

**BEFORE THE STATE OF NEW JERSEY  
BOARD OF PUBLIC UTILITIES**

**IN THE MATTER OF THE PETITION OF )  
PIVOTAL UTILITY HOLDINGS, INC. D/B/A ) BPU DKT. NO. GO11070399  
ELIZABETHTOWN GAS FOR AUTHORITY )  
TO EXTEND THE TERM OF ENERGY )  
EFFICIENCY PROGRAMS WITH CERTAIN )  
MODIFICATIONS AND APPROVAL OF )  
ASSOCIATED COST RECOVERY )**

---

**DIRECT TESTIMONY OF ROBERT FAGAN  
ON BEHALF OF THE  
NEW JERSEY DIVISION OF RATE COUNSEL**

---

**STEFANIE A. BRAND, ESQ.  
DIRECTOR, DIVISION OF RATE COUNSEL**

**31 CLINTON STREET, 11<sup>TH</sup> FLOOR  
P.O. BOX 46005  
NEWARK, NJ 07101**

**Phone: 973-648-2690  
Email: [njratepayer@rpa.state.nj.us](mailto:njratepayer@rpa.state.nj.us)**

**FILED: DECEMBER 16, 2011**

---

## **Table of Contents**

I.	STATEMENT OF QUALIFICATIONS.....	1
II.	SCOPE AND PURPOSE OF TESTIMONY .....	2
III.	SUMMARY OF FINDINGS AND RECOMMENDATIONS .....	2
IV.	ANALYSIS OF ETG’S PROPOSED ENERGY EFFICIENCY PROGRAMS.....	5
V.	RECOMMENDATIONS .....	23

Appendix RF-1: Professional Experience of Robert Fagan

---

---

**I. STATEMENT OF QUALIFICATIONS**

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30

**Q. WHAT IS YOUR NAME, POSITION AND BUSINESS ADDRESS?**

A. My name is Robert Fagan. I am Senior Associate with Synapse Energy Economics, Inc., 485 Massachusetts Ave., Cambridge, MA 02139.

**Q. PLEASE DESCRIBE SYNAPSE ENERGY ECONOMICS.**

A. Synapse Energy Economics is a research and consulting firm specializing in electricity industry regulation, planning and analysis. Synapse works for a variety of clients, including consumer advocates, regulatory commissions, and environmental advocates.

**Q. PLEASE DESCRIBE YOUR EXPERIENCE IN THE AREA OF ELECTRIC UTILITY RESTRUCTURING, REGULATION AND PLANNING.**

A. My professional experience is summarized in Appendix RF-1 attached hereto. I am a mechanical engineer and energy economics analyst who has analyzed energy industry issues for more than 20 years. In my current position at Synapse, I focus on many aspects of the electric power industry, including assessment and implementation of energy efficiency and demand response alternatives, as well as economic and technical analysis of transmission systems, wholesale and retail electricity markets, and renewable resource alternatives including on-shore and off-shore wind and solar PV.

**Q. PLEASE DESCRIBE YOUR PROFESSIONAL EXPERIENCE BEFORE BEGINNING YOUR CURRENT POSITION AT SYNAPSE ENERGY ECONOMICS.**

A. Before joining Synapse Energy Economics, I previously worked at Tabors Caramanis and Associates analyzing various electricity industry issues; at Charles River Associates, analyzing and supporting expert testimony on electricity and energy industry issues; at Rhode Islanders Saving Energy (RISE), as a commercial and industrial facilities energy auditor, including facilitation of participation in electric utility DSM programs; and at Narragansett Electric (now, National Grid – Rhode Island) in the transmission and distribution department. I

---

1 hold an M.A. degree from Boston University in Energy and Environmental  
2 Studies, and a B.S. degree from Clarkson University in Mechanical Engineering.

3 **II. SCOPE AND PURPOSE OF TESTIMONY**

4 **Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS CASE?**

5 A. I am testifying on behalf of the New Jersey Division of Rate Counsel (“Rate  
6 Counsel”).

7 **Q. WHAT IS THE SCOPE AND PURPOSE OF YOUR TESTIMONY IN THIS**  
8 **PROCEEDING?**

9 A. This testimony describes the results of my review and analysis of the petition  
10 (“Petition”) filed by Elizabethtown Gas (“ETG” or “the Company”) with the New  
11 Jersey Board of Public Utilities (“Board”, “BPU”) for approval of an extension of  
12 its Regional Greenhouse Gas Initiative (“RGGI”) energy efficiency (“EE”)   
13 programs and ETG’s responses to discovery. My testimony addresses the term,  
14 design, and budget for the EE programs that ETG proposes to continue with  
15 modifications. Cost recovery for ETG’s proposed programs is addressed in the  
16 testimony of Rate Counsel witness Robert J. Henkes.

17 **III. SUMMARY OF FINDINGS AND RECOMMENDATIONS**

18 **Q. ON WHAT MATTERS DO YOU PRESENT FINDINGS?**

19 A. My findings address the following matters:

- 20 A. ETG’s current EE programs
- 21 B. ETG’s proposed new programs—overview
- 22 C. State energy goals
- 23 D. Program benefits
- 24 E. Cost/benefit analysis
- 25 F. Residential EE program proposal
- 26 G. Commercial EE program proposal

---

1 H. Program evaluation

2 I. Term of Extension

3 **Q. PLEASE SUMMARIZE YOUR FINDINGS.**

4 A. My findings may be summarized as follows. They are more fully explicated in  
5 Section IV of my testimony.

- 6 1. ETG's EE programs are structured to provide additional monetary incentives to  
7 efficiency measures already available through New Jersey's Clean Energy  
8 Program ("CEP"); and to provide third-party financing options for efficiency  
9 measure installations by participants, also currently available through CEP. ETG  
10 has presented arbitrary estimates of incremental energy savings accruing because  
11 of its programs, i.e. the savings beyond what would most likely occur in the  
12 absence of ETG's programs due to CEP measures alone. Moreover, ETG does not  
13 demonstrate that these additional incentives are necessary to incent customer  
14 participation in the CEP, nor does ETG demonstrate that the incentives lead to  
15 overall increased program participation. These deficiencies cast serious doubt on  
16 the value of ETG's programs to ratepayers.
- 17 2. Because of the size of its programs, the Company is not required to show cost  
18 effectiveness under the Board's Minimum Filing Requirements ("MFR") rule for  
19 RGGI filings. However, the cost-benefit analysis ("CBA") that was completed  
20 when the other EE programs were initially approved in 2009 did not include the  
21 Combined Heat and Power ("CHP") and Gas Cooling incentive programs. In lieu  
22 of demonstrating cost-effectiveness through a formal CBA, ETG could at least  
23 demonstrate incremental savings and increased participation in CEP as a result of  
24 ETG's CHP and Gas Cooling programs now that these programs have been in  
25 operation for a year. However, as noted in point 1 above, ETG has failed to do so.
- 26 3. Although the Company is not required to provide a CBA, the CBA that was  
27 completed by Rutgers when ETG's EE programs were initially approved in 2009  
28 demonstrates that the residential programs are barely cost effective on the basis of  
29 the Program Administrator cost test, as well as from the Ratepayer Impact

---

1 Measure perspective. Moreover, based on my review, it appears that when  
2 combined with CEP incentives, ETG's incentives for residential customers are  
3 unjustifiably high.

4 4. No analysis has been provided demonstrating the incremental participation and  
5 cost effectiveness of ETG's Commercial and Industrial programs. For the Small  
6 Commercial and Large Commercial programs, the incentive levels available in  
7 ETG's service area appear to be high for gas furnaces. It is very unlikely that  
8 ETG's CHP program will prove to offer net benefits to ratepayers, since CHP  
9 incentives would likely be provided by CEP even in the absence of ETG's  
10 programs.

11 **Q. WHAT ARE YOUR RECOMMENDATIONS?**

12 A. In view of the difficulties discussed in the body of my testimony, the Board  
13 should deny ETG's Petition for the six major programs described. Provision of  
14 cost cutter kits and education through the Dashboard should continue for a one-  
15 year period only.

16 If the residential programs are approved despite the problems laid out in  
17 point 1 above, ETG should not eliminate cost cutter kits from the residential  
18 program offerings. Moreover, ETG should take steps to improve the cost  
19 effectiveness of its residential programs overall.

20 In addition, if any of the programs are approved in spite of the serious  
21 shortcomings noted above, the term of the programs should only be extended for  
22 one year, at which point ETG should demonstrate the value of its programs as  
23 noted in points 1 and 2 above.



- 
- 1                   • An extra customer incentive of up to \$200 for installation of  
2                   energy efficient tankless gas hot water heater, over and above  
3                   CEP incentives for high efficiency residential gas hot water  
4                   heaters.
- 5                   • Free programmable thermostats and cost cutter kits.
- 6                   ○ Small Commercial and Industrial (“Small C&I”) - 100% match of the  
7                   NJCEP incentives up to \$15,000 for high efficiency gas equipment.
- 8                   ○ Large Commercial and Industrial (“Large C&I”) - 100% match of the  
9                   NJCEP incentives up to \$25,000 for high efficiency gas equipment.
- 10                  ○ CHP program - 50% of the CEP CHP incentive up to \$500,000.
- 11                  ○ Gas Cooling incentive program - 100% match of the CEP incentive up to  
12                  \$150,000.

13                  Notably, ETG ratepayers are subject to the Societal Benefits Charge  
14                  (“SBC”), a portion of which funds the CEP pursuant to *N.J.S.A. 48:3.49 et seq.*,  
15                  and the Board’s Order in Docket No. EO07030203 (4/21/2010). A portion of the  
16                  SBC funds collected goes to supporting renewable energy programs, while most  
17                  supports EE. ETG is required to collect \$16.0 million through SBC charges in  
18                  2012.<sup>1</sup> SBC collections for 2013 to 2016 are currently being considered by the  
19                  Board in Docket No. EO11050324V.

20                  **B. ETG’s Proposed New Programs - Overview**

21                  **Q. PLEASE DESCRIBE WHAT IS BEING PROPOSED IN THE**  
22                  **COMPANY’S PETITION.**

23                  A. In the present Petition, ETG seeks approval for a three-year extension for its  
24                  current EE programs. The Petition is filed pursuant to N.J.S.A. 48:3-98.1, the

---

<sup>1</sup> See Appendix A to the Order Establishing 2009-2012 Funding Level, Docket No. EO07030203, dated September 30, 2008.



---

1 requirements of which are clarified in the Board’s May 8, 2008 Order in Docket  
2 No. EO08030164. The proposed programs would involve an incremental \$5.6  
3 million in EE program expenditures in 2012. The total cost for ETG’s EE  
4 proposals would exceed \$16.9 million over three years (Petition, Schedule ACP-  
5 7).

6 ETG seeks approval to extend the term of its residential programs with  
7 modifications, its C&I programs with modifications, its Combined Heat and  
8 Power (“CHP”) program, and its Gas Cooling Program. ETG claims that it  
9 structured its proposals to complement the CEP.

10 ETG proposes to make investments in its residential programs totaling  
11 over \$7.3 million over three years (Petition, Schedule ACP-7). ETG proposes to  
12 retain the financing currently offered through its Whole House program but to  
13 eliminate the provision of “cost cutter” kits and programmable thermostats.  
14 (Petition, p. 10) The Company proposes to eliminate rebates to residential  
15 customers for tank HW heaters and also the cost cutter kits and programmable  
16 thermostats currently being provided through its HVAC and HW program.  
17 (Petition, p. 11) The rebates, financing, and other aspects of the residential  
18 programs are discussed further in section F of my testimony.

19 For commercial and industrial customers, ETG seeks approval to make  
20 investments of over \$4.6 million over three years in its Small Commercial  
21 Customer, Large Commercial Customer, CHP, and Gas Cooling programs.  
22 (Petition, Schedule ACP-7) ETG proposes to eliminate incentives for gas water  
23 heaters that are currently available from both the Small Commercial Customer  
24 and Large Commercial Customer programs. The rebates, financing, and  
25 marketing aspects of the commercial and industrial programs are discussed further  
26 in Section G of my testimony.

27 **C. State Energy Goals**

28 **Q. HOW DOES THE COMPANY’S ENERGY EFFICIENCY PROPOSAL**  
29 **RELATE TO STATE ENERGY GOALS?**

---

1 A. In its Petition, ETG states that its proposed EE programs support State energy  
2 goals. (Petition, p. 4) The most important of these goals are set forth in the  
3 Global Warming Response Act and the State’s Energy Master Plan (“EMP”).

4 The Global Warming Response Act (N.J.S.A. 26:2C-45, also known as the  
5 “RGGI Legislation”, “RGGI Law”, or “RGGI Act”) was signed into law in  
6 January 2008. Among other provisions, the RGGI Law provides the framework  
7 for utilities to propose EE and other clean energy programs, pursuant to which the  
8 Company’s present Petition is filed. The RGGI Law also promulgates a goal of  
9 reducing in-State greenhouse gas (“GHG”) emissions to 80 percent of the 2006  
10 level by 2050.

11 On May 12, 2008, the Board issued an order (“RGGI Standards Order”)  
12 establishing the required elements of utility petitions to offer EE and conservation  
13 programs under the RGGI Law (Docket No. EO08030164). The RGGI Standards  
14 Order also set forth the goal of maximizing program benefits and cost-  
15 effectiveness.

16 A final State Energy Master Plan (“EMP”) was issued on December 6,  
17 2011. The 2011 EMP seeks to ease energy costs and continue to promote energy  
18 efficiency, among other things.

19 ETG fails to quantitatively link the amount of energy savings expected  
20 from its new EE proposals to goals set forth in the EMP. There are a number of  
21 existing and new programs and policies that contribute energy savings, such as  
22 the CEP, the State’s energy-efficiency building code, federal monies, State  
23 appliance efficiency standards, State government in-house efficiency  
24 improvements, etc. If ETG believes these EE measures must immediately be  
25 supplemented by its additional EE extension proposal if the Company is to  
26 achieve its pro-rata share of the 20% goal, it presents no analysis or  
27 documentation to support this effect.

28 With respect to the GHG reduction goal, I found no discussion in the  
29 Company’s Petition quantifying the amount by which GHG emissions from its  
30 customers would need to be reduced to attain its share of the GHG goal, the

---

1 amount by which other programs and policies put into place since the Act was  
2 passed will reduce GHG emissions, and most importantly in the present context,  
3 the amount of needed GHG reductions that its proposed programs would  
4 contribute.

5 In sum, ETG fails to link its EE proposal to either the EMP's GHG or  
6 energy savings goals in any meaningful way. The Company cannot establish  
7 whether its proposals constitute necessary, useful, or cost-effective contributions  
8 to meeting State energy and GHG reduction goals without first establishing clear  
9 linkages between its proposals and those goals.

10 **D. Program Benefits**

11 **Q. WHAT PROGRAM BENEFITS ARE COMMONLY ANALYZED IN**  
12 **SUPPORT OF A PROPOSAL FOR ENERGY EFFICIENCY PROGRAMS?**

13 A. EE programs are typically designed to provide both participant benefits (i.e.,  
14 direct energy savings) and broader societal benefits of reduced expenditures on  
15 electricity and gas transmission and distribution infrastructure, reduced electricity  
16 market clearing prices, and reductions in power plant emissions (including the  
17 value of any emissions reduction credits, as well as health and environmental  
18 benefits beyond those internalized by the emissions reduction credit program).

19 Analyses should be provided which estimate the benefits that arise from  
20 the proposed program alone as well as estimating the combined benefits of the  
21 proposed program and other programs targeting the same energy usage. Since  
22 ETG is proposing incremental subsidies, it should consider the incremental  
23 benefits associated with those costs. Without consideration of the incremental  
24 benefits of the proposed programs, including incremental energy savings and  
25 other benefits discussed below, justification for the programs overall and the  
26 budget allocation amongst them is incomplete and insufficient. Although the  
27 required analysis is complex, projections of incremental program savings are a

---

1 basic part of utility EE filings in other states and can be done with the help of  
2 experts.<sup>2</sup>

3 **Q. HAS THE COMPANY QUANTIFIED THE ENERGY IMPACTS OF ITS**  
4 **PROPOSED PROGRAM?**

5 A. In response to RCR-POL-23, ETG provided estimated annual gas savings (but not  
6 electricity savings) for the proposed programs, broken down by incremental  
7 participation resulting from ETG's programs and incremental participation  
8 resulting from CEP. However, the Company's analysis includes what appears to  
9 be arbitrarily assigned allocations of participation and savings between CEP and  
10 ETG programs. The only savings that are attributed to the CEP are about 55% of  
11 the savings associated with the residential gas heating measures. The other five  
12 CEP programs (Whole House, Small C&I, Large C&I, Gas Cooling, and CHP)  
13 are given no credit for energy savings, even though all of ETG's programs are  
14 directly linked to CEP programs.

15 Moreover, ETG is claiming the energy savings associated with two CEP  
16 incentives—HPwES and CHP—that would likely be fully provided by CEP even  
17 in the absence of ETG's programs. Regarding HPwES, CEP currently offers 0%  
18 loans for HPwES work to customers where a utility program is not in place.<sup>3</sup> The  
19 residential market manager has proposed continuing this provision into 2012.<sup>4</sup> As  
20 for CHP, ETG simply proposes to displace 50% of the CEP incentive for CHP.  
21 Although in both cases eliminating the utility incentive might require the CEP to  
22 adjust its budgets, it is not reasonable to assume that these CEP incentives would

---

<sup>2</sup> See, for example, the Technical Resource Manual used in Massachusetts to compute energy efficiency savings at [http://www.ma-eeac.org/docs/MA%20TRM\\_2011%20PLAN%20VERSION.PDF](http://www.ma-eeac.org/docs/MA%20TRM_2011%20PLAN%20VERSION.PDF); and, associated regulatory filings in Massachusetts on three-year gas efficiency plans, available at [www.ma-eeac.org](http://www.ma-eeac.org).

<sup>3</sup> New Jersey's Clean Energy Program: Honeywell's Residential Energy Efficiency and Renewable Energy Program Plan Filing for 2011. Revised October 20, 2010, page 29, note 1 to Table 2.

<sup>4</sup> New Jersey's Clean Energy Program: Honeywell's Residential Energy Efficiency and Renewable Energy Program Plan Filing for 2012: Draft. Submitted October 7, 2011, page 33, note 1 to Table 1.

---

1 fail to achieve *any* savings in the absence of ETG's Whole House and CHP  
2 programs.

3 To measure the costs or benefits of its program, ETG should provide a  
4 reasonable estimate of the incremental participation, costs and savings that would  
5 be realized compared with a CEP-only program and also accounting for naturally  
6 occurring EE. On the basis of ETG's apparently arbitrary estimates of  
7 incremental savings assigned to ETG's programs, it is impossible to determine  
8 whether the proposed programs' benefits warrant the expenditure of the additional  
9 incentives.

10 ETG does not adequately demonstrate that its additional incentives are  
11 necessary to incent customer participation in the CEP, nor does ETG demonstrate  
12 that the incentives lead to overall increased participation in its EE programs.  
13 These failures cast serious doubt on the value of ETG's programs to ratepayers. In  
14 any event, it is essential that a more rigorous technical evaluation that assesses  
15 incremental benefits be conducted in order to meaningfully assess the Company's  
16 proposals.

17 **Q. HAS THE COMPANY QUANTIFIED THE EMISSIONS IMPACTS OF**  
18 **ITS PROPOSED PROGRAM?**

19 A. ETG provided estimates of emissions reductions attributable to its proposed EE  
20 programs in its Petition. (Petition, EEP Schedule ACP-10) However, the  
21 Company's emissions reduction projections do not distinguish between the  
22 benefits of the CEP alone and the benefits attributable to its proposed programs.  
23 (Response to RCR-POL-15)

24 **Q. HAS THE COMPANY QUANTIFIED THE JOB IMPACTS OF ITS**  
25 **PROPOSED PROGRAM?**

26 A. The Petition includes direct employment impacts in EEP Extension Schedule  
27 ACP-12. Again, however, the Company's job creation projections do not  
28 distinguish between job creations attributable to CEP alone and the job creations  
29 attributable to its proposed programs. (Response to RCR-POL-15)

---

1        **E. Cost-Benefit Analysis**

2        **Q.     DID THE COMPANY CONDUCT A COST-BENEFIT ANALYSIS OF ITS**  
3        **ENERGY EFFICIENCY PROPOSAL?**

4        A.     No. According to the MFR rules for electric public utilities and gas public  
5        utilities offering energy efficiency and conservation programs pursuant to  
6        N.J.S.A. 48:3-98.1 (See May 12 2009 Order in Docket No. EO08030164), small  
7        and pilot programs are generally exempted from the requirement that an up-front  
8        cost-benefit analysis be submitted. Because of the size of ETG’s programs, ETG  
9        is not required to submit cost benefit analysis. Despite this, ETG has indicated  
10       that it “will perform an analysis that will permit it to respond to this question and  
11       provide the information as soon as possible” in response to discovery. (Response  
12       to RCR-POL-7)

13       **Q.     DID THE COMPANY USE THE RESULTS OF A PREVIOUS COST-**  
14       **BENEFIT ANALYSIS OF ETG’S PROGRAMS?**

15       A.     Yes. The results of an earlier CBA of ETG’s programs were provided for a  
16       discovery response in the ongoing docket for recovery of ETG’s EE program  
17       costs. (Response to RCR-EE-5 in BPU Docket No. GR11070398) This CBA was  
18       performed by the Rutgers Center for Energy, Economics & Environmental Policy  
19       (“CEEEP”) and includes estimates of the costs and benefits of ETG’s 2009 EE  
20       proposals from the Total Resource Cost (“TRC”), Program Administrator Cost  
21       (“PA”), Ratepayer Impact Measure (“RIM”), and other perspectives.<sup>5</sup> The  
22       information provided in this analysis, in my opinion, is relevant to the proposed  
23       extended program modifications given that the Company’s Petition has few  
24       changes from the approved program for which the CBA was initiated.

25       **Q.     WHAT DOES THE COST-BENEFIT ANALYSIS PROVIDE?**

---

<sup>5</sup> Center for Energy, Economics & Environmental Policy, Edward J. Bloustein School of Planning and Public Policy, Rutgers, The State University of New Jersey, Cost Benefit Analysis of the Proposed Energy Efficiency Utility Programs Associated with the New Jersey Economic Stimulus Plan: Summary Report, March 2010.

---

1 A. The CBA provides estimates of the aggregate economic benefits and costs of EE  
2 from various perspectives. In my opinion, the TRC and PA tests are the most  
3 important ones to consider when determining whether to proceed with EE. Brief  
4 descriptions of these perspectives are:

- 5 • The TRC test predicts the net benefits of EE based on its combined effects  
6 on both the customers participating and those not participating in a  
7 program. The benefits are the net “avoided” costs of supplying and  
8 delivering the energy that would have been consumed absent EE,  
9 including those environmental benefits that have a monetary value in the  
10 market. The costs are the EE measure and program costs paid by both the  
11 utility and the participants. A TRC ratio equal to or greater than 1.0  
12 indicates net benefits from a total resource and total cost perspective.
- 13 • The PA test measures the net benefits of a program as a resource option  
14 with a focus on the costs incurred by the program administrator. The  
15 benefits are the net “avoided” costs of supplying and delivering the energy  
16 that would have been consumed absent EE. A PA ratio equal to or greater  
17 than 1.0 indicates net benefits for ratepayers.

18 **Q. WHAT WERE THE FINDINGS OF THE EARLIER COST-BENEFIT**  
19 **ANALYSIS?**

20 A. The CEEEP analysis found a very low PA ratio for ETG’s Residential Expanded  
21 Gas HVAC and HW program, only 0.4 on the program level and by EE measure  
22 ranging from 0.1 for the Gas Water Heater to 0.6 for the Tankless Gas Water  
23 Heater. C&I programs exhibited relatively high PA ratios. See Table 1, below.

1

**TABLE 1. CEEEP Benefit-Cost Analysis Results for ETG Programs**

	All Programs	Small Commercial	Large Commercial	Residential Expanded Gas HVAC				Residential Whole House
				Gas HVAC	Gas Water Heater	Tankless Gas Water Heater	Total	
Participant	\$35,575,691	\$3,325,418	\$6,042,547	\$8,698,892	\$1,676,468	\$493,409	\$10,868,769	\$15,338,957
Ratio	5.2	7.7	10.2	3.8	9.7	3.9	4.2	5.0
PA	\$375,156	\$1,147,716	\$3,218,958	(\$2,500,302)	(\$604,351)	(\$89,810)	(\$3,194,464)	(\$797,054)
Ratio	1.0	2.1	4.0	0.5	0.1	0.6	0.4	0.9
RIM	(\$4,681,827)	\$491,248	\$2,213,910	(\$3,079,575)	(\$631,779)	(\$119,706)	(\$3,831,060)	(\$3,555,924)
Ratio	0.8	1.3	2.1	0.4	0.1	0.5	0.4	0.7
TRC	\$18,339,063	\$2,382,942 xx	\$5,536,017	\$3,499,364	\$942,553	\$263,634	\$4,705,551	\$5,714,553
Ratio	2.6	5.4	9.0	1.8	2.4	1.9	1.9	2.2
Societal	\$18,841,281	\$2,491,293	\$5,648,907	\$3,515,387	\$943,452	\$264,495	\$4,723,335	\$5,977,747
Ratio	2.6	5.6	9.1	1.8	2.4	1.9	1.9	2.2

2 Source: CEEEP 2010.

3

4

5

6

7

For the Whole House program in total, the CEEEP analysis found a PA ratio of only 0.9, with Tiers 2 and 3 achieving only 0.7 and 0.3, respectively. The programmable thermostats and cost cutter kits, with cost effectiveness results of 8.2 and 1.6 from the PA perspective respectively, boost the PA ratio for Whole House as a program. See Table 2, below.

8

**TABLE 2. CEEEP CBA Results for ETG's Whole House Program**

9

	All Whole House	Tier 1				Tier 2	Tier 3
		Cost Cutter	Thermostat	Audit	Total Tier 1		
Participant	\$15,338,957	\$1,514,472	\$4,084,616	\$1,103,249	\$6,702,337	\$3,811,465	\$4,825,156
Ratio	5.0	93.5	21.8	3.5	11.2	2.3	22.0
PA	(\$797,054)	\$301,972	\$2,401,283	(\$191,600)	\$2,511,655	(\$789,104)	(\$2,519,605)
Ratio	0.9	1.6	8.2	0.7	2.6	0.7	0.3
RIM	(\$3,555,924)	\$92,238	\$1,445,709	(\$577,875)	\$960,072	(\$1,705,113)	(\$2,810,883)
Ratio	0.7	1.1	2.1	0.5	1.3	0.6	0.2
TRC	\$5,714,553	\$830,866	\$3,329,722	\$111,909	\$4,272,496	\$133,439	\$1,308,618
Ratio	2.2	2.6	7.8	1.3	4.0	1.0	4.1
Societal	\$5,977,747	\$837,131	\$3,423,582	\$151,386	\$4,412,099	\$239,102	\$1,326,546
Ratio	2.2	2.6	8.0	1.3	4.1	1.1	4.1

10 Source: CEEEP 2010.

11

12 **Q. WHAT DO YOU CONCLUDE FROM THE RESULTS OF THESE COST-**  
13 **BENEFIT ANALYSES?**

14 A. As a whole, the full portfolio of ETG programs evaluated by CEEEP had a PA  
15 ratio of 1.0, which was largely attributable to the high cost-effectiveness of the



---

1 Small Commercial and Large Commercial programs and bolstered by the cost  
2 cutter and thermostat program ratios. The remaining residential program PA  
3 ratios, in contrast, are very low. For example, the Residential Expanded Gas  
4 HVAC program has only a 0.4 PA ratio (see Table 1, the total for all three sub-  
5 programs), while still exhibiting a net benefit from the total resource cost  
6 perspective (TRC ratio = 1.9).

7 **F. Residential EE Program Proposal**

8 **Q. PLEASE ASSESS THE COMPANY'S EE PROPOSALS FOR**  
9 **RESIDENTIAL CUSTOMERS.**

10 A. ETG's proposals include the Residential Expanded Gas HVAC and Whole House  
11 programs. I assess each program in turn below.

12 **Q. PLEASE DESCRIBE THE REBATE LEVELS AND INCREMENTAL**  
13 **COSTS OF THE EFFICIENT EQUIPMENT MEASURES APPROVED FOR**  
14 **ETG'S RESIDENTIAL PROGRAMS, AND COMPARE ETG'S INCENTIVE**  
15 **LEVELS TO THOSE AVAILABLE IN OTHER STATES.**

16 A. Table 3 below summarizes rebate levels for residential gas space heating and  
17 domestic hot water equipment in New Jersey and a few other Northeastern states.  
18 The level of rebates for residential gas space heating equipment available from CEP  
19 alone is comparable to the level of rebates in other jurisdictions such as  
20 Massachusetts, Rhode Island and Vermont. However, if ETG's rebates of \$900 are  
21 added to the CEP rebates, the total rebate levels for residential gas space heating  
22 equipment appear excessive and become significantly larger than the levels offered  
23 in those jurisdictions. In contrast, the total combined rebate by ETG and CEP for  
24 efficient tankless hot water systems is comparable to the rebate levels in  
25 Massachusetts and Rhode Island.

1

**TABLE 3. Residential Rebate Comparison**

Equipment Type	MA	RI	VT	ETG & CEP	CEP	ETG
Tankless gas hot water (0.82+ EF)	\$500	\$500	\$100	\$500	\$300	\$200
Tankless gas hot water (0.95+ EF)	\$800	\$800				
Furnaces $\geq 92\%$ AFUE			\$300			
Furnaces $\geq 92\%$ AFUE with ECM	\$400	\$400	\$300	\$1,300	\$400	\$900
Furnaces $\geq 94\%$ AFUE with ECM	\$600	\$600	\$400			
Furnaces $\geq 95\%$ AFUE				\$1,200	\$300	\$900
Furnaces $\geq 96\%$ AFUE with ECM		\$800				
Boilers $\geq 85\%$ AFUE	\$500		\$400 to	\$1,200	\$300	\$900
Boilers $\geq 90\%$ AFUE	\$1,000	\$1,000	\$600			
Boilers $\geq 96\%$ AFUE	\$1,500	\$1,500				

2

Sources (accessed on December 8, 2011):

3

MA, <http://www.masssave.com/residential/building-a-house-or-addition/offers/gas-networks-hehewh>,

4

VT (Vermont Gas), [http://www.vermontgas.com/efficiency\\_programs/res\\_programs.html#retrofit](http://www.vermontgas.com/efficiency_programs/res_programs.html#retrofit),

5

RI (National Grid), [https://www.powerofaction.com/media/pdf/RI\\_HEHE.pdf](https://www.powerofaction.com/media/pdf/RI_HEHE.pdf)

6

In other states, incentive levels for efficient furnaces and boilers for space heating appear to be very close to the incremental prices of efficient furnaces and boilers. (Incremental price is the price of a high efficiency unit less the price of a standard efficiency unit). See Table 4, below. For example, the incremental price of a 93% AFUE (annual fuel utilization efficiency (“AFUE”)) furnace is about \$350, and the incentive levels in the other jurisdictions considered in this analysis range from \$300 to \$400. The incremental price for a furnace rated  $\geq 95\%$  AFUE is about \$850, while the incentive levels range from \$400 to \$800 for furnaces with  $\geq 94\%$  or  $\geq 96\%$  AFUE in other jurisdictions. The incremental prices of efficient boilers range from \$200 to \$1,670, while the incentive levels range from \$500 to \$1,500, with the higher end of the price range representing the more efficient units.

17

In contrast to the other states, the level of total incentives for space heating equipment available in ETG’s area is much higher than the incremental price of this measure. The total incentive for an efficient boiler with  $\geq 85\%$  AFUE is \$1200 in ETG’s area, but the incremental price for a boiler at this level of efficiency is only \$500 based on this research. In addition, the total incentive for an efficient furnace with  $\geq 92\%$  AFUE range from \$1,200 to \$1,300 in ETG’s territory, but the total incremental price for a boiler at this level of efficiency is only about \$350.

23

1

**TABLE 4. Incremental Price of Efficient Residential Furnaces and Boilers**

Equipment type	Product Name	Capacity	Price	Incremental Price	Source
<b>Standard Furnace</b>					
Furnace 80% AFUE	Goodman GMS80403AX	45 kBtu	\$605	n/a	1
<b>Efficient Furnace</b>					
Furnace 93% AFUE	Goodman GKS90453BX	46 kBtu	\$951	\$346	2
Furnace 95% AFUE, variable speed blower	Goodman GKS90453BX	46 kBtu	\$1,454	\$849	3
<b>Standard Boiler</b>					
Boiler 82% AFUE	Peerless MI-03	50 kBtu	\$1,495.95	n/a	4
<b>Efficient Boiler</b>					
Boiler 85% AFUE	Weil Mclain CGI-4	50 kBtu	\$1,830.00	\$334	5
Boiler 88% AFUE	Burnham Revolution	48 kBtu	\$2,389.95	\$894	6
Boiler 92% AFUE	Weil Mclain GV90	56 kBtu	\$2,414.95	\$919	7
Boiler 95% AFUE	Triangle Tube Solo 60	47 kBtu	\$3,318.00	\$1,822	8
Boiler 96% AFUE	Viessmann WB2B 19	53 kBtu	\$3,218.95	\$1,723	9

2

Source (accessed on December 8, 2011):

- 1 <http://www.alpinehomeair.com/viewcategory.cfm?categoryID=137>
- 2 <http://www.alpinehomeair.com/viewcategory.cfm?categoryID=39>
- 3 <http://www.alpinehomeair.com/viewcategory.cfm?categoryID=216>
- 4 <http://www.pexsupply.com/Weil-Mclain-381-357-609-CGA-3-Natural-Gas-Boiler-Standing-Pilot-70-000-BTU-High-Altitude>
- 5 <http://www.pexsupply.com/Weil-McLain-381-356-214-CGS-3-67000-BTU-Sealed-Combustion-Boiler-Nat-Gas>
- 6 <http://www.pexsupply.com/Burnham-RV3NI-2-Revolution-48-000-BTU-Output-High-Efficiency-Cast-Iron-Boiler-Nat-Gas>
- 7 <http://www.pexsupply.com/Weil-McLain-GV90-3-GV90-56000-BTU-High-Efficiency-Gas-Boiler-Nat-Gas>
- 8 <http://www.pexsupply.com/Triangle-Tube-Solo-60-Solo-60-60000-BTU-Prestige-Boiler-11769000-p>
- 9 <http://www.pexsupply.com/Viessmann-WB2B857-WB2B-19-Vitodens-200-W-Wall-Mounted-Condensing-Gas-Boiler-31000-67000-BTU>

3

4

5

6

7

8

While the total combined rebate by ETG and CEP for efficient tankless hot water systems may be reasonable, ETG has not shown that its programs are necessary in order to increase participation in CEP, as discussed previously in Section D. In the current petition, the Company proposes to eliminate rebates to residential customers for tank HW heaters (Petition, pp. 10-11). According to the

---

1 2010 CEEEP analysis, the tank HW heater PA ratios are very low (0.1), which  
2 suggests that it may be appropriate to eliminate these incentives.

3 **Q. PLEASE ASSESS THE WHOLE HOUSE PROGRAM.**

4 A. The Whole House program includes provision of cost-cutter kits and  
5 programmable thermostats, and third-party financing options for customers  
6 participating in CEP's Home Performance with Energy Star program.

7 The Company has proposed to eliminate "cost cutter" kits and  
8 programmable thermostats from the Whole House. As can be seen in Table 2,  
9 above, both of these measures had good PA ratios under the Residential Whole  
10 House program according to the 2010 CEEEP report. Because the energy savings  
11 associated with programmable thermostats have recently been called into  
12 question,<sup>6</sup> I do not object to the elimination of programmable thermostats.  
13 However, ETG has provided no justification for eliminating the cost cutter kit  
14 other than "to achieve further consistency with the NJCEP." (Petition, p. 10).  
15 Considering that the CEEEP analysis deemed the cost cutter kit to be the most  
16 cost effective component of the Whole House program on the basis of the PA test,  
17 aside from the programmable thermostat, it is problematic that ETG is proposing  
18 to eliminate this measure.

19 In the absence of the cost-cutter kits, ETG's Whole House financing  
20 program does not clearly add value beyond what CEP provides, since CEP offers

---

<sup>6</sup> Energy savings from programmable thermostats have been called into question for the past several years. One of the key reasons is that programmable thermostats are too complicated to use, and thus consumers are not getting the savings that are claimed by energy models. Another reason is the existence of a self-selection bias within study samples, where consumers owning a programmable thermostat are more likely to favor energy conservation. A study by a professor at the University of Alberta summarizes issues found in past studies conducted in the U.S. (available at [http://www.ualberta.ca/~cbeedac/publications/documents/progtherm1\\_000.pdf](http://www.ualberta.ca/~cbeedac/publications/documents/progtherm1_000.pdf)). Because of increasing concerns about the effectiveness of programmable thermostats, the US EPA suspended the ENERGY STAR specification for programmable thermostats in 2009. ([http://www.energystar.gov/index.cfm?c=archives.thermostats\\_spec](http://www.energystar.gov/index.cfm?c=archives.thermostats_spec)). While the EPA believes that emerging programmable thermostats will better enable consumers to save energy with enhanced usability features, it appears that thermostats currently sold in the market do not offer the enhanced features. Thus, it is likely that the cost-benefit ratio for programmable thermostat presented in CEEEP's analysis is too high.

---

1 financing for HPwES where utilities do not. ETG offers third-party financing with  
2 similar or the same terms as the financing already available through CEP.

3 **Q. WHAT DO YOU CONCLUDE ABOUT THE COMPANY'S EE**  
4 **PROPOSALS FOR RESIDENTIAL CUSTOMERS?**

5 A. For the Residential Expanded Gas HVAC program, ETG provides additional  
6 equipment incentives to supplement the CEP incentives but does not provide  
7 analysis demonstrating that the increased incentives are warranted or cost  
8 effective. Based on my review of incentives in other states, the combination of  
9 CEP and ETG incentives for space heating appears to be excessive.

10 For the Whole House program, ETG's financing program option is no  
11 different than that available through CEP. Therefore, I don't see any incremental  
12 benefit from this element of ETG's residential programs. If ETG were to propose  
13 an on-bill repayment program (OBRP), such an offering could be complementary  
14 to CEP efforts and possibly in the ratepayers' interest.

15 Lastly, ETG proposes to eliminate the cost-cutter kit program even though  
16 it is one of the more cost-effective elements of the entire suite of residential  
17 options.

18 **Q. WHAT DO YOU RECOMMEND FOR ETG'S RESIDENTIAL**  
19 **PROGRAMS?**

20 A. I recommend the following:

- 21 1. The Residential Expanded Gas HVAC program should not be approved since  
22 it includes overly-generous incentives that have not been demonstrated to  
23 provide incremental benefits to residential ratepayers.
- 24 2. The financing option available with the Whole House program is the same as  
25 the financing option that would be available through CEP. This program  
26 should not be approved. If ETG were to offer an on-bill financing program, it  
27 would represent a true complement to CEP's programs and would be worthy  
28 of consideration.

---

1           3. Provision of cost-cutter kits should be retained for a one-year period, since  
2           these are one of the more cost-effective measures available and they are not  
3           otherwise provided by the NJCEP.

4           **G. Commercial and Industrial EE Program Proposals**

5           **Q. PLEASE PRESENT YOUR ASSESSMENT OF THE COMPANY'S SMALL**  
6           **COMMERCIAL AND INDUSTRIAL AND LARGE COMMERCIAL AND**  
7           **INDUSTRIAL PROGRAMS.**

8           A. The Small C&I and Large C&I programs were found to be highly cost-effective  
9           per the CEEEP cost-benefit analysis. However, the incentive levels available in  
10          ETG's service area appear to be high for gas furnaces. The total rebate level by  
11          ETG and CEP for commercial gas furnaces is significantly higher than the rebate  
12          levels set in Vermont and Massachusetts. As shown in Table 5 below, at a 90%  
13          or greater AFUE level, ETG and CEP incentives total \$600, while Vermont only  
14          provides a \$100 rebate. At a 92% or greater AFUE, ETG and CEP together offer  
15          an \$800 incentive, but Vermont and Massachusetts only provide \$300 to \$400 in  
16          rebates.

1

**TABLE 5. Commercial Rebate Comparison for Furnaces**

Equipment Type	VT	MA	ETG & CEP	NJ CEP	ETG
<b>ETG &amp; CEP</b>					
Furnace 90%+ AFUE			\$600	\$300	\$300
Furnace 92%+ AFUE with ECM			\$800	\$400	\$400
<b>Other Jurisdictions</b>					
Furnace 90% to 92% AFUE	\$100				
Furnace 92% AFUE or greater		\$400			
Furnace 92.1% to 93.9% AFUE	\$300				
Furnace 94%+ AFUE	\$400	\$600			
Furnace 96%+ AFUE		\$800			

2 Sources (accessed on December 8, 2011): VT (Vermont Gas),  
3 [http://www.vermontgas.com/pdf/2011%20Vermont%20Gas%20WorkPlace%20Equipment%20Replacement](http://www.vermontgas.com/pdf/2011%20Vermont%20Gas%20WorkPlace%20Equipment%20Replacement%20Form.pdf)  
4 [http://www.masssave.com/~media/Files/Business/Applications%20and%20Rebate%20Forms/2011\\_Statewi](http://www.masssave.com/~media/Files/Business/Applications%20and%20Rebate%20Forms/2011_Statewide_Heating_WaterHeating_Controls_Form_02-22-2011_fnl.ashx)  
5 [de\\_Heating\\_WaterHeating\\_Controls\\_Form\\_02-22-2011\\_fnl.ashx](http://www.masssave.com/~media/Files/Business/Applications%20and%20Rebate%20Forms/2011_Statewide_Heating_WaterHeating_Controls_Form_02-22-2011_fnl.ashx);  
6 NJ, TRC 2011. New Jersey's Clean Energy Program 2011 Program Descriptions and Budget: Commercial &  
7 Industrial Energy Efficiency Programs  
8

9           CEP and ETG rebates for commercial boilers differentiate only by size,  
10 not by efficiency, making them difficult to compare with rebates in some other  
11 states like Vermont and Massachusetts. Further, this incentive design by ETG  
12 would likely result in promoting the minimum efficiency units within a given  
13 capacity range because ETG and CEP only set the minimum efficiency level.  
14 Changing the structure of the boiler incentives in ETG's service area (and  
15 statewide) to reflect the efficiency level of the equipment would promote more  
16 high efficiency boilers, and could be more cost effective than the current  
17 CEP/ETG structure strictly based on boiler size.

18 **Q. DO YOU HAVE CONCERNS WITH THE COMPANY'S PROPOSALS**  
19 **FOR CHP AND GAS COOLING?**

20 **A.** Yes. Unlike the other programs, the CHP and Gas Cooling programs were not  
21 analyzed for cost effectiveness in the 2010 CEEEP report. Although the Company  
22 is not required to provide a formal cost-benefit analysis under the Board's MFR  
23 rule, ETG should demonstrate incremental savings and increased participation in  
24 CEP as a result of ETG's CHP and Gas Cooling programs since these programs  
25 have been in operation for a year. However, the Company has provided estimates  
26 of incremental participation. These estimates of incremental participation are

---

1 seriously flawed, as discussed in Section D. Thus, ETG has failed to show that  
2 increased incentives are warranted or cost effective.

3 It is very unlikely that ETG's CHP program will prove to offer net  
4 benefits to ratepayers. If CHP incentives would be provided by CEP even in the  
5 absence of ETG's programs, consistent with the CEP proposal for CHP in 2012,  
6 there are no demonstrated incremental energy savings associated with ETG's  
7 incentives for CHP. As a result, ETG's CHP program would fail all cost  
8 effectiveness tests.

9 **H. Program Evaluation**

10  
11 **Q. PLEASE ASSESS ETG's PROGRAM EVALUATION.**

12 A. ETG relies on evaluations conducted by the CEP. ETG proposes no separate  
13 evaluation of its programs. ETG also does not accurately estimate the  
14 incremental effect of its programs, and therefore, I am not able to evaluate the  
15 success or performance of the program independent from the New Jersey's CEP.

16 **I. Term of Extension**

17  
18 **Q. PLEASE DISCUSS THE TERM OF THE EXTENSION REQUESTED BY**  
19 **ETG.**

20 A. ETG has requested a three-year extension for its EE programs. The Company has  
21 provided little justification for the proposed term of the extension. When asked in  
22 discovery, ETG indicated that "the EE Programs may have many beneficial  
23 effects, including an increase in customer energy conservation and job creation,  
24 two important state goals. A three-year program versus a one-year program  
25 would help towards meeting these goals over the long-term." (RCR-POL-4)  
26 While longer program durations are generally beneficial for minimizing confusion  
27 in the marketplace and for keeping program momentum going, there is currently  
28 substantial uncertainty regarding state policy direction and CEP program details,



---

1 on which ETG's programs depend. For example, the final 2011 EMP calls for a  
2 re-evaluation of the method to fund EE programs moving forward. (EMP, p. 118)  
3 Also, it calls for initiating a process to streamline the delivery of EE programs and  
4 transition to increased use of revolving loans. (EMP, p. 119) It is unclear how  
5 developments consistent with these directives will affect ETG's programs, but at a  
6 minimum, ETG's programs may require regular, mid-term adjustments to  
7 accommodate CEP changes. Based on these uncertainties, a three year term is  
8 unnecessary and inappropriate at this time. If the Board decides to extend ETG's  
9 programs, a one-year extension would be more appropriate.

10

11

## V. RECOMMENDATIONS

12

**Q. WHAT ARE YOUR RECOMMENDATIONS REGARDING THE  
13 CURRENT PETITION?**

14

A. In view of the many serious difficulties with the Company's proposals that  
15 I have described above, the BPU should deny the Petition as proposed, and  
16 instruct ETG to retain only the cost cutter kit provision and the Dashboard  
17 education vehicle for a one-year period . This does not mean ETG should forego  
18 future EE efforts. Any future proposal should present programs that are well  
19 designed and whose effects and cost-effectiveness are well documented. ETG  
20 should also demonstrate how its programs would work in concert with existing  
21 and soon-to-be-modified CEP structures.

22

If the Board decides to allow the Company to continue its programs, ETG  
23 should be required to take steps to improve the cost effectiveness of its residential  
24 programs and should continue to provide cost cutter kits.

25

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

26

A. Yes, it does. However, I reserve my right to amend my testimony subject to  
27 updated information from the Company.

## **Appendix RF-1 - Professional Experience of Robert M. Fagan**

---

# **Robert M. Fagan**

**Senior Associate**  
**Synapse Energy Economics, Inc.**  
**22 Pearl Street, Cambridge, MA 02139**  
**(617) 661-3248 ext. 240 • fax: (617) 661-0599**  
**www.synapse-energy.com**  
**rfagan@synapse-energy.com**

## **PROFESSIONAL EXPERIENCE**

**Synapse Energy Economics, Inc., Cambridge, MA. 2004 – Present. Senior Associate**

**Tabors Caramanis & Associates, Cambridge, MA 1996 -2004. Senior Associate.**

**Charles River Associates, Boston, MA, 1992-1996. Associate.**

**Rhode Islanders Saving Energy, Providence, RI, 1987-1992. Senior Commercial/Industrial Energy Specialist.**

**Fairchild Weston Systems, Inc., Syosset, NY 1985-1986. Facilities Engineer.**

**Narragansett Electric Company, Providence RI, 1981-1984. Supervisor of Operations and Maintenance.**

## **EDUCATION**

**Boston University, M.A. Energy and Environmental Studies, 1992**

Resource Economics, Ecological Economics, Econometric Modeling

**Clarkson University, B.S. Mechanical Engineering, 1981**

Thermal Sciences

## **Additional Professional Training and Academic Coursework**

Utility Wind Integration Group - Short Course on Integration and Interconnection of Wind Power Plants Into Electric Power Systems (2006).

Regulatory and Legal Aspects of Electric Power Systems – Short Course – University of Texas at Austin (1998)

Illuminating Engineering Society courses in lighting design (1989).

Coursework in Solar Engineering; Building System Controls; and Cogeneration at Worcester Polytechnic Institute and Northeastern University (1984, 1988-89).

Graduate Coursework in Mechanical and Aerospace Engineering – Polytechnic Institute of New York (1985-1986)

## **SUMMARY OF TESTIMONY**

---

**New Jersey Board of Public Utilities.** Oral testimony before the Board, on certain aspects of the Board's inquiry into capacity and transmission interconnection issues, Docket No. EO11050309. Hearing conducted October 14, 2011.

**New Jersey Board of Public Utilities.** Certification before the Board, I/M/O a Generic Stakeholder Proceeding To Consider Prospective Standards for Gas Distribution Utility Rate Discounts and Associated Contract Terms, Docket Nos. GR10100761 and ER10100762. Issues addressed included SBC charge rates associated with gas generation. Testimony filed January 28, 2011.

**New Jersey Board of Public Utilities.** Oral testimony before the Board, on certain aspects of the Basic Generation Service (BGS) procurement plan for service beginning June 1, 2011. Docket No. ER10040287. Hearing conducted September, 2010.

**Virginia State Corporation Commission.** Pre-filed Direct Testimony filed October 23, 2009 on behalf of the Sierra Club on the need for the Potomac-Appalachian Transmission Highline (PATH), a 765 kV proposed transmission line across West Virginia, Virginia and Maryland. Proceedings are currently terminated as filing party (American Electric Power and Allegheny Power) withdrew the application pending additional RTEP analyses by PJM scheduled for 2010. Testimony addressed issues of need and modeling of DSM resources as part of the PJM RTEP planning processes.

**Pennsylvania Public Utility Commission.** Direct Testimony filed June 30, 2009 on behalf of the Pennsylvania Office of Consumer Advocate on the need for the Susquehanna-Roseland 500 kv proposed transmission line in portions of Luckawanna, Luzerne, Monroe, Pike, and Wayne counties. Testimony assessed the modeling for the proposed line, including load forecasts, energy efficiency resources, and demand response resources. Docket number A-2009-2082652. Surrebuttal testimony filed August 24, 2009.

**Delaware Public Service Commission.** Report on Behalf of the Staff of the Delaware Public Service Commission, filed in Docket No. 07-20, Delmarva's IRP docket, "Review of Delmarva Power & Light Company's Integrated Resource Plan", April 2, 2009. Jointly authored with Alice Napoleon, William Steinhurst, David White, and Kenji Takahashi of Synapse Energy Economics.

**State of Maine Public Utilities Commission.** Pre-filed Direct Testimony on the Application of Central Maine Power for a Certificate of Public Convenience and Necessity for the proposed Maine Power Reliability Project (MPRP), a \$1.55 billion transmission enhancement project. Direct testimony focus on the non-transmission alternatives analysis conducted on behalf of CMP. Maine PUC Docket 2008-255, filed January 12, 2009 (direct) and surrebuttal (February 2, 2010) on behalf of the Maine Office of Public Advocate. Docket proceeding 2008-255, hearings completed in February 2010.

**New Jersey Board of Public Utilities.** Oral testimony before the Board, jointly with Bruce Biewald, on certain aspects of the Basic Generation Service (BGS) procurement plan for service beginning June 1, 2009. Docket No. ER08050310. Hearing conducted on September 29, 2008.

---

**Wisconsin Public Service Commission.** Direct and Surrebuttal Testimony in Docket 6680-CE-170 on behalf of Clean Wisconsin in the matter of an application by Wisconsin Power and Light for a CPCN for construction of a 300 MW coal plant. The testimony focused on the alternative energy options available with wind power, and the effect of the MISO RTO in helping provide capacity and energy to the Wisconsin area reliably without needed the proposed coal plant. The CPCN was denied by the WPSC in December 2008. Testimony filed in August (Direct) and September (Surrebuttal), 2008.

**Ontario Energy Board.** Pre-Filed Direct Testimony filed on behalf of Pollution Probe in the matter of the Examination and Critique of Demand Response and Combined Heat and Power Aspects of the Ontario Power Authority's Integrated Power System Plan and Procurement Process, Docket EB-2007-0707. The testimony addressed issues associated with the planned levels of procurement of demand response, combined heat and power, and NUG resources as part of Ontario Power Authority's long-term integrated planning process. Testimony filed on August 1, 2008. Docket is open; additional Power System Plan and Procurement filings expected from the Ontario Power Authority.

**Ontario Energy Board.** Direct and Supplemental Testimony filed jointly with Mr. Peter Lanzalotta on behalf of Pollution Probe in the matter of Hydro One Networks Inc. application to construct a new 500 kV transmission line between the Bruce Power complex and the town of Milton, Ontario. Docket EB-2007-0050. The testimony addressed issues of congestion (locked-in energy) modeling, need, and series compensation and generation rejection alternatives to the proposed line. Testimony filed on April 18, 2008 (Direct) and May 15, 2008 (Supplemental).

**Federal Energy Regulatory Commission.** Direct and Rebuttal Testimony on PJM Regional Transmission Expansion Plan (RTEP) Cost Allocation issues in Dockets ER06-456, ER06-954, ER06-1271, ER07-424, EL07-57, ER06-880, et al. The testimony addressed merchant transmission cost allocation issues. Testimony filed on behalf of the New Jersey Department of the Public Advocate, Ratepayer Division. Testimony filed on January 23, 2008 (Direct) and April 16, 2008 (Rebuttal).

**Minnesota Public Utilities Commission.** Supplemental Testimony and Supplemental Rebuttal Testimony on applicants' estimates of DSM savings in the Certificate of Need proceeding for the Big Stone II coal-fired power plant proposal. In the Matter of the Application by Otter Tail Power Company and Others for Certification of Transmission Facilities in Western Minnesota and In the Matter of the Application to the Minnesota Public Utilities Commission for a Route Permit for the Big Stone Transmission Project in Western Minnesota. OAH No. 12-2500-17037-2 and OAH No. 12-2500-17038-2; and MPUC Dkt. Nos. CN-05-619 and TR-05-1275. Testimony filed December 21, 2007 (Supplemental) and January 16, 2008 (Supplemental Rebuttal).

**Pennsylvania Public Utility Commission.** Direct testimony filed before the Commission on the effect of demand-side management on the need for a transmission line and the level of consideration of potential carbon regulation on PJM's analysis of need for the TrAIL transmission line. Docket Nos. A-110172 *et al.* Testimony filed October 31, 2007.

---

**Iowa Public Utilities Board.** Direct testimony filed before the Board on wind energy assessment in Interstate Power and Light's resource plans and its relationship to a proposed coal plant in Iowa. Docket No. GCU-07-01. Testimony filed October 21, 2007.

**New Jersey Board of Public Utilities.** Direct testimony before the Board on certain aspects of PSE&G's proposal to use ratepayer funding to finance a solar photovoltaic panel initiative in support of the State's solar RPS. Docket No. EO07040278. Testimony filed September 21, 2007.

**Indiana Utility Regulatory Commission.** Direct Testimony filed before the Commission addressing a proposed Duke – Vectren IGCC coal plant. Testimony focused on wind power potential in Indiana. Filed on behalf of the Citizens Action Coalition of Indiana, Cause No. 43114 May 14, 2007.

**State of Maine Public Utilities Commission.** Pre-filed testimony on the ability of DSM and distributed generation potential to reduce local supply area reinforcement needs. Testimony filed before the Commission on a Request for Certificate of Public Convenience and Necessity to Build a 115 kV Transmission Line between Saco and Old Orchard Beach. Testimony filed jointly with Peter Lanzalotta, on behalf of the Maine Public Advocate. Docket No. 2006-487, February 27, 2007.

**Minnesota Public Utilities Commission.** Rebuttal Testimony on wind energy potential and related transmission issues in the Certificate of Need proceeding for the Big Stone II coal-fired power plant proposal. In the Matter of the Application by Otter Tail Power Company and Others for Certification of Transmission Facilities in Western Minnesota and In the Matter of the Application to the Minnesota Public Utilities Commission for a Route Permit for the Big Stone Transmission Project in Western Minnesota. OAH No. 12-2500-17037-2 and OAH No. 12-2500-17038-2; and MPUC Dkt. Nos. CN-05-619 and TR-05-1275. December 8, 2006.

**British Columbia Utilities Commission.** In the Matter of BC Hydro 2006 Integrated Electricity Plan and Long Term Acquisition Plan. Pre-filed Evidence filed on behalf of the Sierra Club (BC Chapter), Sustainable Energy Association of BC, and Peace Valley Environment Association. October 6, 2006. Testimony addressing the "firming premium" associated with 2006 Call energy, liquidated damages provisions, and wind integration studies.

**Maine Joint Legislative Committee on Utilities, Energy and Transportation.** Testimony before the Committee in support of an Act to Encourage Energy Efficiency (LD 1931) on behalf of the Maine Natural Resources Council, February 9, 2006. The testimony and related analysis focused on the costs and benefits of increasing the system benefits charge to increase the level of energy efficiency installations by Efficiency Maine.

**Nova Scotia Utilities and Review Board (UARB).** Testimony filed before the UARB on behalf of the UARB staff, In The Matter of an Application by Nova Scotia Power Inc. for Approval of Air Emissions Strategy Capital Projects. Filed January 30, 2006. The testimony addressed the application for approval of installation of a flue gas desulfurization system at NSPI's Lingan station and a review of alternatives to comply with provincial emission regulations.

---

**New Jersey Board of Public Utilities.** Direct and Surrebuttal Testimony filed before the Commission addressing the Joint Petition Of Public Service Electric and Gas Company And Exelon Corporation For Approval of a Change in Control Of Public Service Electric and Gas Company And Related Authorizations (the proposed merger), BPU Docket EM05020106. Joint Testimony with Bruce Biewald and David Schlissel. Filed on behalf of the New Jersey Division of the Ratepayer Advocate, November 14, 2005 (direct) and December 27, 2005 (surrebuttal).

**Indiana Utility Regulatory Commission.** Direct Testimony filed before the Commission addressing the proposed Duke – Cinergy merger. Filed on behalf of the Citizens Action Coalition of Indiana, Cause No. 42873, November 8, 2005.

**Illinois Commerce Commission.** Direct and Rebuttal Testimony filed before the Commission addressing wholesale market aspects of Ameren’s proposed competitive procurement auction (CPA). Testimony filed on behalf of the Illinois Citizens Utility Board in Dockets 05-0160, 05-0161, 05-0162. Direct Testimony filed June 15, 2005; Rebuttal Testimony filed August 10, 2005.

**Illinois Commerce Commission.** Direct and Rebuttal Testimony filed before the Commission addressing wholesale market aspects of Commonwealth Edison’s proposed BUS (Basic Utility Service) competitive auction procurement. Testimony filed on behalf of the Illinois Citizens Utility Board and the Cook County State’s Attorney’s Office in Docket 05-0159. Direct Testimony filed June 8, 2005; Rebuttal Testimony filed August 3, 2005.

**Indiana Utility Regulatory Commission.** Responsive Testimony filed before the Commission addressing a proposed Settlement Agreement between PSI and other parties in respect of issues surrounding the Joint Generation Dispatch Agreement in place between PSI and CG&E. Filed on behalf of the Citizens Action Coalition of Indiana, Consolidated Causes No. 38707 FAC 61S1, 41954, and 42359-S1, August 31, 2005.

**Indiana Utility Regulatory Commission.** Direct Testimony filed before the Commission in a Fuel Adjustment Clause (FAC) Proceeding concerning the pricing aspects and merits of continuation of the Joint Generation Dispatch Agreement in place between PSI and CG&E, and related issues of PSI lost revenues from inter-company energy pricing policies. Filed on behalf of the Citizens Action Coalition of Indiana, Cause No. 38707 FAC 61S1, May 23, 2005.

**Indiana Utility Regulatory Commission.** Direct Testimony filed before the Commission concerning the pricing aspects and merits of continuation of the Joint Generation Dispatch Agreement in place between PSI and CG&E. Filed on behalf of the Citizens Action Coalition of Indiana, Cause No. 41954, April 21, 2005.

**State of Maine Public Utilities Commission.** Testimony filed before the Commission on an Analysis of Eastern Maine Electric Cooperative, Inc.’s Petition for a Finding of Public Convenience and Necessity to Purchase 15 MW of Transmission Capacity from New Brunswick Power and for Related Approvals. Testimony filed jointly with David Schlissel and Peter Lanzalotta, on behalf of the Maine Public Advocate. Docket No. 2005-17, July 19, 2005.

---

**State of Maine Public Utilities Commission.** Testimony filed before the Commission on an Analysis of Maine Public Service Company Request for a Certificate of Public Convenience and Necessity to Purchase 35 MW of Transmission Capacity from New Brunswick Power. Testimony filed jointly with David Schlissel and Peter Lanzalotta, on behalf of the Maine Public Advocate. Docket No. 2004-538 Phase II, April 14, 2005.

**Nova Scotia Utilities and Review Board (UARB).** Testimony filed before the UARB on behalf of the UARB staff, In The Matter of an Application by Nova Scotia Power Inc. for Approval of an Open Access Transmission Tariff (OATT). Filed April 5, 2005. The testimony addressed various aspects of OATTs and FERC's *pro forma* Order 888 OATT.

**Texas Public Utilities Commission.** Testimony filed before the Texas PUC in Docket No. 30485 on behalf of the Gulf Coast Coalition of Cities on CenterPoint Energy Houston Electric, LLC. Application for a Financing Order, January 7, 2005. The testimony addressed excess mitigation credits associated with CenterPoint's stranded cost recovery.

**Ontario Energy Board.** Testimony filed before the Ontario Energy Board, RP-2002-0120, et al., Review of the Transmission System Code (TSC) and Related Matters, Detailed Submission to the Ontario Energy Board in Response To Phase I Questions Concerning the Transmission System Code and Related Matters, October 31, 2002, on behalf of TransAlta Corporation; and Reply Comments for same, November 21, 2002. Related direct and reply filings in response to the Ontario Energy Board's "Preliminary Propositions" on TSC issues in May and June, 2003.

**Alberta Energy and Utilities Board.** Testimony filed before the Alberta Energy and Utilities Board, in the Matter of the Transmission Administrator's 2001 Phase I and Phase II General Rate Application, no. 2000135, pertaining to Supply Transmission Service charge proposals. Joint testimony filed with Dr. Richard D. Tabors. March 28, 2001. Testimony filed on behalf of the Alberta Buyers Coalition.

**Ontario Energy Board.** Testimony filed before the Ontario Energy Board, RP-1999-0044, Critique of Ontario Hydro Networks Company's Transmission Tariff Proposal and Proposal for Alternative Rate Design, January 17, 2000. Testimony filed on behalf of the Independent Power Producer's Society of Ontario.

## **PAPERS, PUBLICATIONS AND PRESENTATIONS**

*Assessing the Multiple Benefits of Clean Energy: A Resource for States*, with a multi-disciplinary team of consultants. Prepared for U.S. Environmental Protection Agency, February 1, 2010.

*Synapse Report and Ohio Comments in Case No. 09-09-EL-COI, "The Value of Continued Participation in RTOs"*, with Rick Hornby and Bruce Biewald. Prepared for Ohio Consumers' Counsel, May 26, 2009.



---

*Review of AmerenUE February 2008 Integrated Resource Plan*, with Rick Hornby, Jeff Loiter, Phil Mosenthal, Tom Franks, and David White. Prepared for Missouri Department of Natural Resources, June 18, 2008.

*LMP Electricity Markets: Market Operations, Market Power, and Value for Consumers* with Ezra Hausman, David White, Kenji Takahashi, and Alice Napoleon. Prepared for American Public Power Association, February 5, 2007.

*Interstate Transfer of a DSM Resource: New Mexico DSM as an Alternative to Power from Mohave Generating Station*. Jointly authored with Tim Woolf, Bill Steinhurst and Bruce Biewald. Presented at the 2006 ACEEE Summer Study on Energy Efficiency in Buildings and published in the proceedings. (2006)

*SMD and RTO West: Where are the Benefits for Alberta?* Keynote Paper prepared for the 9th Annual Conference of the Independent Power Producers Society of Alberta, with Dr. Richard D. Tabors, March 7, 2003.

*A Progressive Transmission Tariff Regime: The Impact of Net Billing*, presentation at the Independent Power Producer Society of Ontario annual conference, November 1999.

*Tariff Structure for an Independent Transmission Company*, with Richard D. Tabors, Assef Zobian, Narasimha Rao, and Rick Hornby, TCA Working Paper 101-1099-0241, November 1999.

*Transmission Congestion Pricing Within and Around Ontario*, presentation at the Canadian Transmission Restructuring Infocast Conference, Toronto, June 2-4, 1999.

*The Restructured Ontario Electricity Generation Market and Stranded Costs*. An internal company report presented to the Ontario Ministry of Energy and Environment on behalf of Enron Capital and Trade Resources Canada Corp., February 1998.

*Alberta Legislated Hedges Briefing Note*. An internal company report presented to the Alberta Department of Energy on behalf of Enron Capital and Trade Resources Canada, January 1998.

*Generation Market Power in New England: Overall and on the Margin*. Presentation at Infocast Conference: New Developments in Northeast and Mid-Atlantic Wholesale Power Markets, Boston, June 1997.

*The Market for Power in New England: The Competitive Implications of Restructuring*. Prepared for the Office of the Attorney General, Commonwealth of Massachusetts, by Tabors Caramanis & Associates with Charles River Associates, April 1996. R. Fagan was a key member of the team that produced the report.

*Estimating DSM Impacts for Large Commercial and Industrial Electricity Users*. Lead investigator and author, with M. Gokhale, D.S. Levy, P.J. Spinney, G.C. Watkins. Presented at The Seventh International Energy Program Evaluation Conference, Chicago, Illinois, August 1995, and published in the Conference Proceedings.

---

*Sampling Issues in Estimating DSM Savings: An Issue Paper for Commonwealth Electric.* Prepared with G.C. Watkins, Charles River Associates. Report for COM/Electric System, filed with the MA Dept. of Public Utilities (MDPU), April 28, 1995, Docket # DPU 95-2/3-CC-1.

*Demand-side Management Information Systems (DSMIS) Overview.* Electric Power Research Institute Technical Report TR-104707. Robert M. Fagan and Peter S. Spinney, principal investigators, prepared by Charles River Associates for EPRI, January 1995.

*Impact Evaluation of Commonwealth Electric's Customized Rebate Program.* With P.J. Spinney and G.C. Watkins. Charles River Associates, Initial and Updated Reports, April 1994, April 1995, and April 1996. 1995 updated report filed with the MDPU, April 28, 1995, Docket # DPU 95-2/3-CC-I. The initial report filed with the MDPU, April 1, 1994.

*Northeast Utilities Energy Conscious Construction Program (Comprehensive Area): Level I and Level II Impact Evaluation Reports.* With Peter S. Spinney (CRA) and Abbe Bjorklund (Energy Investments). Charles River Associates Reports prepared for Northeast Utilities, June and July 1994.

*The Role of Trade Allies in C&I DSM Programs: A New Focus for Program Evaluation,* Paper authored by Peter J. Spinney (Charles River Associates) and John Pelozo (Wisconsin Electric Power Corp.). Presented by Bob Fagan at the Sixth International Energy Evaluation Conference, Chicago, Illinois, August 1993.

November 2011.