

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

METROPOLITAN EDISON COMPANY
Docket No. M-2009-2092222

PENNSYLVANIA ELECTRIC COMPANY
Docket No. M-2009-2112952

PENNSYLVANIA POWER COMPANY
Docket No. M-2009-2112956

ENERGY EFFICIENCY AND CONSERVATION PLAN

July 1, 2009

Testimony

of

George L. Fitzpatrick

List of Topics Addressed

The Companies' Energy Efficiency and Conservation Plans,

Plan Development and Compliance

Plan Risks and Program Goals

EE&C-related Recommendations

1 **I. INTRODUCTION AND BACKGROUND**

2 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

3 **A.** My name is George L. Fitzpatrick and my business address is 898 Veterans Memorial Highway, Suite
4 430, Hauppauge NY 11788.

5
6 **Q. MR. FITZPATRICK, BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

7 **A.** I am a Managing Director within the Enterprise Management Solutions (“EMS”) division of Black &
8 Veatch Corporation. My current responsibilities include co-leading the DSM/Energy Efficiency practice
9 and leading the Regulatory Litigation Support practice within EMS. I am also designated as a Subject
10 Matter Specialist in a number of areas related to our electric and gas utility consulting practice.

11
12 **Q. PLEASE DESCRIBE YOUR PROFESSIONAL EXPERIENCE RELEVANT TO THE**
13 **TESTIMONY YOU ARE NOW GIVING.**

14 **A.** My professional experience includes over 30 years within utility management and electric/gas technical
15 and management consulting fields. My areas of expertise include: econometric and statistical analysis for
16 energy and peak forecasting, load research, integrated resource planning, demand side
17 management/energy efficiency (“DSM/EE”) assessment, program design, implementation and
18 evaluation, as well as generating plant life cycle economics, operating costs and performance modeling
19 and overall utility investment prudence analyses.

20 I have testified extensively before state regulatory commissions throughout the United States, in both
21 direct and rebuttal roles. Areas in which I have provided testimony include:

- 22 • Integrated Resource Planning
- 23 • Electric and Gas DSM/EE Program Assessment, Implementation and Evaluation
- 24 • Comparative lifecycle economics of competing utility investments
- 25 • Econometric/statistical-based Load and Energy Forecasting
- 26 • Other Econometric and Statistical Studies on Utility- related Issues

- 1 • Weather Normalization Studies
- 2 • Strategic Planning
- 3 • Load Research Program Sample Design, Implementation and Analysis
- 4 • Rate Design
- 5 • Cost of Service Studies
- 6 • Renewable Program Evaluation
- 7 • Performance Standard design and statistical construction

8 A more complete description of relevant qualifications to this testimony is contained in my professional
9 resume which is provided in attached Appendix A.

10

11 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

12 **A.** The purpose of my testimony is to explain the Energy Efficiency and Conservation (“EE&C”) Plans
13 being submitted by Metropolitan Edison Company (“Met-Ed”), Pennsylvania Electric Company
14 (“Penelec”) and Pennsylvania Power Company (“Penn Power”) (collectively, “Companies”), including
15 the risks surrounding the achievement of the goals set forth in the Plans and Plan-related
16 recommendations. It should be noted that throughout my testimony I refer to sections included in each of
17 the Companies’ EE&C Plans. Rather than reiterate in my testimony the details of the sections to which I
18 refer, I am incorporating them by reference.

19

20 **Q. WHAT WAS BLACK & VEATCH’S ROLE IN THE DEVELOPMENT OF THE COMPANIES’**
21 **PLANS?**

22 **A.** Black & Veatch’s scope of work for this project is as follows:

- 23 • Market assessment of the energy efficiency and conservation potential in FirstEnergy’s
24 Pennsylvania service territories by rate class;
- 25 • Development of potential energy efficiency, conservation and demand response programs for
26 each class of customers;

- 1 • Evaluation of the cost-effectiveness of the plan consistent with the Commission's requirements;
- 2 • Optimization of the plan components to achieve goals of Act 129 of 2008 ("Act 129"), given
- 3 regulatory requirements, spending limits, and targeted reductions;
- 4 • Development of measurement, verification and evaluation (M&V) criteria and processes to
- 5 support the demonstration of achieved savings consistent with the Commission's requirements;
- 6 and
- 7 • Assistance in the preparation of the Plans, including the provision of supporting testimony for
- 8 filing with the Pennsylvania Public Utility Commission ("Commission") on July 1, 2009; and
- 9 • Performance of post-filing work, as required, to obtain Plan approval.

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11 **Q. HOW DID THE BLACK & VEATCH TEAM PREPARE FOR THIS PROJECT?**

12 **A.** In addition to staffing the project with Black & Veatch experts in the areas of energy efficiency and

13 demand reduction, the Black & Veatch team reviewed the provisions of Act 129, the Commission's

14 January 15, 2009 Implementation Order, the Commission's final June 1, 2009 Technical Reference

15 Manual ("TRM"), the draft Total Resource Cost ("TRC") Order and other filings made in the

16 Commission's Energy Efficiency Docket at M-2008-2069887.

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18 **Q. DID BLACK & VEATCH PREPARE THE PLANS?**

19 **A.** Developing each of the Companies' three EE&C Plans was a collaborative effort between Black &

20 Veatch and FirstEnergy's in-house experts. Black & Veatch's national experience was blended with the

21 DSM/EE experience specific to the Companies' respective service territories, resulting in three separate,

22 yet similar, EE&C Plans that employed consistent assumptions on measure costs, consistent utilization of

23 the Commission's Technical Reference Manual ("TRM"), and consistent application of the results of the

24 three individual Company surveys administered by Black & Veatch, to establish baselines and realizable

25 market penetration goals. The ultimate plans developed have a broad spectrum of programs, each

26 containing several important measures that cover all of these Companies' major customer classes. At the

1 outset, consistency of portfolios across the three Companies, if economically appropriate and
 2 geographically relevant, was deemed beneficial in order to optimize the costs of delivery of these
 3 programs to all of FirstEnergy's Pennsylvania customers. These reports represent each of the Companies'
 4 responses to the Commission's January 15, 2009 Implementation Order, issued pursuant to Act 129,
 5 which requires the submission of EE&C Plans by July 1, 2009.

7 **Q. WERE THE COMPANIES' EE&C PLANS DEVELOPED UNDER YOUR DIRECTION AND**
 8 **CONTROL?**

9 **A.** Yes, with significant valuable input from FirstEnergy personnel who worked closely with the Black &
 10 Veatch Team, and direction from the Commission's final June 1, 2009 TRM and its draft Total Resource
 11 Cost ("TRC") Test.

13 **II. ACT 129 EE&C TARGETS AND EE&C PLAN ACHIEVEMENTS**

14 **Q. WHAT ARE THE OVERALL KW AND KWH TARGETS THAT EACH OF THE COMPANIES**
 15 **MUST ACHIEVE PURSUANT TO ACT 129?**

16 **A.** The following two tables present the targets that have been calculated by FirstEnergy and accepted by the
 17 Commission based upon the calendar 2006 kWh sales and the top 100 hours of system peak loads for the
 18 summer of 2007 for each Company. These targets are based upon the percentage goals set forth in Act
 19 129:

Energy Consumption Forecasts and Act 129 Mandated Consumption Reductions as Measured in Megawatt-Hours			
EDC	Forecast	1% at 5/31/2011 Reduction	3% at 5/31/2013 Reduction
Penelec	14,399,289	143,993	431,979
Penn Power	4,772,937	47,729	143,188
Met-Ed	14,865,036	148,650	445,951

Average Peak Loads Top 100 Hours and Act 129 Mandated Peak Demand Reductions as Measured in Megawatts		
EDC	Load	4.5% Reduction
Penelec	2,395	108 MW
Penn Power	980	44
Met-Ed	2,644	119

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2 **Q: DO THE EE&C PLANS MEET THE MW AND MWH TARGETS IDENTIFIED ABOVE?**

3 **A:** Yes. The table below demonstrates that each Plan, as filed, has been developed to produce results that will
 4 meet or exceed the targets established by Act 129.

	May 2011 Target (MWH)	May 2013 Target (MWH)	May 2013 Target (MWs)
Met-Ed			
Target	146,239	438,718	119
MWH/MW Savings	172,394	447,737	120
% of Target	118%	102%	101%
Penn Power			
Target	47,729	143,188	44
MWH/MW Savings	56,422	145,693	45
% of Target	118%	102%	102%
Penelec			
Target	143,993	431,979	108
MWH/MW Savings	173,094	447,100	110
% of Target	120%	104%	102%

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6 Please see Appendix B in each of the Companies' EE&C Plans for the identification of their top 100 load
 7 hours for 2007, which set the targets for the system peak-related reductions.

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Q. WHAT IS THE ANNUAL BUDGET FOR THE DEVELOPMENT AND IMPLEMENTATION OF THE COMPANIES' PLANS?

A. Act 129 specifies that "The total cost of any plan required under this section shall not exceed 2% of the electric distribution company's total annual revenue as of December 31, 2006." Per Act 129, the calculation of the budget for each of the Companies is as follows:

Company Name	Total Annual Revenue	2% of Total Annual
	12/31/2006	Revenue 12/31/2006
Met-Ed	\$1,243,344,716	\$24,866,894
Penelec	\$1,148,737,096	\$22,974,742
Penn Power	\$332,989,436	\$6,659,789

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Q. PLEASE PROVIDE ADDITIONAL BUDGET DETAILS FOR THE RESIDENTIAL SECTOR PROGRAMS.

A. For Met-Ed, the residential sector program budget for each program is as follows:

Residential Portfolio (including Low-Income)			
EE&C Program	Cost Elements (\$)		
	Total Incentives	Operations Costs	Total Budget (2010-2013)
Demand Reduction	6,656,265	20,243,802	26,900,067
Home Energy Audits	6,238,300	1,101,044	7,339,344
Appliance Turn-In	1,970,270	5,383,214	7,353,484

Residential Portfolio (including Low-Income)			
EE&C Program	Cost Elements (\$)		
	<i>Total Incentives</i>	<i>Operations Costs</i>	<i>Total Budget (2010-2013)</i>
EE HVAC & Solar	5,089,398	1,101,943	6,191,340
EE Products	5,323,172	1,946,168	7,269,339
New Construction	3,199,000	892,075	4,091,075
Whole Building Comprehensive	903,925	109,975	1,013,900
Multiple Family	117,334	36,844	154,178
<i>Low-Income</i>	<i>234,180</i>	<i>73,558</i>	<i>307,738</i>
Totals	29,731,843	30,888,622	60,620,465

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2 For Penelec, the residential sector program budget for each program is as follows:

Residential Portfolio (including Low-Income)			
EE&C Program	Cost Elements (\$)		
	<i>Total Incentives</i>	<i>Operations Costs</i>	<i>Total Budget (2010-2013)</i>
Demand Reduction	6,066,480	18,484,807	24,551,287
Home Energy Audits	5,461,463	1,087,741	6,549,204
Appliance Turn-In	1,341,671	3,658,006	4,999,677
EE HVAC & Solar	1,941,151	417,999	2,359,150
EE Products	6,171,426	2,330,676	8,502,102

Residential Portfolio (including Low-Income)			
EE&C Program	Cost Elements (\$)		
	<i>Total Incentives</i>	<i>Operations Costs</i>	<i>Total Budget (2010-2013)</i>
New Construction	3,998,750	1,112,075	5,110,825
Whole Building Comprehensive	903,925	109,975	1,013,900
Multiple Family	121,529	37,955	159,484
<i>Low-Income</i>	<i>364,820</i>	<i>108,177</i>	<i>472,997</i>
Totals	26,371,216	27,347,410	53,718,626

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For Penn Power, the residential sector program budget for each program is as follows:

Residential Portfolio (including Low-Income)			
EE&C Program	Cost Elements (\$)		
	<i>Total Incentives</i>	<i>Operations Costs</i>	<i>Total Budget (2010-2013)</i>
Demand Reduction	602,415	1,582,934	2,185,349
Home Energy Audits	2,167,894	368,807	2,536,701
Appliance Turn-In	373,722	1,027,648	1,401,370
EE HVAC & Solar	1,265,025	286,379	1,551,404
EE Products	1,502,187	605,158	2,107,345
New Construction	1,199,625	342,075	1,541,700
Whole Building Comprehensive	320,775	46,799	367,574

Residential Portfolio (including Low-Income)			
EE&C Program	Cost Elements (\$)		
	<i>Total Incentives</i>	<i>Operations Costs</i>	<i>Total Budget (2010-2013)</i>
Multiple Family	33,717	14,685	48,402
<i>Low-Income</i>	<i>105,440</i>	<i>39,442</i>	<i>144,882</i>
Totals	7,570,800	4,313,926	11,884,726

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2 **Q. PLEASE PROVIDE ADDITIONAL BUDGET DETAILS FOR THE SMALL C&I SECTOR**
 3 **PROGRAMS.**

4 **A.** For Met-Ed, the small commercial & industrial sector program budget for each program is as follows:

Small Commercial & Industrial			
EE&C Program	Cost Elements (\$)		
	<i>Total Incentives</i>	<i>Operations Costs</i>	<i>Total Budget (2010-2013)</i>
Energy Audit	182,008	170,344	352,351
Equipment Rebates	8,335,763	2,151,546	10,487,308
Multiple Family	205,335	67,937	273,272
Totals	8,723,106	2,389,827	11,112,931

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6 For Penelec, the small commercial & industrial sector program budget for each program is as follows:

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Small Commercial & Industrial			
EE&C Program	Cost Elements (\$)		
	<i>Total Incentives</i>	<i>Operations Costs</i>	<i>Total Budget (2010-2013)</i>
Energy Audit	529,700	221,061	750,760
Equipment Rebates	8,843,449	1,967,576	10,811,025
Multiple Family	212,676	70,160	282,836
Totals	9,585,825	2,258,797	11,844,621

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For Penn Power, the small commercial & industrial sector program budget for each program is as follows:

Small Commercial & Industrial			
EE&C Program	Cost Elements (\$)		
	<i>Total Incentives</i>	<i>Operations Costs</i>	<i>Total Budget (2010-2013)</i>
Energy Audit	106,029	90,855	196,884
Equipment Rebates	2,686,223	736,367	3,422,590
Multiple Family	59,005	23,620	82,625
Totals	2,851,257	850,842	3,702,099

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Q. PLEASE PROVIDE ADDITIONAL BUDGET DETAILS FOR THE LARGE C&I SECTOR PROGRAMS.

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A. For Met-Ed, the large commercial & industrial sector program budget for each program is as follows:

Large Commercial & Industrial			
EE&C Program	Cost Elements (\$)		
	<i>Total Incentives</i>	<i>Operations Costs</i>	<i>Total Budget (2010-2013)</i>
Equipment Rebates	3,654,826	543,262	4,198,089
Industrial Motors and VSD	341,760	87,459	429,219
PJM Demand Response	2,400,000	--	2,400,000
Totals	6,396,586	630,721	7,027,308

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For Penelec, the large commercial & industrial sector program budget for each program is as follows:

Large Commercial & Industrial			
EE&C Program	Cost Elements (\$)		
	<i>Total Incentives</i>	<i>Operations Costs</i>	<i>Total Budget (2010-2013)</i>
Equipment Rebates	4,017,876	643,536	4,661,413
Industrial Motors and VSD	580,320	109,592	689,912
PJM Demand Response	2,400,000	--	2,400,000
Totals	6,998,196	753,128	7,751,325

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For Penn Power, the large commercial & industrial sector program budget for each program is as follows:

Large Commercial & Industrial			
EE&C Program	Cost Elements (\$)		
	<i>Total Incentives</i>	<i>Operations Costs</i>	<i>Total Budget (2010-2013)</i>
Equipment Rebates	1,637,337	256,015	1,893,352
Industrial Motors and VSD	128,480	62,782	191,262
PJM Demand Response	3,600,000	--	3,600,000
Totals	5,365,817	318,797	5,684,614

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Q. PENN POWER IS LOCATED WITHIN THE MIDWEST INDEPENDENT TRANSMISSION SYSTEM OPERATOR, INC, YET THE ABOVE TABLE INCLUDES A PJM DEMAND RESPONSE PROGRAM. WHY IS THAT?

A. For consistency purposes the tables were set up the same. Although not included in the PJM Demand Response program, Penn Power will use the PJM protocol for Economic Load Response to measure implementation unless and until MISO adopts a demand response program. Performance verification will be based on PJM ELRP protocols for the aggregated hourly load reductions of the participants until such time as MISO adopts its own rules for curtailment.

Q. PLEASE PROVIDE ADDITIONAL BUDGET DETAILS FOR THE FEDERAL, STATE, AND LOCAL GOVERNMENT/MUNICIPALITIES/SCHOOL DISTRICTS/INSTITUTIONS OF HIGHER LEARNING AND NON-PROFIT ENTITIES (“GOVERNMENT/NON-PROFIT”) SECTOR PROGRAMS.

A. For Met-Ed, the Government/Non-Profit sector program budget for each program is as follows:

Governmental/Non-Profit			
EE&C Program	Cost Elements (\$)		
	<i>Total Incentives</i>	<i>Operations Costs</i>	<i>Total Budget (2010-2013)</i>
Governmental & Institutional	4,095,904	3,483,985	7,579,889
Totals	4,095,904	3,483,985	7,579,889

1 For Penelec, the Government/Non-Profit sector program budget for each program is as follows:

Governmental/Non-Profit			
EE&C Program	Cost Elements (\$)		
	<i>Total Incentives</i>	<i>Operations Costs</i>	<i>Total Budget (2010-2013)</i>
Governmental & Institutional	3,912,142	2,758,861	6,671,003
Totals	3,912,142	2,758,861	6,671,003

2 For Penn Power, the Government/Non-Profit sector program budget for each program is as follows:

Governmental/Non-Profit			
EE&C Program	Cost Elements (\$)		
	<i>Total Incentives</i>	<i>Operations Costs</i>	<i>Total Budget (2010-2013)</i>
Governmental & Institutional	1,145,604	531,502	1,677,106
Totals	1,145,604	531,502	1,677,106

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1 Q: PLEASE IDENTIFY THE MAJOR CLASS CONTRIBUTIONS BY COMPANY THAT
 2 COMPRISE THE MWH AND KW SAVINGS THAT WILL BE CAPTURED BY THE THREE
 3 EE&C PLANS.

4 A: Section 1.0, PUC Table 2 of each Company's EE&C Plan provides the MWH and kW savings
 5 contributions, by major class.

7 Q: DO THE FILED EE&C PLANS OF THE THREE OPERATING COMPANIES ACHIEVE THE
 8 OVERALL TRC TEST COST BENEFIT THRESHOLD OF 1.0?

9 A: Yes. As the following three tables demonstrate, each of the Companies TRC portfolios achieves a Cost-
 10 Benefit Ratio of 1.0 or better.

11 Met-Ed Lifetime Costs and Benefits

Portfolio Summary of Lifetime Costs and Benefits					
Net Lifetime Benefits, and TRC per the California Standard Practice Manual					
Portfolio	Discount Rate	Total Discounted Lifetime Costs (\$000)	Total Discounted Lifetime Benefits (\$000)	Total Discounted Net Lifetime Benefits (\$000)	Cost- Benefit Ratio (TRC)
Residential <i>(exclusive of Low-Income)</i>	7.52%	85,524,151	178,009,081	92,484,930	2.08
Residential Low- Income	7.52%	307,738	759,547	451,809	2.47
Commercial/ Industrial Small	7.52%	36,387,406	101,357,395	64,969,988	2.79
Commercial/ Industrial Large	7.52%	26,276,912	33,528,580	7,251,669	1.28
Governmental/ Non-Profit	7.52%	21,639,072	39,651,001	18,011,929	1.83
Total	7.52%	170,135,279	353,305,604	183,170,324	2.08

Penelec Lifetime Costs and Benefits

Portfolio Summary of Lifetime Costs and Benefits Net Lifetime Benefits, and TRC per the California Standard Practice Manual					
Portfolio	Discount Rate	Total Discounted Lifetime Costs (\$000)	Total Discounted Lifetime Benefits (\$000)	Total Discounted Net Lifetime Benefits (\$000)	Cost- Benefit Ratio
Residential <i>(exclusive of Low-Income)</i>	7.92%	71,442,882	147,843,114	76,400,232	2.07
Residential Low- Income	7.92%	472,997	1,178,533	705,536	2.49
Commercial/ Industrial Small	7.92%	44,432,476	104,878,540	60,446,064	2.36
Commercial/ Industrial Large	7.92%	34,002,073	42,671,923	8,669,849	1.25
Governmental/ Non-Profit	7.92%	16,170,354	30,379,020	14,208,665	1.88
Total	7.92%	166,520,783	326,951,130	160,430,346	1.96

Penn Power Lifetime Costs and Benefits

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Portfolio Summary of Lifetime Costs and Benefits Net Lifetime Benefits, and TRC per the California Standard Practice Manual					
Portfolio	Discount Rate	Total Discounted Lifetime Costs (\$000)	Total Discounted Lifetime Benefits (\$000)	Total Discounted Net Lifetime Benefits (\$000)	Cost- Benefit Ratio
Residential <i>(exclusive of Low-Income)</i>	11.1%	18,815,383	36,722,106	17,906,723	1.95
Residential Low- Income	11.1%	144,882	296,302	151,421	2.05
Commercial/ Industrial Small	11.1%	15,378,642	34,830,388	19,451,746	2.26
Commercial/ Industrial Large	11.1%	12,868,218	11,533,815	(1,334,403)	0.90
Governmental/ Non-Profit	11.1%	6,858,479	10,457,063	3,598,583	1.52
Total	11.1%	54,065,604	93,839,674	39,774,069	1.74

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3 **III. RESULTS OF BLACK & VEATCH'S STUDY**

4 **Q. PLEASE DESCRIBE GENERALLY HOW THE PROGRAMS WERE SELECTED FOR**
5 **INCLUSION IN THE PLANS.**

6 **A.** The first step was to assess the market potential for various DSM/EE programs, which was done through
7 various measures. The Companies' Plans include kW and kWh impact estimates taken directly from the
8 Commission's TRM. The Commission's draft TRC methodology was followed, with only minor
9 adjustments that were addressed in FirstEnergy's Comments submitted June 5, 2009, to the Commission's
10 draft order regarding the TRC test. Further, the measure/plan cost assumptions were developed by Black
11 & Veatch based largely upon its DSM/EE measure database, the California Database for Energy Efficient

1 Resources (“DEER”), the DSMore MI Database, and The Energy Star Website, as well as information
2 obtained from Pennsylvania stakeholders. This information set was augmented with input from the
3 FirstEnergy team. The measure penetration estimates were developed in large measure from Black &
4 Veatch’s residential, commercial and industrial survey results for each of the three Companies. Based
5 upon this information, a market assessment of potential results was developed and incorporated into the
6 development of the programs included in the Plans.

7
8 **Q. WERE ANY OTHER RESOURCES USED DURING THE DEVELOPMENT OF THE PLAN?**

9 A. Yes, in addition to the resources described above, Black & Veatch also reviewed

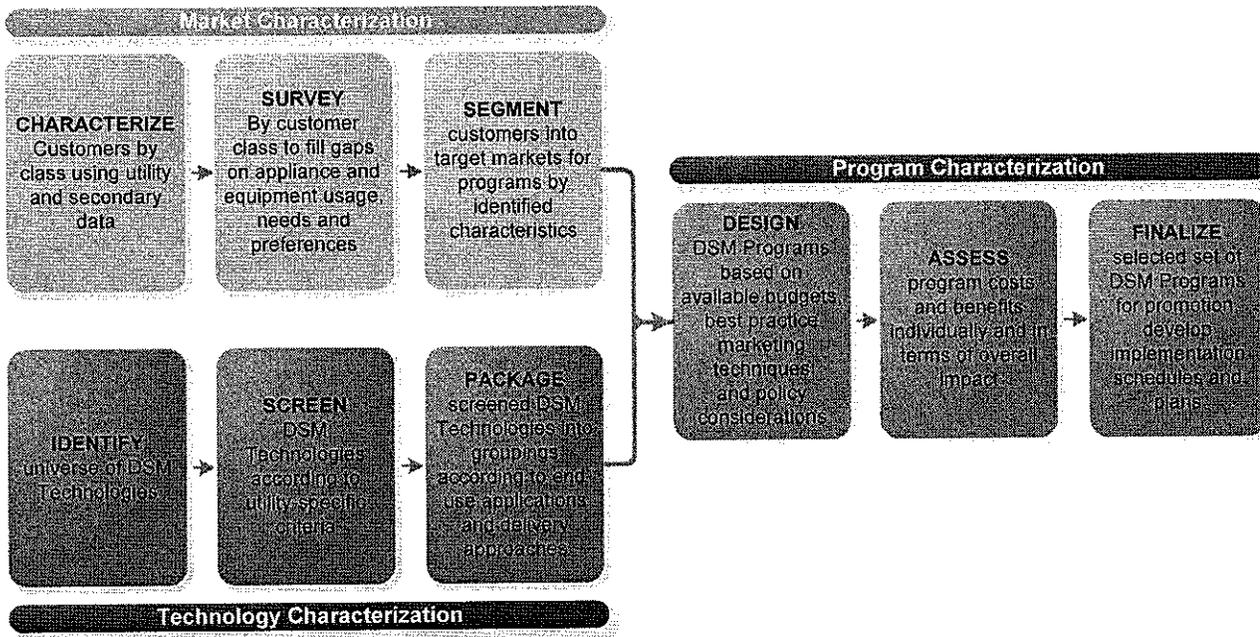
- 10 • American Council for an Energy Efficient Economy (ACEEE) Report Number E093 entitled
- 11 “Potential For Energy Efficiency, Demand Response, And Onsite Solar In Pennsylvania”, 2008
- 12 • U.S. Environmental Protection Agency’s ENERGY STAR estimates; and
- 13 • The Michigan Public Utilities Commission’s deemed measure life and savings database

14
15 Appendix E in each Company Plan lists the measures selected and the source of each deemed savings
16 estimates.

17
18 **Q. PLEASE DISCUSS THE PROCESS THAT BLACK & VEATCH UTILIZED IN COMPLETING**
19 **ITS EE&C PROGRAM ASSESSMENT STUDY.**

20 A: The figure below illustrates the process undertaken by the FirstEnergy- Black & Veatch planning team to
21 develop the EE&C plan for each of the Companies.

FirstEnergy EE&C Plan Development Process



Our approach balances three key sources of information:

1. External stakeholder experience and opinions captured in Stakeholder meetings; and Conservation Service Provider experience captured in a Request for Information survey given to stakeholders after the first meeting.
2. Industry experience as reflected in the literature and previous contractor evaluation studies.
3. Met-Ed, Penelec and Penn Power customer attitudes and preferences captured through operating company-specific mail and telephone surveys and key account representative interviews. To capture this customer data, FirstEnergy commissioned Black & Veatch to perform 100 C/I phone surveys per Company and over 400 residential mail surveys per operating company. Interviews were conducted with a sample of each Company's Managed Account representatives, National Account representatives and Area Managers to capture needed information on each Company's largest customers and local governments.

Using all of the data collected, the Black & Veatch team populated its models by Company in order to assess measure, program and overall portfolio costs and benefits, by Company, utilizing the final TRM information that was issued on June 1, 2009. This final step, by necessity, became an iterative process

1 that went through multiple iterations until the optimal balance of kW/kWh target achievement was
2 developed within the dollar spending budgets prescribed within Act 129.

3
4 **Q. HOW MANY MEASURES WERE EVALUATED BY BLACK & VEATCH FOR THIS STUDY?**

5 **A.** The FirstEnergy- Black & Veatch team has in the past evaluated hundreds of EE&C measures. For these
6 plans, the FirstEnergy- Black & Veatch team used a prescreening process to identify 113 EE&C
7 measures, along with additional energy efficiency measures based upon stakeholder input. Our program
8 modeling was augmented with a significant amount of data obtained from 28 responses to the Request for
9 Information from Conservation Service Providers (“CSPs”) and other energy efficiency program vendors
10 on the costs of various program elements. Other information was collected as part of the market research
11 of retail stores in each operating company’s service territory that sought product availability and pricing
12 for selected energy efficient appliances.

13
14 **Q. HOW MANY MEASURES WERE ULTIMATELY INCLUDED IN THE EACH OF THE**
15 **COMPANIES PLANS?**

16 **A.** All of the 113 pre-screened measures were ultimately included at various levels of participation. While
17 some measures did not pass the TRC they were considered valuable components of a comprehensive
18 portfolio. Each Company’s EE&C Plan provides details of each of the included measures.

19
20 **IV. RESULTS OF STAKEHOLDER MEETINGS**

21 **Q. PLEASE DESCRIBE THE PROCESS THROUGH WHICH STAKEHOLDER INPUT WAS**
22 **SOLICITED AND RECEIVED OVER THE COURSE OF BLACK & VEATCH’S**
23 **ASSIGNMENT.**

24 **A.** Stakeholder input was obtained through two Stakeholder meetings held early in the process, followed by
25 conference calls with interested organizations. A third Stakeholder meeting was held on June 16, 2009 to

1 brief the Stakeholder group on the contents of FirstEnergy's draft EE&C plans and to answer questions
2 posed by participants.

3 In addition, the FirstEnergy team discussed program concepts with the Pennsylvania Housing Finance
4 Authority in the development of the Multifamily Buildings program, the Office of Consumer Advocate in
5 regard to various issues, and the American Water Company.

6 Written comments to the proposed portfolio of programs were received from several organizations
7 including: The Department of Environmental Protection, CSPs and others.

8
9 **Q. IN YOUR OPINION, WAS THE STAKEHOLDER PROCESS AND INPUT BENEFICIAL TO**
10 **THE CONSTRUCTION OF THE FIRSTENERGY COMPANIES' PLANS?**

11 **A.** Yes. The Stakeholder group represented a significant cross section of customer class representatives,
12 regulators and CSPs. Their contributions were of great value to the process and the results.

13 **V. THE EE&C PLANS**

14 **Q. WHAT WERE THE GUIDING PRINCIPLES UTILIZED BY THE FIRSTENERGY-BLACK &**
15 **VEATCH TEAM IN DEVELOPING THE ELEMENTS OF EACH EE&C PLAN?**

16 **A.** The FirstEnergy- Black & Veatch team pursued the following priorities in designing each EE&C plan:

- 17 • Seek out near-term "shovel ready" opportunities;
- 18 • Focus on high reliability programs first;
- 19 • Leverage other funding sources to stay within spending cap;
- 20 • Build market share with lower reliability programs and those requiring more lead time; and
- 21 • Favor programs with attributable savings that are easily proven via the TRM.

22 The FirstEnergy- Black & Veatch team made some additional global assumptions about the context
23 within which these programs will be implemented over the next five years:

- 24 • An economic context of continued high unemployment rates caused concern that mass market
25 programs that require customer capital may be slower to build, at least in the initial years of each
26 plan;

- 1 • Programs may require higher rebate subsidies or full financing, which may make some programs
2 marginally cost effective;
- 3 • It will be possible to seek out large projects, such as government accounts that can leverage other
4 funding.

5

6 **Q. WHAT ARE THE KEY FEATURES OF THE PLANS?**

7 A. Each of the EE&C plans:

- 8 • Include a variety of EE&C measures and will provide the measures equitably to all customer classes
9 pursuant to 66 Pa. C.S. §2806.1(a)(5).
- 10 • Include a well-reasoned and balanced test of measures that are tailored to usage and to the potential
11 for savings and reductions for each customer class.
- 12 • Are cost effective, in accordance with the Total Resource Cost test, and will provide a diverse cross-
13 section of alternatives and reasonable mix of programs that will benefit consumers of all rate classes
14 as required by 66 Pa. C.S. §2806.1(b)(1)(i)(I).
- 15 • Will enable the Companies to meet or exceed the required consumption and peak demand reductions
16 required by Act 129. These consumption and demand reduction goals will be achieved based on the
17 Technical Reference Manual and other metric resources to measure the effect of various EE&C
18 measures.
- 19 • Reflect estimated costs of the proposed EE&C measures that are within the 2% limit imposed by Act
20 129, and are being reasonably allocated and recovered from the customer class receiving the direct
21 benefit of such measures.

22

23 **Q. PLEASE DISCUSS THE PROGRAM MENU THAT COMPRISES EACH PORTFOLIO.**

24 A. The 15 programs ultimately selected for inclusion in the Companies' respective portfolios cover the major
25 classes of customers of each Company, and offer a mix of technologies that achieves Act 129 kW and
26 kWh goals. The combination of these programs provides benefits to all classes and optimizes the

1 program mix in order to achieve each Company's portfolio TRC Cost/Benefit ratio of over 1.0. Each of
2 the Companies' respective Plans provides detailed descriptions of each program, along with the
3 underlying analyses supporting their inclusion in the Plans.
4

5 **Q. WHY DOES IT APPEAR THAT THE COMPANIES ARE EMPHASIZING RESIDENTIAL**
6 **PROGRAMS IN THEIR INITIAL PLANS?**

7 **A.** Given the relatively short timeframe for achieving Act 129 kW and MWH targets, the most reliable and
8 predictable set of programs to achieve such targets are for the Residential class. For example, Residential
9 CFL programs have been identified by our surveys to have significant short term energy conservation
10 potential. For the Commercial-Industrial classes, programmatic savings are less reliable since these
11 programs require some level of customer investment. Given the current economic conditions, there are
12 questions concerning the extent to which these classes will be willing to invest in EE&C promoted
13 technologies. Further, from a kW load shed perspective, a significant hurdle to many C&I demand
14 response programs is the requirement to achieve load sheds over the top 100 load hours. Thus, the most
15 effective demand response methods in this situation focus on the Residential Direct Load Control
16 Program offerings. The Companies have also committed plan resources to expand services to low income
17 and low income-low usage customers by providing energy saving measures free of charge.
18

19 **Q. DOES THIS MEAN THE COMPANIES WILL FOCUS THEIR EFFORTS ON RESIDENTIAL**
20 **PROGRAMS THROUGHOUT THE LIFE OF THE PLAN?**

21 **A.** Not at all. The Companies will continue to monitor the success of each program, continue to seek input
22 from various stakeholders and continue to assess economic conditions. Nothing precludes the Companies
23 from modifying or adding programs as conditions and market demands warrant; something that the
24 Companies fully intend to do during the life of these Plans.
25

1 **VI. RISKS AND RECOMMENDATIONS**

2 **Q. DURING THE COURSE OF YOUR WORK ON THE COMPANIES' EE&C PLANS, DID YOU**
3 **IDENTIFIED ANY SIGNIFICANT RISKS THAT WOULD IMPEDE THE COMPANIES FROM**
4 **ACHIEVING THE TARGETS DEVELOPED IN EACH PLAN?**

5 **A.** Yes. In my opinion, the following are the most significant risks that may impede Met-Ed, Penelec and
6 Penn Power from achieving the goals that have been set under Act 129:

- 7 • Due to the timing of this initiative, implementation resources may be in shorter supply than
8 perhaps anticipated;
- 9 • With the exception of low-income programs, programs will be new with no historical basis for
10 participation rates or experience which may cause installation rates to be lower than modeled,
11 particularly in the early years;
- 12 • The supply of certain energy efficiency products may also be in shorter supply than desired
13 causing an increase in the prices paid for such equipment;
- 14 • The struggling economy may dampen customer participation in the portfolio of programs to be
15 offered. To meet targets, projects may require higher rebate subsidies, which may make some
16 programs marginally cost effective or exceed program funding constraints; and
- 17 • The Governmental 10 percent saving target may be difficult to reach due to the fact that this
18 segment comprises less than 10 percent of each Company's annual kWh Sales.

19
20 **Q. GIVEN THE RISKS THAT YOU HAVE IDENTIFIED, DO YOU HAVE ANY**
21 **RECOMMENDATIONS FOR THE COMMISSION?**

22 **A.** In order to minimize the potential risks associated with this important undertaking, I would suggest that
23 the following recommendations be considered:

- 24 1. The Commission should attempt to shorten the July 1 –Nov 1 2009 review time allotted to the
25 Companies in the Commission's Implementation Order. The earlier that implementation can
26 begin, the greater the chance for overall success in meeting Act 129 goals within the spending
27 limits mandated.

- 1 2. If accelerating this review cycle is not feasible, then I would suggest that the Commission
2 consider expediting the implementation and cost recovery approvals of contracts that will enable
3 timely start-up of programs when approved, specifically early approval of:
- 4 ○ the Company's selection of an on-line home energy audit service provider and recovery
5 of costs incurred prior to November associated with developing the online systems
6 enabling implementation in November 2009;
 - 7 ○ the Company's selection of an M&V/Tracking system service provider and recovery of
8 costs incurred prior to November to enable implementation by November 2009; and
 - 9 ○ the Company's selection of an appliance recycling service provider and recovery of costs
10 incurred prior to November to enable implementation by November 2009.
- 11 3. To assist in the expeditious approval of each Company's portfolio, perhaps in-person workshops
12 between Commission Staff and the Companies would facilitate a more comprehensive
13 understanding of the key elements of each Company's programs in a shorter timeframe than if the
14 more common "information request-followed by written responses" approach is taken.
- 15 4. When the Commission finally approves some version of each plan, I would suggest that there be
16 a level of flexibility contained in the Order so that the Companies can make "one or more mid-
17 course corrections" in order to keep the overall progress of each EE&C portfolio on track to meet
18 the 2011 and 2013 Act 129 goals while keeping within the dollar budgets prescribed.
- 19 5. Act 129 is a forward thinking piece of legislation that envisions a long term solution for energy
20 efficiency. Thus, I would suggest that the Commission consider the extent to which "persistence"
21 of the Energy Efficiency ethic is fostered by programs and portfolios. Once the EE&C plans are
22 put in motion, the objective should be to use these plans as the initial down payment on a long
23 term, sustainable EE&C investment for residents and businesses in Pennsylvania.

24

27 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

28 **A. Yes, it does.**



Managing Director

*DSM Planning,
Implementation and
Evaluation*

*Lifecycle Economic, Cost
and Performance
Analyses*

*Load & Energy
Forecasting*

*Econometric &
Statistical Analysis*

*30 Years of Expert
Testimony Experience*

Education

St. John's University, M.B.A.,
Economic Theory, 1972

St. John's University, B.A.,
Economics, 1969

C.W. Post College, course work
toward an MS, Management
Engineering

Mr. Fitzpatrick has also
completed course work in
Engineering Economics, Load
Research, Demand Forecasting,
Box-Jenkins Forecasting
Techniques, logistic curve
analyses; two and three stage
multiple regression techniques;
advanced econometric modeling
and the utilization and
interpretation of multiple
regression models and
associated analytical techniques

Total Years Experience

30

Professional Associations

Association of Energy
Engineers

American Statistical
Association

American Economic
Association

Mathematical Association of
America

Omicron Delta Epsilon

Advisor to American
Management Association

GEORGE L. FITZPATRICK

Mr. Fitzpatrick's professional experience includes over 30 years within the utility management and electric/gas management consulting fields. Mr. Fitzpatrick's areas of expertise include: economic and econometric analysis for energy and peak forecasting, load research, integrated resource planning, demand side management and related areas, as well as generating plant life cycle economics, operating costs and performance modeling and overall utility investment prudence analyses. He has testified extensively throughout the U.S. before the FERC and state regulatory commissions, in both direct and rebuttal roles. Areas in which he has provided testimony include:

- Integrated Resource Planning
- Electric and Gas DSM/EE Program Assessment, Implementation and Evaluation
- Comparative lifecycle economics of competing utility investments
- Econometric/statistical-based Load and Energy Forecasting
- Other Econometric and Statistical Studies on Utility- related Issues
- Weather Normalization Studies
- Strategic Planning
- Load Research Program Sample Design, Implementation and Analysis
- Rate Design
- Cost of Service Studies
- Renewable Program Evaluation
- Performance Standard design and statistical construction

During Mr. Fitzpatrick's consulting career he has provided services to over 50 electric and gas utility clients both in the U.S. and abroad. However, there are a number of clients that have utilized his services on an ongoing basis over the years as a senior management consultant and/or expert witness. These clients include:

- American Electric Power Corp.
- Arizona Public Service Company (Pinnacle West)
- Bermuda Electric Light Company Limited
- Consolidated Edison Company of New York
- El Paso Electric Company
- Entergy
- Freeport Electric
- Georgia Power Company (Southern Company)
- KeySpan Energy
- New England Electric System
- Niagara Mohawk Power Corp. (National Grid)
- New York Power Authority
- Public Service Company of Oklahoma
- San Diego Gas & Electric
- TXU Electric (TXU)
- United Illuminating Co.
- Westar Energy (and its three predecessor companies)

**GEORGE L. FITZPATRICK**

Professional Experience***Demand-Side Management Program Design, Implementation, & Evaluation:*****Overview:**

George Fitzpatrick has over 35 years experience in performing DSM/EE technical and economic potential assessments, program implementation and program evaluations for his electric and gas utility clients. His strong economic, statistical and ESCO business background has enabled him to advise clients on effective DSM/EE initiatives, provide unbiased evaluations of both electric and gas supply and demand side resources, operate successful ESCO's on behalf of his utility clients and finally manage the evaluation of over 300 DSM/EE programs.

Over this same 35 year span he has served as an expert witness on a number of subjects related to the DSM/EE practice area. It should be noted that his long professional career as an expert witness attests to the fact that he is a knowledgeable professional who has and continues to offer reasonable perspectives on the subjects to which he provides expert testimony. This same ethic carries over to his conduct of consulting assignment for clients.

The following paragraphs provide a representative sample of the DSM/EE work that he has performed over his professional career:

American Electric Power:

In 2004-5 he directed an eleven operating company DSM/EE measure assessment that included the estimation of the economic and load/energy impacts of over 80 measures, customized where appropriate to each of AEP's operating companies. As part of this assignment, he directed the development of conditional demand analyses for the purpose of developing individual service territory-specific impacts for certain weather sensitive measures. This work served as a basis for AEP's decision to more fully engage in DSM/EE activities. Mr. Fitzpatrick also served as AEP's overall IRP prudence and DSM/EE witness in PSO's 2007 Oklahoma IRP-related docket.

Bermuda Electric Light Company, Ltd.

Directed a 1990-1991 multi-faceted evaluation of the potential for DSM on Bermuda. Conducted in-depth research of various customer classes to determine likelihood of adoption of available DSM technologies. Building on this research, developed a series of pilot programs that were implemented in 1993, as well as evaluation strategies to be employed at the programs' conclusion. Designed and served as the responsible officer for the creation and staffing of a full service energy services company, BESCO, that commenced operation in 1995 and provides, to this day, a full range of energy efficiency, energy security and power protection products and services to residential, commercial and industrial customers in Bermuda.

Consolidated Edison Company of New York, Inc.



GEORGE L. FITZPATRICK

Project Manager for a 1981 Conservation Assessment Study which included designing a methodology and performing analysis to impact Conservation measures in the residential and commercial sectors to meet requirements imposed by New York PSC in Case No. 28223.

El Paso Electric Company's Energy Service Business Unit (ESBU):

From 1996-2001, Mr. Fitzpatrick served as the General Manager of El Paso Electric's ESB, a full service ESCO that he conceived, staffed and managed until this unit was spun off as a wholly-owned subsidiary of EPE. Although a consultant to EPE, Mr. Fitzpatrick had full operating authority and served as authorized agent of the company for contracting and procurement matters. This profitable business unit designed and negotiated long term power supply contracts that had value adding components such as large chilled water storage plants (University Of Texas-El Paso), emergency backup generation for water and wastewater facilities (El Paso Water Utilities), innovative time of use rates that provided for increased security for military installations and pipeline operations (e.g., Ft Bliss, Holloman Air Force Base, White Sands Missile Range, NASA, Diamond Shamrock, shopping centers, office parks and the like.

Jersey Central Power & Light (JCP&L):

Performed a 2006-7 assessment and recommended a portfolio of targeted peak load management initiatives to achieve significant reductions of electric loads on both a substation and system wide basis. These programs served as a significant component of JCP&L's submission to the New Jersey Energy Master Plan (2007).

Long Island Lighting Company (LILCO):

Directed a 1993 research project focusing on the right-sizing of LILCO's DSM program in the face of maturing market conditions, as well as on the measurement of the extent to which LILCO's programs had successfully moved the market to energy efficient technologies. Research includes an assessment of the impacts of pure market forces on DSM and the role of rebates and information in overall market capture for DSM technologies.

Project Manager for LILCO's 1992 Research and Development Initiative entitled, "Institutional Barriers to Conservation in Master-Metered, Tenant-Occupied Commercial Office Space." The project involved estimating the market conservation potential, identifying institutional barriers through focus groups and interviews with landlords and tenants, and establishing a pilot program and blueprint lease to implement in order to enhance DSM measures in the relevant market.

Directed the comprehensive evaluation of LILCO's 1987 Conservation and Load Management Programs. This evaluation is contained in a three-volume report, which has been called the "most comprehensive" effort to date in this area.

Directed the evaluation of LILCO's 1988 and 1989 Conservation and Load Management Programs. Directed the preparation of a June 1988 Load Management Study. Specific responsibilities included estimating Load

**GEORGE L. FITZPATRICK**

Management reductions included in LILCO's Load Forecasts by major components.

Minnegasco:

Served as the Senior Management Advisor to Minnegasco's DSM/Load Research Program from 1993 through mid-1995. Responsibilities included contract negotiations with consultants, supervision of consultant's activities, and resolution of technical issues, and on-site presence as required to effectively oversee all Load Research-related activities.

New York Power Authority (NYPA):

Served as the Senior Management Advisor (1992-present) for NYPA's \$1 Billion High Efficiency Lighting Program (HELP) and its successor programs having primary responsibility for drafting and negotiating DSM cost sharing umbrella contracts with New York State and New York City, serving as project executive during the program's 18 month startup and directing multiple implementation contractor management and quality assurance efforts.

Analysis on behalf of NYPA of Energy Systems Research Group's (ESRG) Conservation Assessment Report submitted in FERC Case No. 2729: Prattsville Pumped Storage Facility.

Supervised the development of an evaluation of potential Load Management strategies for the NYPA's municipal customers, including a cost/benefit analysis and specific Load Management test programs.

New York Power Pool:

Analyzed the conservation forecasts contained within the Member Systems' individual long-range forecasts and evaluated all parties' conservation forecasts and analyses.

New York State Electric & Gas Corporation (NYSEG):

Served as Responsible Officer for NYSEG's 1991 & 1992 Commercial / Industrial Process and Impact Evaluations. Served as Responsible Officer in the development of NYSEG's June 1994 DSM Market Transformation Study.

Orlando Utilities Board:

Directed a 2007 comprehensive assessment of the maximum and technically feasible potential for DSM/EE measures in the OUB service territory. Measures were evaluated based upon lifecycle economics from varying stakeholder perspectives. Developed a short list of most applicable measures for the OUB service territory and directed the development of 8,760 hour load shapes for each short-listed measure. This work was utilized in OUB's 2007-2008 IRP filing.

Orange and Rockland Utilities (O&R):

Assessed the potential for and designed an Energy Cooperative Program for O&R's commercial customers. Directed project to assess new regulated and unregulated business opportunities to diversify O&R from its core business.



GEORGE L. FITZPATRICK

Rochester Gas & Electric Corporation:

Served as Responsible Officer for RG&E's 1990-94 DSM Evaluations. Represented RG&E in all DSM-related interactions with PSC Staff.

Westar Energy:

Developed the initial 2006-2007 DSM/EE program menu that included program by program projected impacts and lifecycle economics for consideration by Company senior management. Further developed Westar's peak load and energy forecasts that included both programmatic and free market substitution DSM/EE effects. Worked with the Company and Commission to explore appropriate mechanisms for DSM/EE program implementation and predetermined cost recovery