management team member of Efficiency Vermont, the nation's first statewide energy-efficiency utility. (2000-present) Leading analysis and planning to support application for regulatory approval of additional targeted demand-side investment to defer future transmission and distribution investments on behalf of Central Vermont Public Service (in progress). Expert testimony on economically achievable potential for demand-side T&D capacity in Vermont's "Southern Loop," on behalf of CVPS and VELCO (in progress).
- China: Leading Natural Resources Defense Council consulting team working with Jiangsu province to develop and implement "energy-efficiency power plants." (July 2003 – present). Team leader of pre-feasibility analysis of \$100 million EPP loan in Guangdong province for the Asian Development Bank (June 2006 – present).
- Canada: Expert testimony before the BC Public Utilities Commission on appropriate energy-efficiency portfolio investment and savings goals in BC Hydro's current cost of service and long-range resource plan, on behalf of Sierra Club of Canada and the British Columbia Sustainable Energy Association (August– December 2006).

1996 – 2005

*Partner, **Optimal Energy, Inc.**, Bristol, VT.*

Strategic planning, implementation management and regulatory support on energy-efficiency investment by regulated and unregulated businesses. Lead technical consultant for Natural Resources Defense Council on demand-side management portfolio design and economic analysis in two Chinese provinces. On Efficiency Vermont senior management team responsible for administering statewide energy efficiency portfolio through third three-year contract. Lead author and expert witness on report recommending revamped performance incentive for Connecticut efficiency program administrators, on behalf of Office of Consumer Counsel. Led statewide efficiency and renewable potential study for New York and efficiency potential study for Vermont. Lead author and expert witness on assessment of economically achievable transmission capacity from efficiency resources, for Vermont transmission utility. Advisor on economic analysis of clean energy initiative for the Long Island Power Authority, and on program cost-effectiveness in Massachusetts and New Jersey collaboratives, and regional market transformation initiatives for Northeast Energy Efficiency Partnerships.

1990 – 1996

*Senior Vice President, **Resource Insight, Inc.**, Middlebury, VT.*

Provided analysis of DSM resource planning/acquisition and integrated resource planning in numerous states. Investigated regulatory and planning reforms needed to integrate demand-side resources with least-cost planning requirements by public utility commissions. Prepared, delivered and/or supported testimony on wide variety of IRP, DSM, economic, cost recovery and other issues before regulatory agencies throughout North America. Consulted and provided technical assistance regarding utility filings. Responsible for presentations and seminars on DSM planning and evaluation.

1984 – 1990

*Senior Economist, **Komanoff Energy Associates**, New York, NY.*

Directed consulting services on integrated utility resource planning. Testified on utility resource alternatives, including energy-efficiency investments and independent power. Examined costs and benefits of resource options in over twenty-five proceedings. Supported major investigation into utility DSM investment and integrated resource planning. Designed and co-wrote microcomputer software for evaluating the financial prospects of customer-owned power generation. Wrote and spoke widely on integrated planning issues. Contributed to least-cost planning handbooks prepared by the National Association of Regulatory Utility Commissioners and by the National Association of State Utility Consumer Advocates.

1978 – 1984

*Staff Economist, **Institute for Local Self-Reliance**, Washington, D.C.*

Project development and management for a non-profit consulting firm specializing in energy and urban economic development. Project manager and economist for an investigation into the economic impact on small generators from electric utilities' grid-interconnection requirements. Coordinated research by three electrical engineers, and analyzed the impact of interconnection costs on wind, hydroelectric and cogeneration projects in seven utility service areas in New York. Provided technical coordination in cases before the District of Columbia Public Service Commission involving gas and electric utility demand management investment, non-utility generation pricing, both for the D.C. Office of People's Counsel.

EDUCATION

B.A., Economics *with Distinction*, *Phi Beta Kappa*, Swarthmore College, Swarthmore, PA, 1983.
Adams Prize in Quantitative Economics.

HIGHLIGHTS OF PROJECT EXPERIENCE

EFFICIENCY PORTFOLIO DESIGN AND PLANNING

- Rebuttal testimony on achievable value from additional energy-efficiency investment in utility service area, on behalf of Green Mountain Power in its merger approval application in Docket No. 7213. December 2006.
- Direct testimony on energy-efficiency investment spending and savings, British Columbia Hydro and Power Authority, 2006 Integrated Electricity Plan and Long Term Acquisition Plan, Project No. 3698419; and F2007/F2008 Revenue Requirements Application, Project No. 3698416, on behalf of the Sierra Club Of Canada (British Columbia Chapter), British Columbia Sustainable Energy Association, and Peace Valley Environment Association. September 2006 – January 2007.
- Direct and surrebuttal testimony for Citizens for Pennsylvania's Future (Pennfuture) on appropriate levels of efficiency portfolio investment in two rate cases before the Pennsylvania Public Utility Commission: Docket Nos. 00061366 and 00061367 re Metropolitan Edison Company and Pennsylvania Electric Company; and Docket No. R-00061346 re Duquesne Light Company. May - August 2006.
- Consulting team leader on development, assessment, and implementation of demand-side management investment portfolios for China, for the Natural Resources Defense Council. (July 2003 – present) Responsible for framing and conducting benefit/cost analysis of efficiency program portfolios for Jiangsu province and Shanghai municipality, including assessment of 300-MW Efficiency Power Plants for prospectus by Asian Development Bank; co-authoring portfolio analysis report; and program implementation planning and support. Led development and application of program and portfolio economic analysis tool based on model developed for U.S. DSM planning. Assisting Jiangsu Province with design and planning for first-stage implementation of Efficiency Power Plant (EPP) programs investing 100 million RMB annually on high-efficiency retrofits to industrial motors and drives and commercial lighting and cooling. October 2005 – present.
- Team leader for Chinese and international consultants engaged in a pre-feasibility analysis for the Asian Development Bank of a potential loan to support a \$100 million demonstration Efficiency Power Plant (EPP) project in Guangdong province. June 2006 – present.
- Senior Policy Advisor and member of senior management team, Efficiency Vermont, the world's first Energy Efficiency Utility, currently operating under a US\$52 million three-year contract with the Vermont Public Service Board to deliver statewide energy-efficiency programs for the customers of Vermont's twenty-one electric utilities. Senior management team member from inception in 2000 to present; policy advisor, 2002-present; led program

development and planning, 2000-2002. Responsibilities included leading development and negotiation of energy-efficiency portfolio performance goals and performance incentive mechanism for three successive contracts totaling US\$147 million over nine years, as well as revised performance goals for major budget increase ordered by regulators in August 2006.

- Leading program planning and analysis for local, accelerated targeted efficiency investment demonstration in Vermont's southern loop, on behalf of Central Vermont Public Service (in progress)
- Consulting team leader for assessment of economically achievable potential for distributed resources to solve a variety of transmission and distribution contingencies in the "southern loop" of Vermont, on behalf of the Vermont Electric Power Company and Central Vermont Public Service. 2005-2006.
- Advisor to consulting team leader on planning and management support for Long Island Power Authority's Clean Energy Initiative, which is currently investing US\$40 million annually (January 2003 – present). Assisting with development and economic analysis of ten-year US\$700 million efficiency power plant portfolio. Previously, consulting team leader on energy-efficiency program planning and implementation management support. (July 1998 – January 2001). Coordinated development of core energy-efficiency and renewable programs in LIPA's first five-year clean energy portfolio, investing US\$160 million in efficiency, load-management, and solar power programs.
-
- Economic advisor to Northeast Energy Efficiency Partnerships (NEEP) on cost-effectiveness of regional market-transformation initiatives. Most recently served as technical advisor on a report assessing need for and approaches to standardizing protocols for estimating DSM savings throughout the northeastern US. 1998-present.
- Co-author (with Optimal Energy and Vermont Energy Investment Corporation), Comments on Efficiency Maine's 2006-2008 Program Plan, on behalf of Maine's Office of Public Advocate. September 2005.
- Leader of analysis of economically achievable potential for energy-efficiency resources to offset loss of output in the event of early retirement of the Indian Point nuclear generation station, on behalf of the National Academy of Sciences. May-October 2005.
- Co-author (with Paul Chernick) of testimony assessing planned energy-efficiency investments by British Columbia Hydro, on behalf of the British Columbia Sustainable Energy Association and British Columbia Sierra Club, August 2005.
- Written testimony recommending energy-efficiency portfolio investment levels and savings goals in utility merger application before the Pennsylvania Public Utility Commission, Joint Application of PECO Energy Company and Public Service Electric and Gas Company for Approval of the Merger of Public Service Enterprise Group with and into Exelon Corporation, on behalf of the Pennfuture Parties, June 28, 2005.

- Co-author of and expert witness supporting "Getting Results: Review of Hydro Quebec's Proposed 2005-2010 Energy Efficiency Plan," before the Quebec Energy Board, on behalf of a coalition of business, municipal, and environmental groups (January-March 2005)
- Testimony (with Ashok Gupta) before the New York Public Service Commission supporting joint settlement proposal for 300 MW of additional efficiency investment in Con Edison territory, on behalf of the Natural Resources Defense Council, Pace Energy Project, and the Association for Energy Affordability (December 2004 – January 2005).
- Report and testimony on performance incentives for administrators of conservation and load management programs in Connecticut, on behalf of Connecticut Office of Consumer Counsel. (February 2003 – August 2004). DPUC adopted recommended performance incentive mechanism for 2006 program year.
- Project leader, including report and testimony, for consulting team projecting potential for demand-side resources to defer the need for major transmission upgrades, on behalf of Vermont Electric Power Company. (November 2001 – December 2004)
- Report and testimony on Opportunities for Accelerated Electrical Energy Efficiency in Québec 2005 – 2012, on behalf of Regroupement National des Conseils Régionaux de L'environnement du Québec, Regroupement des Organismes Environnementaux en Energie and Regroupement pour la Responsabilité Sociale des Entreprises. (March – June 2004)
- Project leader for consulting team assessing technical, achievable and economic potential for energy-efficiency and renewable resources in New York State and five sub regions over 5, 10 and 20 years, on behalf of New York State Research and Development Authority. (January 2002 – August 2003)
- Project leader for consulting team updating statewide projection of economically achievable efficiency potential for state of Vermont, on behalf of the Vermont Department of Public Service. (October 2001 – 2003)
- "A Conservation Contingency Plan for Indian Point: Using California's Success Beating Blackouts to Replace Nuclear Generation Serving Greater New York," prepared for the Natural Resources Defense Council, October 2003.
- "The Achievable Potential for Electric Efficiency Savings in Maine." Projected and compared 10-year C&I costs, savings and benefits (based on technical potential analysis prepared by Exeter Associates). Expert testimony on behalf of the Office of Public Advocate, before the Maine PUC. (October 2002)
- Project leader for consulting team supporting utilities in targeting demand-side resources to optimize distribution investment planning in statewide distributed utility planning collaborative, on behalf of the Vermont Department of Public Service. (September 2001 – December 2002) Led development of DSM scoping tool, an MS Excel spreadsheet for preliminary analysis of the economically achievable potential for energy-efficiency to defer or displace planned distribution investments.

- Advisor on economic analysis for program planning and implementation of multi-year statewide energy-efficiency programs in the New Jersey Clean Energy Collaborative involving all the state's electric and gas utilities and the Natural Resources Defense Council. (April 2000 – June 2003, on behalf of NRDC). Co-directed collaborative work on program development, planning, and implementation for Conectiv. (November 1996 – 2000)
- Policy and economic advisor for Massachusetts energy efficiency collaboratives, focusing on regulatory, cost-effectiveness, shareholder incentives and other policy issues and strategies, on behalf of Massachusetts Collaborative Non-Utility Parties. (January 1999 – present)
- Economic advisor to Northeast Energy Efficiency Partnerships, a not-for-profit regional consortium of utilities pursuing market transformation in efficiency markets. Economic analysis and report on cost-effectiveness of NEEP initiatives involving high-efficiency motors, clothes washers, and residential lighting. (1998 – in progress)
- "Examining the Potential for Energy Efficiency in Michigan: Help for the Economy and the Environment," for American Council for an Energy-Efficient Economy (ACEEE). Analysis and report projecting costs and benefits of aggressive energy-efficiency investment. (January 2003)
- Led consulting team in the preparation of detailed recommendations for implementing strategic plan for acquiring clean power resources for the Jacksonville Electric Authority. (May – September 2001)
- Consultant to Citizens Utilities Corporation, supporting planning and management of investments pursuing maximum achievable levels of optimally cost-effective energy-efficiency in its Vermont Electric Division. (1997 – 2001)
- Consultant to PEPCo Energy Services on building energy-efficiency into retail service offerings. (2000 – 2001)
- Consultant to California Board for Energy-Efficiency, the agency responsible for administering wires-charge funded statewide energy-efficiency programs. Technical service consultant on nonresidential program design. (1997 – 1999)
- Lead consultant on energy product development for consumer energy cooperative, on behalf of Vermont Energy Futures, a non-profit organization spearheading development of a consumer-owned energy cooperative that will bundle electricity with energy-efficiency, renewables, and fossil fuels for residential, low-income, and small non-residential customers. One of key team members who prepared grant application to federal Health and Human Services Department for \$800,000 grant supporting development of the co-op. (1997 – 2000)
- Led feasibility analysis and prepared preliminary business plan for bundling electricity, fuel, efficiency services, and green power initially targeting low-income and environmentally-conscious consumers, on behalf of the Energy Coordinating Agency and Conservation Consultants, Inc. (July – December 1997). Consultant on energy and business strategy and planning for Energy Cooperative Association of Pennsylvania, a buyers' cooperative offering

electricity, fuel oil, energy-efficiency, and renewable energy to residential and non-profit consumers in eastern and western Pennsylvania. (1998 – July 1999)

- Lead consultant on energy efficiency program designs and planning for Maryland Office of People's Counsel and Maryland Energy Administration. Led research, analysis, and program descriptions and budgets for use in restructuring workshops and legislative development on efficiency and renewable programs supported by system benefits charge. (1998)
- Consultant on various energy-efficiency program, planning, and policy issues for Maryland utilities including Potomac Electric, Baltimore Gas and Electric, Potomac Edison, Delmarva Power and Light, Southern Maryland Electric Cooperative, Washington Gas, on behalf of Maryland Office of People's Counsel. Coordinator and lead negotiator on DSM collaboratives for Washington Gas, Potomac Electric, Baltimore Gas and Electric, Delmarva Power and Light and Potomac Electric. Projects have included resource planning and allocation, program design, policy, cost recovery, mechanism design, and monitoring and evaluation planning. (1989 – 1997)
- Lead consultant for the Vermont Department of Public Service regarding energy-efficiency investment during and after the transition to electricity restructuring. Lead author of *The Power to Save: A Plan to Transform Vermont's Efficiency Markets*, the DPS filing which calls for development of centrally delivered statewide core programs by an efficiency utility. Prepared written testimony, on behalf of the Vermont Department of Public Service in Docket 5980. (1997 – 1999)
- Support to the Burlington (VT) Electric Department in developing energy efficiency programs and policies as part of their resource and business planning. (November 1996 – May 1997)
- Prepared written report to the Ontario Energy Board assessing the 1997 DSM Plan filed by Union and Centra Gas LTD in light of prior OEB decisions, as well as specific program plans for residential and non-residential customers. The report also addressed potential changes in gas DSM regulation, cost recovery, and incentives. [*Assessment of the Centra/Union Gas Fiscal 1997 DSM Plan*, Plunkett, Hamilton, and Mosenthal, August 30, 1996.] Also testified before the OEB concerning the report's findings and recommendations. Union/Centra Rate Case, EBRO 493/494. Also prepared a report and testified on Union Gas's DSM program design in EBRO 496/94/95. (July 1996 – November 1996)
- Support to the Iowa Office of Consumer Advocate with the review and analysis of MidAmerican's, Interstate Power's and Iowa Electric Services' existing energy efficiency plans. Developed proposals for changes to and modifications of the utilities commercial and industrial energy efficiency programs. (1995 – 1996)
- Prepared testimony and supported the Iowa Office of Consumer Advocate in settlement negotiations re IES Utilities C/I DSM programs. Docket No. EEP-95-1. (February 1996)
- Supported Florida Power Corporation with development of alternative DSM programs for commercial and industrial customers. (1995 – 1997)
- Supported the development of testimony and discussions regarding DSM program

alternatives for Carolina Power & Light, on behalf of the Southern Environmental Law Center. Docket No. 92-209-E. (1995 – 1996)

- Reviewed and commented on Consumer Gas' C/I DSM programs on behalf of the Green Energy Coalition. (1995)
- Support to the Vermont Department of Public Service in negotiation settlement with Green Mountain Power regarding DSM program design and planning, focusing on target retrofits in load centers under T&D capacity constraints, and increased participation and comprehensiveness of lost-opportunity programs. (1995)
- Consulting services and expert testimony concerning Ontario Hydro's DSM plans and acquisition of lost-opportunity resources on behalf of the Green Energy Coalition. Before Ontario Energy Board H.R. 22. re: Ontario Hydro 1995 Rates and Spending. (1994) and re: Ontario Hydro's Bulk Power Rates for 1993. Ontario Energy Board HR-21. (1992)
- Coordinated testimony assessing the planning process, screening analyses, and cost-recovery proposals of the Detroit Edison Company for its demand-side management programs. Estimated potential levels of savings; identified improvements to the utility's proposed cost-recovery, lost-revenue, and incentive mechanisms; and recommended regulatory signals consistent with least-cost planning. Provided economic and regulatory advice, consulting services, and oversaw preparation of testimony. Michigan PSC Case No. U-10102. (1992)
- Economic and regulatory advice, consulting services, and oversaw preparation of testimony. Provided technical services encompassing demand-side management program monitoring and evaluation, cost recovery, and review of second efficiency plans. Before the Iowa Utilities Board, Iowa Power and Light Docket No. EEP-91-3 and Interstate Power Company Docket No. EEP-91-5. (1992)
- Consulting on policy and resource-allocation issues on behalf of the Vermont Department of Public Service as part of DSM-program-design collaboratives with Vermont Gas. (1990 – 1991), Citizens Utilities (1990 – 1991), Central Vermont Public Service Corporation (1990) and Green Mountain Power. (1990)

ENERGY AND REGULATORY POLICY

- Team leader providing technical assistance supporting rulemaking to implement energy-efficiency provision of renewable portfolio standard for Pennsylvania, on behalf of Citizens for Pennsylvania's Future (PennFuture). Lead consultant on development of protocols for measuring savings from energy-efficiency investments as tradable credits toward the electricity resource portfolio standard. Protocols adopted by the Pennsylvania Public Utilities Commission. 2005. (February – September 2005)
- Analysis and testimony before the Connecticut Siting Council on integrating potential demand reductions from targeted demand-side resources into need assessment for transmission upgrades, on behalf of the Connecticut Office of Consumer Counsel. Docket No. 217. (February 2002 – present)

- Advice and negotiation on policy and scope of utility activities regarding targeted DSM to optimize distribution investment planning, involving Consolidated Edison, PECO Energy, and Orange and Rockland Utilities, on behalf of the Natural Resources Defense Council (Con Ed and PECO) and Pace Energy Project (O&R). (1999 – 2000)
- Consultant to Vermont Senate Natural Resources and Finance Committees on efficiency and renewable policies in restructuring legislation passed by the Senate but not adopted by the House. Provided technical assistance to support drafting and passage of utility restructuring legislation (S.62). (1997)
- Provided direct testimony and cross-examination relating to the future of DSM under the proposed BG&E/PEPCo utility merger. Case No. 8725 In the matter of Application of BGE, PEPCo & Constellation Energy Corporation for Merger. (1996)
- Reviewed Tennessee Valley Authority programs and environmental planning for the Tennessee Valley Energy Reform Coalition. (November 1994 – July 1995)
- Prepared and defended direct testimony on gas and electric Demand-Side Management/Integrated Resource Planning guidelines before the North Carolina Public Utilities Commission. Evaluated DSM activities in light of market barriers, total-resource-cost-effectiveness, and rate impacts. Docket No. E-100, SUB 64A in the matter of Request by Duke Power Company for Approval of a Food Service Program, Docket E-100, SUB 71 In the matter of Investigation of the Effect of Electric IRP and DSM Programs on the Competition Between Electric Utilities and Natural Gas Utilities. (1994)
- Prepared and defended expert testimony and led analyses of demand-side management and fuel switching opportunities in Central Vermont Public Service territory, on behalf of the Vermont Department of Public Service. Project involved detailed analysis of measure costs, savings, and cost-effectiveness. Vermont Public Service Board, Docket 5270-CVPS-1&3. (1994)
- Prepared and defended expert testimony for the Vermont Department of Public Service on prudence of demand-side management in CVPS rate case. Vermont Public Service Board, Docket 5724. (May – August 1994)
- Directed and supported the preparation of joint testimony for Enersave, an efficiency service provider. Before the New York Public Service Commission, Case No. 94-E-0334. (September 1994)
- Joint testimony with Jonathan Wallach for the New York Public Utility intervenors reviewing 1994 LILCo DSM Plan. Before the New York Public Service Commission. P.S.C. Case No. 93-5-1123. (May 1994)
- Contributed to the critique of PECO Demand-Side Management Plan for the Nonprofits Energy Savings Investment Program. (February 1994)
- Provided direct testimony in a proceeding to investigate restrictions on DSM that could give one utility (gas or electric) an unfair competitive advantage over another (electric or gas, respectively). Before the Louisiana Public Service Commission Docket No. U-20178 Re:

Louisiana Power & Light Company Least Cost Resource Plan. (1994)

- Provided expert testimony in support of PEPCo's DSM implementation. Before the Public Service Commission of the District of Columbia. Case No. 929. (1993)
- Comprehensive assessment of Ontario Hydro's 25-year resource plan. Directed work by over a dozen consultants. The study encompassed load forecasting; assessing DM potential and costs; resolving DM-implementation, resource-integration, and institutional issues; assessing all resource costs, including externalities; assessing costs of all supply resources, including non-utility generators; and estimating avoided costs. (1990 – 1992)
- Support to the Pennsylvania Energy Office in its evaluation of Pennsylvania electric utility demand-management plans by preparing testimony and co-authoring a comprehensive, five-volume study of all aspects of demand management. This document surveys issues related to integration of demand-management resources into utility planning, and reconciling least-cost planning objectives with rate-impact constraints; discusses strategies for utility intervention to remove market barriers to energy conservation; evaluates cost-recovery mechanisms for demand-management expenditures by utilities; explores issues related to the screening demand-management measures and programs; and examines direct costs, risk, and externalities avoidable through demand management. (1991 – 1993)
- Provided analysis of 1991 - 1992 New York electric utility DSM plans, and support for the analysis of 1993 - 1994 DSM Plans on behalf of Pace University Center for Environmental and Legal Studies, and Vladeck, Waldman, Elias & Engelhard, P.C., Counsel for the Class of LILCo Ratepayers in County of Suffolk *et al.* v. LILCo *et al.* Proceeding to Inquire into the Benefits to Ratepayers and Utilities from Implementation of Conservation Programs that will reduce Electric Use, New York Public Service Commission Case No. 28223. (1990, 1992, 1994)
- Reviewed Demand Side Management regulations and DSM compliance filings of four New Jersey utilities on behalf of the New Jersey Division of Rate Counsel. Demand Side Management Resource Plan of Jersey Central Power & Light Company. Docket No. EE-92020103. (1992)
- Advisor to the Vermont Public Service Board. Supported formulating issues, conducting hearings, deciding policy, and drafting opinions and orders on DSM planning programs, and ratemaking. Advised the Board's hearing officer on numerous decisions concerning policy and process, including cost-benefit analysis, design and coverage of utility energy-efficiency programs and integrated planning requirements. Investigation into Least-Cost Investments, Energy Efficiency, Conservation, and Management of Demand for Energy, Docket No. 5270. (1988 – 1990)
- Provided technical and policy advice for the South Carolina Department of Consumer Affairs in PSC investigation into Electric Utility Least-Cost Planning, Docket No. 87-223-E. (September 1987 – November 1992)

RESOURCE PLANNING AND ASSESSMENT

- Support to the Vermont Department of Public Service in assessing the performance and expenditures of Green Mountain Power's commercial and industrial DSM programs. Also provided support to the DPS in the evaluation of GMP's actions surrounding the Vermont Joint Owners contract with Hydro Quebec including prudence. (1997)
- Prepared testimony and supported settlement negotiations concerning the DSM Plan of Jersey Central Power and Light on behalf of the Mid Atlantic Energy Project and New Jersey Public Interest Research Group. Analyzed DSM policy and commercial and industrial programs. Docket No. EE9580349 In the matter of Consideration and Determination of Jersey Central Power and Light Company's Demand Side Management Resource Plan filed pursuant to N.J.A.C. 14:12. (1995)
- Prepared written testimony for the Maryland Office of People's Counsel analyzing potential for demand-side resources offset need for power for proposed coal-fired plant. Delmarva Power & Light Company Dorchester Power Plant Certificate of Public Convenience and Necessity. Maryland PSC Case No. 8489. (January 1993)
- Provided technical assistance and advice on behalf of the South Carolina Department of Consumer Affairs on all aspects of Integrated Resource Planning and DSM planning including cost-effectiveness tests for South Carolina PSC investigation into Electric Utility Least-Cost Planning, Docket No. 87-223-E. (1987 – 1992)
- Identified energy-efficiency resources missing from FPL's resource plan that could provide economical substitutes for proposed power supply option. Expert testimony also addressed environmental costs avoided by DSM. Florida PSC Docket No. 920520-EG, In Re: Joint Petition of Florida Power and Light and Cypress Energy Partners, Limited Partnership for Determination of Need. (1992)
- Provided technical consulting services for the Indiana Office of Utility Consumer Counselor, including expert testimony. In the matter of the Petition of Indianapolis Power & Light Company for a Certificate of Public Convenience and Necessity for the Construction by it of Facilities for the Generation of Electricity and Submission and Request for Approval of Plan to meet future needs for Electricity. Cause No. 39236. (August 1991 – May 1992)
- Provided technical consulting services for the Indiana Office of Utility Consumer Counselor, including expert testimony. In the matter of the Petition of PSI Energy, Inc. Filed Pursuant to the Public Service Commission Act, as Amended, and I.C. 8-1-8.52 for the Issuance of Certificates of Public Convenience and Necessity to Construct Generating Facilities for the Furnishing of Electric Utility Service to the Public and for the Approval of Expenditures for such Facilities. Cause No. 39175. (June 1991 – February 1992)
- Testimony and surrebuttal for the Delaware PSC Staff. Before the Delaware Public Service Commission Staff, In the Matter of the Application of Delmarva Power & Light Company for Approval of 48 MW Power Purchase Agreement with Star Enterprise, PSC Docket No. 90-16. (January 1991)
- Prepared comments on IRP principles and objectives for the Southern Environmental Law

Center. Commonwealth of Virginia State Corporation Commission Order Establishing Commission Investigation to Consider Rules and Policy Regarding Conservation and Load Management Programs, Case No. PUE900070. (1991)

- Prepared and defended expert testimony for the Indiana Office of Utility Consumer Counselor on potential for DSM to defer need for new generating capacity. Petition of Southern Indiana Gas and Electric Co. for Approval of Construction and Cost of Additional Electric Generation and for Issuance of a Certificate of Need Therefore, Indiana Utility Regulatory Commission, Cause No. 38738. (September 1989)
- Prepared and defended expert testimony for the Illinois Citizens Utility Board on adequacy of Commonwealth Edison's DSM efforts. Rulemaking Implementing Section 8-402 of the Public Utilities Act, Least-Cost Planning, Illinois ICC Docket No. 89-0034. (July 1989)
- Supported the Vermont Public Service Board with analysis, findings, and conclusions regarding the need for power based on potential DSM resources. Application of Twenty-Four Electric Utilities for a Certificate of Public Good Authorizing Execution and Performance of a Firm Power and Energy Contract with Hydro-Quebec and a Hydro-Quebec Participation Agreement, Docket No. 5330. (1989 – 1990)
- Cost-benefit analysis for the City of Chicago examining alternatives to the renewal of Commonwealth Edison's franchise. (1989)
- Advisor for the South Carolina Department of Consumer Affairs. Assessed costs and benefits of long-term power contract. In the Matter of Duke Power Company, Federal Energy Commission, Docket No. ER89-106-000. (January 1989 – March 1990)
- Analyzed and provided expert testimony on the economic potential for cost-effective DSM to substitute for capacity and energy from a combined cycle generating plant. Testimony. Application of Potomac Electric Power Company for Certificate of Public Convenience and Necessity for Station H, Maryland PSC Docket No. 8063 Phase II. (1988)
- Examined, compared, and recommended appropriate cost-effectiveness tests for the DSM portion of the Massachusetts Department of Public Utilities investigation into the Pricing and Ratemaking Treatment to Be Afforded New Electric Generating Facilities Which Are Not Qualifying Facilities. Docket No. 86-36. (1988)
- Testimony for the District of Columbia on electric and gas utility least-cost planning. Application of the Potomac Electric Power Company for Changes to Electric Rate Schedules, D.C. PSC Formal Case 834 Phase II. (April and June 1987)
- Stood cross-examination for the Connecticut Division of Consumer Counsel to defend KEA's financial assessment of CL&P's ability to withstand Millstone 3 disallowance. Investigation into Excess Generating Capacity of Connecticut Light & Power Company, Connecticut DPUC Docket No. 85-09-12. (April 1986)
- Cross examination for the Connecticut Division of Consumer Counsel to defend financial and statistical model supporting KEA's findings of CL&P construction imprudence. Retrospective Audit of the Prudence of the Construction of Millstone 3, Connecticut DPUC Docket 83-07-

03. (March 1986)

- Cross-examination for the Pennsylvania Office of Consumer Advocate, defended quantification of imprudence findings by O'Brien/Kreitzberg & Associates regarding PECO's construction management of the Limerick 1 project. Pennsylvania PUC v. Philadelphia Electric Company Docket R-850152. (February 1986)
- Prepared and defended direct and surrebuttal testimony for the Pennsylvania Office of Consumer Advocate critiquing utility conservation and cogeneration assumptions and presented alternative 20-year electricity sales projection. Pennsylvania PUC Limerick 2 Investigation Docket I-840381. (April 1985)

LOW-INCOME ENERGY PROGRAMS

- Technical advisor to the Public Utility Law Project of New York. Recommended economic principles for planning utility DSM investment for low-income customers in New York. Proceeding on Motion of the Commission to Determine Whether the Major Gas and Combination Gas and Electric Utilities Subject to the Commission's Jurisdiction Should Establish and Implement a Low-Income Energy Efficiency Program, Case 89-M-124. (1990).

RENEWABLE ENERGY

- Co-author (with J. Wallach) of *The Power Analyst*, integrated spreadsheet-based software for projecting the economic and financial performance of renewable and cogeneration projects, for the New York State Energy Research and Development Authority. Project manager, economic analysis. (1989)
- Technical and economic analysis of small-generator grid interconnection of seven New York electric utilities for the New York Energy Research and Development Authority. Project manager, economic analysis. (1983)
- Written testimony on behalf of the Alaska Public Interest Research Group implementing PURPA 210. Before the Alaska PUC. (1981)
- Written and oral testimony in oversight hearings on state implementation of PURPA 210. U.S House of Representatives Subcommittee on Energy Conservation and Power. (1981)
- Written and oral testimony in rulemaking for PURPA on behalf of the Institute for Local Self-Reliance, before the Federal Energy Regulatory Commission. (1979)

PUBLICATIONS/PRESENTATIONS

"Demand-Side Management Strategic Plan for Jiangsu Province, China: Economic, Electric and Environmental Returns from an End-Use Efficiency Investment Portfolio in the Jiangsu Power Sector," with Barbara Finamore and Francis Wyatt, 2006 *Summer Study on Energy Efficiency in Buildings*, American Council for an Energy Efficient Economy, Pacific Grove, California, August 2006.

"Walking the Walk" of Distributed Utility Planning: Deploying Demand-Side Transmission and Distribution Resources in Vermont's "Southern Loop," with Bruce Bentley and Francis Wyatt, , 2006 *Summer Study on Energy Efficiency in Buildings*, American Council for an Energy Efficient Economy, Pacific Grove, California, August 2006.

"Comparative Performance of Electrical Energy Efficiency Portfolios in Seven Northeast States," with Glenn Reed and Francis Wyatt, 2006 *Summer Study on Energy Efficiency in Buildings*, American Council for an Energy Efficient Economy, Pacific Grove, California, August 2006.

"Charting New Frontiers with Vermont's Deployment of Demand-Side Transmission and Distribution Resources," ACEEE National Conference on Energy Efficiency as a Resource, Berkeley, CA, September 27, 2005.

"Energy Efficiency and Renewable Energy Resource Potential In New York State: Summary of Potential Analysis Prepared For the New York State Energy Research and Development Authority", invited presentation to the National Academy of Sciences Committee On Alternatives to Indian Point, Washington, DC, January 2005.

"Estimating and Valuing Energy-Efficiency Resource Contributions: Toward a Common Regional Protocol," presented at the Northeast Energy Efficiency Partnerships conference on regional efficiency policy, November 2004.

"The Economically Achievable Energy Efficiency Potential in New England," presented at the Northeast Energy Efficiency Partnerships conference on regional efficiency policy, November 2004.

"Rewarding Successful Efficiency Investment In Three Neighboring States: The Sequel, the Re-Make and the Next Generation (In Vermont, Massachusetts and Connecticut)," (with P. Horowitz and S. Slote), 2004 *Summer Study on Energy Efficiency in Buildings*, American Council for an Energy Efficient Economy, Pacific Grove, California, August 2004.

"Measuring Success at the Nation's First Efficiency Utility" (With B. Hamilton), 2002 *Summer Study on Energy Efficiency in Buildings*, American Council for an Energy Efficient Economy, Pacific Grove, California, August 2002.

"New Jersey's Clean Energy Collaborative: Model or Mess?" (with D. Bryk and S. Coakley), 2002 *Summer Study on Energy Efficiency in Buildings*, American Council for an Energy Efficient Economy, Pacific Grove, California, August 2002.

"Yes, Virginia, You Can Get There From Here: New Jersey's New Policy Framework For Guiding Ratepayer-Funded Efficiency Programs" (with S. Coakley and D. Bryk), 2000 *Summer Study on Energy Efficiency in Buildings*, American Council for an Energy Efficient Economy, Pacific Grove, California, August 2000.

"Integrated Market-Based Efficiency and Supply for Small Energy Consumers: The Consumer Energy Cooperative" (with B. Sachs and E. Belliveau) 2000 *Summer Study on Energy Efficiency in Buildings*, American Council for an Energy Efficient Economy, Pacific Grove, California, August 2000.

"Comprehensive Energy Services At Competitive Prices: Integrating Least-Cost Energy Services to Small Consumers through a Retail Buyer's Cooperative" (with B. Sachs), *1998 Summer Study on Energy Efficiency in Buildings*, American Council for an Energy Efficient Economy, Pacific Grove, California, August 1998.

"Capturing Comprehensive Benefits from Commercial Customers: A Comparative Analysis of HVAC Retirement Alternatives" (with P. Mosenthal and M. Kumm), *1996 Summer Study on Energy Efficiency in Buildings*, American Council for an Energy Efficient Economy, Pacific Grove, California, August 1996. 5.169.

"Joint Delivery of Core DSM Programs: The Next Generation, Made in Vermont" (with S. Parker), *1996 Summer Study on Energy Efficiency in Buildings*, American Council for an Energy Efficient Economy, Pacific Grove, California, August 1996. 7.127.

"Retrofit Economics 201: Correcting Common Errors in Demand-Side Management Cost-Benefit Analysis" (with R. Brailove and J. Wallach) *IGT's Eighth International Symposium on Energy Modeling*, Atlanta, Georgia, April 1995.

"DSM's Best Kept Secret: The Process, Outcome and Future of the PEPCo-Maryland Collaborative" (with R. D. Obeiter and E. R. Mayberry), *Proceedings of the ACEEE Summer Study on Energy Efficiency in Buildings*, Monterey, California, August 1994. 10.199.

Louisville Gas and Electric Company. Invited to make presentation on commercial program design. March 10, 1994.

'DSM for Public Interest Groups," Seminar coordinator and presenter. DSM Training Institute, Boston, Massachusetts, October 1993.

DSM Training Institute - *Training for Ohio DSM Advocates: Effective DSM Collaborative Processes*. Seminar co-presenter. Cleveland, Ohio, August 1993.

"Demand-Management Programs: Targets and Strategies," Vol. 1 of "Building Ontario Hydro's Conservation Power Plant" (with J. Wallach, J. Peters, and B. Hamilton), Coalition of Environmental Groups, Toronto, ONT, November 1992.

"DSM Program Monitoring and Evaluation: Prospects and Pitfalls for Consumer Advocates," *Proceedings from the Mid-Year NASUCA Meeting*, Saint Louis, Missouri, June 8, 1993.

"Twelve Steps To Comprehensive Demand-Management Program Development: A Collaborative Perspective", *Proceedings from the IRP Workshop: The Basic Landscape, NARUC-DOE Fourth IRP Conference*, Burlington Vermont, September 1992. 45.

"Demand-Side Cost Recovery: Toward Solutions that Treat the Causes of Utility Under-Investment in Demand-Side Resources" (with P. Chernick), *Proceedings from the Third NARUC Conference on Integrated Utility Planning*, Santa Fe, New Mexico, April 1991.

"Demand-Side Bidding: A Viable Least-Cost Resource Strategy?" (with P. Chernick and J. Wallach), *Proceedings from the Seventh NARUC Biennial Regulatory Information Conference*, Columbus, Ohio, September 1990.

"Where Do We Go From Here? Eight Steps for Regulators to Jump-Start Least-Cost Planning" (with M. Dworkin), *Proceedings from the Seventh NARUC Biennial Regulatory Information Conference*, Columbus, Ohio, September 1990.

"A Utility Planner's Checklist for Least-Cost Efficiency Investment" (with P. Chernick) *Proceedings from the Seventh NARUC Biennial Regulatory Information Conference*, September 1990. Also published in *Proceedings from the Canadian Electric Association's Demand-Side Management Conference*, St. John, Nova Scotia, September 1990.

"Carrots and Sticks: Do Utilities Need Incentives to Do the Right Thing on Demand-Side Investment?", *Proceedings from the National Association of State Utility Consumer Advocates* Santa Fe, New Mexico, June 1990.

"New Tools On the Block: Evaluating Non-Utility Supply "Opportunities with the Power Analyst" (with J. Wallach), *Proceedings from the Fourth National Conference on Microcomputer Applications in Energy*, Phoenix, AZ, April 1990.

"Breaking New Ground in Collaboration and Program Design," *The Rocky Mountain Institute Competitek Forum* (Moderator), Aspen, Colorado, September 1989.

"Lost Revenues and Other Issues in Demand-Side Resource Evaluation: An Economic Reappraisal" (with P. Chernick), *1988 Summer Study on Energy Efficiency in Buildings*, American Council for an Energy Efficient Economy, Pacific Grove, California, September 1988.

"Pursuing Least-Cost Strategies for Ratepayers While Promoting Competitive Success for Utilities", *Proceedings from the Least-Cost Planning Conference*, National Association of Regulatory Utility Commissioners, Aspen, Colorado, April 1988.

"Balancing Different Economic Perspectives in Demand-Side Resource Evaluation", Workshop on Demand-Side Bidding, Co-sponsored by New York State PSC, ERDA, and Energy Office, Albany, New York, March 1988.

"There They Go Again: A Critique of the AER/UDI Report on Future Electricity Adequacy through the Year 2000" (with C. Komanoff, H. Geller and C. Mitchell), Presentation NASUCA (also debated AER/UDI co-author before NARUC annual meeting), New Orleans, Louisiana, November 1987.

"Saying No to the No-Losers Test: Correctly Assessing Demand-Side Resources to Achieve Least-Cost Utility Strategies", *Proceedings from the Mid-year NASUCA meeting*, Washington, D.C., June 1987.

"The Economic Impact of Three Mile Island" (with C. Komanoff), *Proceedings from the American Association for the Advancement of Science symposium*, May 1986.

"Facing the Grid" (with D. Morris), *New Shelter*, May - June 1981.

Energy Efficiency Portfolio Performance Comparison							
Residential		Spending Depth (4) / (5)	Savings Yield (6) / (4)	Savings Depth (6) / (5)	Data		
State	Year	(1) \$ Spent (2005\$) per Retail Sector MWh Sales	(2) Annual kWh Savings per \$ Spent (2005\$)	(3) Annual MWh Savings per Retail Sector MWh Sales	(4) Spending (Nominal \$ millions)	(5) Retail Sector Sales (MWh)	(6) Annual MWh Savings
Connecticut	2004	\$1.4	5.1	0.65%	\$16.4	12,366,484	80,617
	2003	\$1.2	1.9	0.20%	\$14.4	12,331,116	25,000
	2002	\$1.7	4.3	0.62%	\$18.3	11,772,238	72,460
	2001	\$2.0	5.1	0.81%	\$20.2	11,446,846	92,550
Maine	2004	\$0.4	4.0	0.13%	\$1.5	4,359,020	5,580
	2003	\$0.1	4.6	0.04%	\$0.4	4,359,020	1,918
	2002	-	-	-	NAV	NAV	NAV
	2001	-	-	-	NAP	NAV	NAP
Massachusetts	2004	\$3.3	4.3	1.29%	\$51.7	16,430,880	211,781
	2003	\$2.3	2.8	0.55%	\$34.6	16,114,567	88,913
	2002	\$1.8	2.3	0.36%	\$25.9	15,522,546	55,241
	2001	\$2.2	2.5	0.45%	\$30.1	15,159,987	68,291
New Hampshire	2004	\$1.7	2.3	0.35%	\$6.9	4,218,015	14,896
	2003	\$1.7	2.2	0.32%	\$6.5	4,129,405	13,344
	2002	-	-	-	NAV	NAV	NAV
	2001	-	-	-	NAP	NAV	NAP
New Jersey	2004	\$1.5	3.5	0.46%	\$37.4	26,947,140	124,369
	2003	\$1.5	2.6	0.33%	\$36.7	26,384,718	88,230
	2002	\$1.1	1.0	0.09%	\$26.8	26,598,261	24,161
	2001	\$1.0	1.1	0.09%	\$23.0	24,783,958	22,882
Long Island Power Authority (LIPA)	2004	\$2.0	2.8	0.51%	\$16.1	9,182,520	43,312
	2003	\$2.7	2.7	0.64%	\$21.8	8,489,702	54,742
	2002	\$2.8	2.3	0.54%	\$21.6	8,489,702	46,102
	2001	\$2.4	2.7	0.52%	\$17.3	8,143,069	42,574
New York State Energy Research and Development Authority (NYSERDA)	2004	\$1.4	1.9	0.24%	\$44.8	33,582,007	80,900
	2003	\$0.7	3.3	0.19%	\$20.3	33,260,213	62,700
	2002	\$0.6	3.5	0.17%	\$17.9	33,305,596	57,800
	2001	-	-	-	NAV	NAV	NAV
Vermont	2004	\$3.6	4.3	1.44%	\$7.0	2,016,715	29,026
	2003	\$3.4	3.3	0.99%	\$6.1	1,917,142	18,969
	2002	\$3.2	3.8	1.02%	\$5.7	1,955,203	19,991
	2001	\$2.7	4.4	0.99%	\$4.7	1,919,617	18,917

Notes:

1. NAV = Information Not Available; NAP = Not Applicable (No Program)
2. 2001, 2002, 2003 and 2004 sector sales as reported by US EIA
3. Maine sales are from Bangor Hydro (2003), Central Maine Power (2004) and Maine Public Service (2002); in addition, all others are assumed to be 5% of these sales
4. U.S. Bureau of Labor and Statistics Consumer Price Index Inflation Calculator used to calculate present worth in 2005\$
5. Connecticut programs were suspended for part of 2003
6. New Hampshire annual savings = lifetime savings / assumed average 15 year measure life
7. Vermont data excludes Burlington Electric Department

Energy Efficiency Portfolio Performance Comparison							
Nonresidential		Spending Depth (4) / (5)	Savings Yield (6) / (4)	Savings Depth (6) / (5)	Data		
State	Year	(1) \$ Spent (2005\$) per Retail Sector MWh Sales	(2) Annual kWh Savings per \$ Spent (2005\$)	(3) Annual MWh Savings per Retail Sector MWh Sales	(4) Spending (Nominal \$ millions)	(5) Retail Sector Sales (MWh)	(6) Annual MWh Savings
Connecticut	2004	\$1.5	5.7	0.76%	\$23.4	16,779,631	127,385
	2003	\$1.2	6.1	0.63%	\$18.6	16,756,800	105,700
	2002	\$1.7	5.1	0.73%	\$26.2	16,622,278	122,036
	2001	\$1.7	5.5	0.76%	\$26.1	16,867,301	128,200
Efficiency Maine	2004	\$0.3	6.4	0.17%	\$2.0	7,462,290	12,338
	2003	\$0.1	8.5	0.05%	\$0.5	7,462,290	3,909
	2002	-	-	-	NAV	NAV	NAV
	2001	-	-	-	NAP	NAV	NAP
Massachusetts	2004	\$3.4	3.2	1.10%	\$68.6	19,173,983	210,152
	2003	\$2.9	4.7	1.18%	\$56.2	21,030,110	247,488
	2002	\$3.4	3.5	1.02%	\$63.4	20,247,516	205,856
	2001	\$3.4	5.2	1.44%	\$60.5	19,728,983	284,286
New Hampshire	2004	\$1.3	5.7	0.65%	\$7.6	6,457,719	41,879
	2003	\$1.2	6.7	0.70%	\$6.9	6,241,509	43,412
	2002	-	-	-	NAV	NAV	NAV
	2001	-	-	-	NAP	NAV	NAP
New Jersey	2004	\$0.7	7.8	0.50%	\$27.2	32,295,198	204,144
	2003	\$0.7	7.6	0.48%	\$27.6	41,105,248	197,347
	2002	\$0.9	4.5	0.32%	\$35.4	45,129,424	144,635
	2001	\$0.3	2.9	0.07%	\$11.8	43,671,352	30,943
Long Island Power Authority (LIPA)	2004	\$0.8	3.7	0.27%	\$7.2	9,666,377	25,828
	2003	\$0.9	2.8	0.22%	\$7.9	9,593,209	20,884
	2002	\$0.9	4.0	0.31%	\$7.5	9,026,264	27,542
	2001	\$0.9	3.0	0.22%	\$7.3	9,002,154	19,510
New York State Energy Research and Development Authority (NYSERDA)	2004	\$1.3	9.0	1.21%	\$52.5	37,897,275	456,900
	2003	\$0.6	12.3	0.69%	\$24.7	41,500,182	284,500
	2002	\$0.6	10.1	0.49%	\$25.8	48,471,686	239,100
	2001	-	-	-	NAV	NAV	NAV
Efficiency Vermont	2004	\$1.6	6.0	0.86%	\$4.9	3,294,004	28,410
	2003	\$1.9	5.7	0.93%	\$5.4	3,069,837	28,453
	2002	\$1.6	4.6	0.63%	\$4.9	3,291,679	20,630
	2001	\$1.3	5.5	0.56%	\$3.8	3,293,986	18,572

Notes:

1. NAV = Information Not Available; NAP = Not Applicable (No Program)
2. 2001, 2002, 2003 and 2004 sector sales as reported by US EIA
3. Maine sales are from Bangor Hydro (2003), Central Maine Power (2004) and Maine Public Service (2002); in addition, all others are assumed to be 5% of these sales
4. U.S. Bureau of Labor and Statistics Consumer Price Index Inflation Calculator used to calculate present worth in 2005\$
5. Connecticut programs were suspended for part of 2003
6. 2003 Connecticut savings are for United Illuminating only
7. New Hampshire annual savings = lifetime savings / assumed average 15 year measure life
8. Vermont data excludes Burlington Electric Department

Pacific Gas & Electric Efficiency Spending and Savings

	Actual	Projected		
	2004	2006	2007	2008
Electric Efficiency Spending (\$)				
Residential	\$ 54,484,071	na	na	na
Non-Residential	\$ 52,872,929	na	na	na
Total	\$ 107,357,000	\$ 236,675,907	\$ 270,316,969	\$ 332,188,355
Savings (GWh)				
Residential	251	581	674	793
Non-Residential	312	275	303	337
Total	564	856	977	1,130
Sales (GWh)				
Residential	21,389	25,186	27,331	29,657
Non-Residential	32,506	36,581	38,854	41,300
Total	53,895	61,768	66,185	70,958
Savings yield (kWh Savings/Spending \$)				
Residential	4.62	3.25	3.24	3.04
Non-Residential	5.90	4.16	4.14	3.89
Total	5.25	3.70	3.68	3.46
Savings depth (kWh Savings/kWh Sales)				
Residential	1.2%	2.3%	2.5%	2.7%
Non-Residential	1.0%	0.8%	0.8%	0.8%
Total	1.0%	1.4%	1.5%	1.6%
Levelized cost of saved electric energy				
Lifetime				
10 Residential	\$ 0.0314	\$ 0.0445	\$ 0.0447	\$ 0.0476
15 Non-Residential	\$ 0.0190	\$ 0.0270	\$ 0.0271	\$ 0.0289

Sources:

1. Pacific Gas and Electric Company's Energy Efficiency Programs Annual Report - May 2005, Table 1.1, Summary of Costs (Electric), page I-6
2. Pacific Gas and Electric Company's Energy Efficiency Programs Annual Report - May 2005, Table 1.2a Summary of EEP Effects (Annual Energy Reductions, Net MWh), page I-7
3. California Public Utility Commissions 9/22/05 Decision, Application 05-06-004, Attachment 4
4. PG&E filing to the CPUC 7/15/05, 2006-2008 Energy Efficiency Program Portfolio
Additional Program Details
5. US Energy Information Agency, Table 6. Class of Ownership, Number of Bundled Ultimate Consumers, Revenue, Sales, and Average Retail Price for the Residential Sector by State Utility, 2004
6. US Energy Information Agency, Table 7. Class of Ownership, Number of Bundled Ultimate Consumers, Revenue, Sales, and Average Retail Price for the Residential Sector by State Utility, 2004
7. US Energy Information Agency, Table 8. Class of Ownership, Number of Bundled Ultimate Consumers, Revenue, Sales, and Average Retail Price for the Residential Sector by State Utility, 2004

DSM and the Need Date for the Glades Units

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
FPL Summer MW Requirements														
FPL Forecast	22,259	22,770	23,435	24,003	24,612	25,115	25,590	26,100	26,772	27,410	28,079	28,737	29,391	30,091
FPL DSM	381	524	656	784	918	1,056	1,199	1,350	1,366	1,486	1,606	1,726	1,846	1,966
Forecast With FPL DSM	21,878	22,246	22,779	23,219	23,694	24,059	24,391	24,750	25,406	25,924	26,473	27,011	27,545	28,125
PG&E Scaled DSM	381	718	1,089	1,501	1,926	2,365	2,815	3,277	3,751	4,239	4,739	5,251	5,775	6,314
Forecast With PG&E Scaled DSM	21,878	22,052	22,346	22,502	22,686	22,750	22,775	22,823	23,021	23,171	23,340	23,486	23,616	23,777
Mass. Scaled DSM	381	575	775	983	1,197	1,418	1,644	1,876	2,115	2,361	2,612	2,870	3,133	3,405
Forecast With Mass. Scaled DSM	21,878	22,195	22,660	23,020	23,415	23,697	23,946	24,224	24,657	25,049	25,467	25,867	26,258	26,686
DSM Budgets (Millions Nominal \$)														
PG&E Scaled DSM		\$ 537	\$ 594	\$ 704	\$ 745	\$ 788	\$ 827	\$ 871	\$ 917	\$ 967	\$ 1,014	\$ 1,066	\$ 1,119	\$ 1,179
Mass. Scaled DSM		\$ 321	\$ 341	\$ 361	\$ 382	\$ 404	\$ 424	\$ 446	\$ 470	\$ 496	\$ 520	\$ 546	\$ 574	\$ 604

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing was served on this 16th day of March, 2007, via electronic mail and US Mail on:

Florida Power & Light Company
R. Wade Lichtfield
Natalie F. Smith
700 Universe Boulevard
Juno Beach, FL 33408
Email: Wade_Litchfield@fpl.com
Natalie_Smith@fpl.com

Florida Power & Light Company
Mr. Bill Walker
215 South Monroe Street, Suite 810
Tallahassee, FL 32301-1859
Email: bill_walker@fpl.com

Office of Public Counsel
c/o Harold McLean
111 W. Madison St., #812
Tallahassee, FL 32399-1400
Email: mclean.harold@leg.state.fl.us

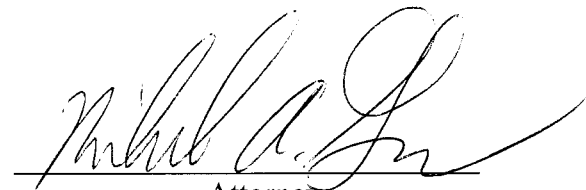
Black & Veatch
Myron Rollins
11401 Lamar Avenue
Overland Park, KS 66211
Email: rollinsmr@bv.com

Department of Community Affairs
Shaw Stiller
Division of Community Planning
2555 Shumard Oak Blvd.
Tallahassee, FL 32399-2100
Email: shaw.stiller@dca.state.fl.us

Department of Environmental Protection
Michael P. Halpin
Siting Coordination Office
2600 Blairstone Road MS 48
Tallahassee, FL 32301
Email: mike.halpin@dep.state.fl.us

Florida Public Service Commission
Katherine E. Fleming, Esq.
Jennifer Brubaker, Esq.
Lorena Holley, Esq.
2540 Shumard Oak Blvd.
Tallahassee, FL 32399-0850
Email: keflemin@psc.state.fl.us
jbrubake@psc.state.fl.us
holley@psc.state.fl.us

Office of Public Counsel
Charles J. Beck, Esq.
Deputy Public Counsel
c/o The Florida Legislature
111 W. Madison St., Room 812
Tallahassee, FL 32399-1400
Email: beck.charles@leg.state.fl.us



Attorney