

**Cost-Benefit Analysis of the
Proposed 2009 Energy Efficiency Utility Programs Associated
with the New Jersey Economic Stimulus Plan**

Summary Report

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I. Summary

In response to the worldwide economic downturn, a plan to assist New Jersey in laying a foundation for long-term economic recovery was announced in October 2008. Part of the plan includes New Jersey's seven electric and gas utilities investing \$500 million in utility energy efficiency programs for residential and business customers.¹

The Center for Energy, Economic & Environmental Policy (CEEEP) of the Edward J. Bloustein School of Planning and Public Policy, Rutgers University was asked by the New Jersey Board of Public Utilities (NJBPU) to conduct a cost-benefit analysis of the proposed utility energy efficiency programs. This draft report summarizes the results of the CEEEP analysis that were made publicly available over the last year for the utilities that have finalized their programs to date.² When all utility programs have been finalized, this draft memorandum will be updated.

The proposed utility energy efficiency programs, and the measures covered within a program, vary by utility. Not accounting for differences in program specifics, a total of eleven programs energy efficiency programs were proposed, five of which are specific to PSE&G (see Table 1). Future cost-benefit analyses and program impact evaluations will be conducted for each utility energy efficiency program, as set forth in the Board Orders and Stipulations. CEEEP has been tasked to conduct these after the fact cost-benefit analyses and evaluations.

Table 1: Proposed Stimulus Energy Efficiency Programs

Residential	Commercial
Residential HVAC	Commercial Retrofit
Home Performance with Energy Star	Commercial Direct Install
Energy Star Products	Retrocommissioning
Residential Low Income*	Municipal Direct Install*
	Hospital*
	Data Centers*
	Technology Demonstration*

* PSE&G only

This summary report discusses the cost-benefit tests and the key assumptions and inputs and presents the cost-benefit analysis results. More detailed assumptions are provided in the Appendices.

II. Cost-Benefit Tests

Five costs tests are utilized for the cost-benefit analysis: Participant Cost Test, Program Administration Cost Test, Ratepayer Impact Measure Test, Total Resource Cost Test and Societal Cost Test.³

Participant Cost Test: The measure of the quantifiable benefits and costs to the customer attributed to participation in a program. The participant benefits are equal to the sum of any participant incentives paid, any reductions in bills, and any federal or state tax deductions or credits. Participant costs include any out-of-pocket costs associated with the program.

¹ Energy Efficiency Stimulus Filings (January 2009). Available at www.nj.gov/bpu/agenda/announcements/approved/stimulus.html

² To date, Orange and Rockland's economic stimulus energy efficiency program has not been finalized.

³ California Standard Practice Manual. Economic Analysis of Demand-Side Programs and Projects. (October 2001).

Program Administrator Cost Test: The costs of a program as a resource option based on the costs incurred by the program administrator (including incentive costs), excluding any costs incurred by the participant. The benefits are the avoided supply costs of energy and demand and the reduction in capacity valued at marginal costs for the periods when there is a load reduction. The costs are the program costs incurred by the administrator, the incentives paid to the customers, and the increased supply costs for the periods in which load is increased.

Ratepayer Impact Measure Test: Measure of what happens to customer bills or rates due to changes in revenues and operating costs caused by the program. The benefits equal the savings from avoided supply costs, including the reduction in capacity costs for periods when load has been reduced and the increase in revenues for periods in which load has increased. The costs are the program costs incurred by administration of the program, the incentives paid to the participant, decreased revenues for any periods in which load has been decreased and increased supply costs for any periods when load has increased.

Total Resource Cost Test: The costs of a program as a resource option based on the total costs of the program, including both the participants' and the utility's costs. This test represents the combination of the effects of a program on both the participating and non-participating customers. The benefits are the avoided supply costs, federal tax credits, and the reduction in transmission, distribution, generation and capacity costs valued at marginal cost for the periods when there is a load reduction. The costs are the program costs paid by the utility and participants plus the increase in supply costs for the periods in which load is increased.

Societal Cost Test:⁴ Goes beyond the Total Resource Cost test in that it attempts to quantify the change in the total resource costs to society as a whole rather than only to the utility and its ratepayers. Benefits associated with the societal perspective include avoided power supply costs, capacity benefits, avoided transmission and distribution costs, and emissions savings. The costs include all consumer, utility and program expenses.

III. Cost-Benefit Analysis Assumptions

The key components of the energy efficiency benefit-cost analysis and the data sources and processes for determining these components are discussed in this section. The estimated number of participant installations, participant electricity and natural gas savings, and administrative costs were provided by the utilities. Appendix A provides a graphical presentation of the forecasted commodity prices and Appendix B provides the emission permit price projections and natural gas transportation and distribution avoided costs.

Retail Electricity Prices: Historic New Jersey retail electricity prices were escalated using an annual growth rate taken from the Energy Information Administration (EIA) Annual Energy Outlook March 2009 for the Mid-Atlantic Region.⁵ An adder was applied to prices starting in 2015 to account for a national CO₂ program, which was not included in the base forecast provided by EIA.⁶

Wholesale Electricity Prices: Wholesale electricity price projections were derived by calculating the historic ratio of wholesale to retail prices, applied to retail price projections. An adder was applied to prices starting in 2015 to account for a national CO₂ program.⁷

⁴ Federal tax credits were initially included as a benefit but were excluded from later analyses.

⁵ Available at www.eia.doe.gov/oiaf/aeo/

⁶ Waxman-Markey Bill. EPA modeling available at www.epa.gov/climatechange/economics/economicanalyses.html

⁷ Implicitly assumed that the wholesale price includes the costs associated with the Regional Greenhouse Gas Initiative.

Table 2: Retail and Wholesale Electricity

	<i>Retail (\$/kWh)</i>			<i>Wholesale (\$/MWh)</i>				
	Residential	Commercial	Industrial	Average Price	Summer Peak	Summer Off-Peak	Non-Summer Peak	Non-Summer Off-Peak
2009	\$0.15	\$0.14	\$0.12	\$77.04	\$99.07	\$62.96	\$87.73	\$58.41
2010	\$0.14	\$0.13	\$0.10	\$72.19	\$92.83	\$59.00	\$82.20	\$54.73
2011	\$0.15	\$0.13	\$0.11	\$75.29	\$96.82	\$61.53	\$85.73	\$57.08
2012	\$0.16	\$0.13	\$0.11	\$77.91	\$100.19	\$63.67	\$88.71	\$59.06
2013	\$0.16	\$0.14	\$0.11	\$81.03	\$104.20	\$66.22	\$92.27	\$61.43
2014	\$0.17	\$0.14	\$0.12	\$83.71	\$107.65	\$68.41	\$95.32	\$63.46
2015	\$0.19	\$0.16	\$0.13	\$98.08	\$126.13	\$80.16	\$111.69	\$74.36
2016	\$0.19	\$0.17	\$0.14	\$101.25	\$130.20	\$82.74	\$115.29	\$76.76
2017	\$0.20	\$0.17	\$0.14	\$104.15	\$133.94	\$85.12	\$118.60	\$78.96
2018	\$0.20	\$0.18	\$0.15	\$107.99	\$138.87	\$88.25	\$122.97	\$81.87
2019	\$0.21	\$0.19	\$0.15	\$112.42	\$144.57	\$91.87	\$128.01	\$85.23
2020	\$0.22	\$0.19	\$0.16	\$115.62	\$148.68	\$ 94.49	\$131.66	\$87.65
2021	\$0.22	\$0.20	\$0.16	\$118.75	\$152.71	\$97.05	\$135.22	\$90.03
2022	\$0.23	\$0.20	\$0.17	\$122.65	\$157.72	\$100.23	\$139.66	\$92.98
2023	\$0.23	\$0.21	\$0.17	\$126.98	\$163.29	\$103.77	\$144.59	\$96.27
2024	\$0.24	\$0.22	\$0.18	\$131.62	\$169.26	\$107.56	\$149.87	\$99.78
2025	\$0.25	\$0.22	\$0.19	\$136.81	\$175.93	\$111.80	\$155.78	\$103.71
2026	\$0.25	\$0.23	\$0.20	\$140.87	\$181.15	\$115.12	\$160.40	\$106.79
2027	\$0.26	\$0.24	\$0.20	\$144.86	\$186.28	\$118.39	\$164.95	\$109.82
2028	\$0.27	\$0.25	\$0.21	\$148.92	\$191.50	\$121.70	\$169.57	\$112.90
2029	\$0.27	\$0.25	\$0.21	\$152.06	\$195.54	\$124.27	\$173.15	\$115.28
2030	\$0.28	\$0.26	\$0.22	\$156.13	\$200.78	\$127.60	\$177.79	\$118.37

Retail Natural Gas Prices: Historic New Jersey retail natural gas prices were escalated using an annual growth rate taken from the EIA Annual Energy Outlook 2009 for the Mid-Atlantic Region.

Wholesale (Henry Hub) Natural Gas Prices: Wholesale natural gas prices are taken from EIA Annual Energy Outlook 2009 Table 13.

Table 3: Retail and Wholesale Natural Gas (\$/MMBtu)

	<i>Retail Prices</i>			<i>Henry Hub Wholesale Prices</i>		
	Residential	Commercial	Industrial	Average Price	Summer	Winter
2009	\$ 13.03	\$ 10.66	\$ 7.84	6.82	6.73	6.94
2010	\$ 13.69	\$ 11.06	\$ 8.17	7.01	6.92	7.14
2011	\$ 13.82	\$ 11.16	\$ 8.23	7.06	6.97	7.19
2012	\$ 14.15	\$ 11.46	\$ 8.50	7.33	7.24	7.47
2013	\$ 14.33	\$ 11.58	\$ 8.58	7.49	7.39	7.62
2014	\$ 14.58	\$ 11.79	\$ 8.74	7.73	7.63	7.86
2015	\$ 14.97	\$ 12.13	\$ 9.04	7.99	7.89	8.13
2016	\$ 15.37	\$ 12.48	\$ 9.31	8.30	8.20	8.45
2017	\$ 15.88	\$ 12.92	\$ 9.66	8.68	8.57	8.84
2018	\$ 16.44	\$ 13.42	\$ 10.07	9.13	9.01	9.29
2019	\$ 16.97	\$ 13.88	\$ 10.43	9.57	9.45	9.74
2020	\$ 17.22	\$ 14.08	\$ 10.55	9.60	9.48	9.77
2021	\$ 17.34	\$ 14.12	\$ 10.54	9.49	9.37	9.66
2022	\$ 17.68	\$ 14.42	\$ 10.78	9.72	9.60	9.90
2023	\$ 17.98	\$ 14.67	\$ 10.98	10.00	9.88	10.18
2024	\$ 18.67	\$ 15.33	\$ 11.59	10.61	10.48	10.80
2025	\$ 19.32	\$ 15.93	\$ 12.13	11.14	11.00	11.34
2026	\$ 19.76	\$ 16.32	\$ 12.47	11.67	11.52	11.88
2027	\$ 20.38	\$ 16.88	\$ 12.98	12.21	12.05	12.43
2028	\$ 20.87	\$ 17.33	\$ 13.37	12.67	12.51	12.90
2029	\$ 21.43	\$ 17.81	\$ 13.80	13.05	12.88	13.28
2030	\$ 21.96	\$ 18.28	\$ 14.20	13.42	13.25	13.66

Capacity Prices: Capacity prices for 2010, 2015 and 2020 were modeled determining the carrying cost of a combustion turbine in the modeling years. The prices are 13.06 \$/MWh in 2010, 14.09 \$/MWh in 2015 and 18.79 \$/MWh in 2020. Capacity prices were linearly interpolated for the other modeling years.

Environmental Externality Benefits: Avoided emission savings are calculated by multiplying the emission permit prices by the energy savings.

Forecasted Emissions Permit Prices: Emission permit prices were taken from available market data and escalated using growth rates generated from the market data or the U.S. Consumer Price Index (CPI). All emission permits are in \$/ton.

- **CO₂:** 2009 and future 2012 allowance prices were taken from the Regional Greenhouse Gas Initiative Auction. 2010-2011 and 2013-2014 values were derived by escalating historic prices by the 2009-2012 growth rate. It is assumed that a national CO₂ program will be in place beginning in 2015. Values for the national program are taken from the proposed American Clean Energy and Security Act of 2009 (Waxman-Markey Bill) analysis provided by the U.S. Environmental Protection Agency (EPA).⁸
- **SO₂:** Spot and 7-year advance allowance auction data were taken from the EPA Annual Auction Results and escalated using the annual change in the CPI. The 2000-2008 CPI is historic U.S. Department of Labor data and the 2009-2030 forecast is from the EIA Annual Energy Outlook 2009.
- **NO_x:** Current and future allowance prices were taken from the Chicago Climate Futures Exchange. The allowance prices were escalated using the annual change in the CPI. The

⁸ Analysis available at www.epa.gov/climatechange/economics/economicanalyses.html#wax

2000-2008 CPI is historic U.S. Department of Labor data and the 2009-2030 forecast is from the EIA Annual Energy Outlook 2009.

Avoided Emissions Factors: Reduced emissions are determined by applying the avoided emissions factors to the energy savings. Average avoided emission factors for electricity are taken from the PJM Regional Average Disclosure Label for 2006 and for natural gas are taken from the EIA *Natural Gas 1998 Issues and Trends*.

Avoided Emission Factors		
	Electricity	Natural Gas
	<i>lbs/MWh</i>	<i>lbs/MMBtu</i>
CO ₂	1,252	117
NO _x	2.21	0.092
SO ₂	7.99	
Hg	0.0000356	

Discount Rate: Discount rates are used to convert future economic values into present day dollars. In the Energy Efficiency Stimulus Filings, the utilities submitted discount rates between 6.6 – 8.7%. A uniform nominal discount rate of 8% is used for simplicity and consistency.

Time Period Allocation Factors: Time period allocation factors account for the variation of electricity and natural gas prices throughout the year. Taken from Summit Blue Consulting,⁹ natural gas programs have summer and winter time period allocation factors and electric programs have summer on-peak, summer off-peak, winter on-peak and winter off-peak time period allocation factors.

Avoided Transportation and Distribution Costs: Avoided transmission and distribution (T&D) costs refer to the costs avoided by not having to provide an additional unit of T&D capacity. The 2010-2011 Clean Energy Program Evaluation and Research Plan includes an avoided cost assessment, which includes the development of avoided electric and natural gas T&D costs for future program analyses.

Avoided Electric T&D Costs: The utility Energy Efficiency Stimulus Filings did not provide estimated electric T&D savings. The avoided transmission savings are assumed to be zero.

Avoided Natural Gas T&D Costs: The avoided transportation savings per year are the annual Henry Hub natural gas prices adjusted for the historic ratio of Henry Hub to New Jersey Citygate prices, calculated at 1.4 for the past 15 years. Avoided distribution savings are assumed to be 40% of the difference between New Jersey Citygate prices and retail prices in 2009, adjusted for inflation in future years.¹⁰

Avoided Electric and Natural Gas Losses: Taken from the New Jersey Clean Energy Program Protocols to Measure Resource Savings,¹¹ avoided electric transmission losses are assumed to be 11% and avoided distribution losses are assumed to be 1%.

Economic Life: These analyses assume that the equipment being replaced is at the end of its economic life.

⁹ Summit Blue Consulting, LLC. Energy Efficiency Market Assessment of New Jersey Clean Energy Programs. (July 20, 2006).

¹⁰ Synapse Energy Economics. Avoided Energy Supply Costs in New England (January 3, 2008).

¹¹ Available at www.njcleanenergy.com/main/public-reports-and-library/market-analysis-protocols/energy-savings-protocols/energy-savings-pr

Free Ridership: Net free ridership is assumed to be 10% for commercial and industrial programs and 20% for residential programs, except for low income programs which are assumed to have a net free ridership of 0%.¹² PSE&G targeted low-income and Urban Enterprise Zones, therefore these analyses utilized a net free ridership of 0%. A sensitivity analysis demonstrated that the exclusion of free ridership did not significantly impact the analyses.

Default Program Inputs: Many of the utilities provided the measures included in the energy efficient program and the measure lives and incremental costs associated with those measures and/or programs. The default inputs, described below, were utilized for any missing information.

Default Incremental Costs: The incremental cost is the additional cost of purchasing an energy efficient product instead of a standard product or the full cost of weatherization and insulation products. The average incremental cost of each measure was estimated using data from Summit Blue Consulting, California,¹³ Connecticut¹⁴ and Vermont.¹⁵ An incremental cost was calculated for each energy efficiency program, the sum of individual measure incremental costs, and used consistently across similar utility programs.

Default Measure Lives: The measure life is used to determine the number of years that an energy efficient product will accrue energy savings. The measure life of each product was calculated using the same method as the incremental cost, using data from the New Jersey Protocols,¹⁶ Energy Star,¹⁷ Connecticut and Vermont. The measure life of a program was calculated and used consistently across similar utility programs.

Default Energy Efficient Programs: The measures included in each energy efficiency program are shown in Table 4, illustrating the range of measures available in each program. Each measure is available in each program, but all measures may not be utilized by each individual who participates in each program.

Table 4: Energy Efficiency Program Measures

¹² Free Ridership assumptions provided in a memo from Rate Counsel on 5/18/09 prepared by Synapse.

¹³ Database for Energy-Efficiency Resources. Technology and Measure Cost Data, California Public Utilities Commission (October 26, 2005).

¹⁴ Connecticut Energy Efficiency Fund. CL&P and UI Program Savings Documentation for 2008 Program Year, Connecticut Light & Power Company and The United Illuminating Company (September 25, 2007).

¹⁵ Efficiency Vermont. Technical Reference User Manual (July 18, 2008).

¹⁶ NJCEP. New Jersey Clean Energy Program Protocols to Measure Resource Savings. (December 2007).

¹⁷ U.S. Environmental Protection Agency and U.S. Department of Energy, *Energy Star*. Available at www.energystar.gov/

Whole House	
<i>Tier I</i>	Audit Programmable Thermostat CFL
<i>Tier II</i>	Caulking and Weather-Stripping Duct Sealing Insulation
<i>Tier III</i>	Water Heater AC/Heat Pump Furnace & Boiler
<i>Other Eligible Measures</i>	Appliances Lighting
Residential HVAC	
Water Heater Central Air Conditioner Heat Pump Furnace & Boiler	
Commercial Direct Install	
Lighting Ventilation Variable Frequency Drives AC/Heat Pump Duct Sealing Dual Enthalpy Controls Motors Pipe Insulation Tank Insulation Temperature Set Back Vending Miser Controls Programmable Thermostat Water Heater Boiler & Furnace	
Commercial Retrofit	
Gas absorption Chillers Boiler & Furnace Water Heater Electric Chillers Desiccant Systems AC/Heat Pumps Dual Enthalpy Controls Variable Frequency Drives Motors Lighting	

IV. Cost-Benefit Analysis Results

The tables below present the cost-benefit analysis results for six of the seven utility energy efficiency stimulus programs. Some of the utility stimulus programs are still under review by the NJBPU, therefore changes to the tables below may occur.

Table 5: South Jersey Gas (as of June 18, 2009)

	Residential Home Performance				Residential Enhanced HVAC	Commercial Direct Install	Non-Residential Efficiency Investment
	Tier 1	Tier 2	Tier 3	Total			
Participant Cost							
	\$2,425,890	\$3,422,852	\$5,201,361	\$11,050,103	\$19,690,808	\$5,915,455	\$11,253,149
Ratio	5.1	1.9	24.9	3.3	17.7	5.2	74.6
Program Administration							
	\$393,954	(\$2,019,050)	(\$3,642,706)	(\$5,267,802)	(\$1,080,228)	(\$642,184)	\$865,823
Ratio	1.4	0.5	0.2	0.4	0.8	0.8	1.2
Ratepayer Impact Measure							
	(\$569,879)	(\$3,011,595)	(\$3,857,164)	(\$7,438,637)	(\$2,322,262)	(\$1,600,555)	(\$397,397)
Ratio	0.7	0.4	0.1	0.4	0.7	0.7	0.9
Total Resource							
	\$824,331	(\$1,356,097)	\$763,063	\$231,298	\$12,793,769	\$2,158,440	\$7,229,220
Ratio	2.4	0.7	2.1	1.0	8.2	2.1	6.1
Societal							
	\$989,500	(\$1,224,093)	\$780,819	\$546,227	\$12,830,520	\$2,349,372	\$7,324,378
Ratio	2.7	0.7	2.1	1.1	8.2	2.2	6.1

Table 6: New Jersey Natural Gas (as of June 18, 2009)

	Residential Home Performance						2010 Evaluation	Total
	Commercial Direct Install	Enhanced Warm Advantage	Tier 1	Tier 2	Tier 3	Financing		
Participant								
	\$612,597	\$31,657,564	\$2,495,064	\$5,341,774	\$6,220,581	\$10,075,726	\$0	\$24,133,145
Ratio	3.5	18.7	3.7	1.9	12.3	15.6	0.0	3.9
Program Administration								
	(\$315,517)	(\$1,230,212)	\$843,119	(\$3,471,938)	(\$2,907,718)	(\$6,426,946)	(\$96,895)	(\$12,060,378)
Ratio	0.5	0.9	1.6	0.5	0.3	0.2	0.0	0.4
Ratepayer Impact Measure								
	(\$455,744)	(\$3,378,189)	(\$660,541)	(\$5,020,649)	(\$3,289,167)	(\$6,903,756)	(\$96,895)	(\$15,971,008)
Ratio	0.4	0.7	0.8	0.4	0.2	0.2	0.0	0.3
Total Resource								
	(\$83,468)	\$20,366,088	\$225,014	(\$2,437,882)	\$2,053,482	\$2,074,554	(\$96,895)	\$1,818,274
Ratio	0.8	7.1	1.1	0.6	4.2	2.6	0.0	1.2
Societal								
	(\$53,400)	\$20,432,971	\$478,559	(\$2,234,647)	\$2,093,107	\$2,124,086	(\$96,895)	\$2,364,209
Ratio	0.9	7.1	1.2	0.7	4.3	2.6	0.0	1.2

Table 7: PSE&G (as of June 26, 2009)

All Programs	Residential Whole House	Residential Multi-Family	Retro-Commissioning	Hospitals	Data Center	Technology Demonstration	Small Business Direct Install	Municipal Direct Install
\$581,160,579	\$17,300,593	\$31,753,495	\$10,953,999	\$196,791,327	\$70,162,629	\$40,407,105	\$57,820,494	\$88,250,468
8.6	4.0	4.0	11.1	11.8	145.2	4.7	6.0	10.7
Ratio								
\$153,918,176	(\$9,555,909)	(\$8,140,085)	\$5,114,787	\$53,229,039	\$34,991,808	\$19,197,188	\$22,090,184	\$36,991,977
1.9	0.4	0.6	3.0	1.8	4.4	2.6	2.0	2.4
Ratio								
\$13,017,850	(\$12,862,173)	(\$14,104,085)	\$1,988,571	\$5,416,206	\$12,462,860	\$6,714,534	\$3,103,504	\$10,298,432
1.0	0.3	0.4	1.4	1.0	1.4	1.3	1.1	1.2
Ratio								
\$295,747,520	(\$847,122)	\$8,113,340	\$7,471,010	\$118,702,143	\$48,236,106	\$25,344,669	\$31,959,891	\$56,767,485
4.0	0.9	1.6	4.8	5.6	19.1	3.0	2.9	5.1
Ratio								
\$324,361,917	(\$384,599)	\$8,938,363	\$8,069,529	\$128,389,465	\$53,075,689	\$27,834,924	\$36,025,186	\$62,413,360
4.2	1.0	1.7	5.1	6.0	21.0	3.2	3.2	5.5
Ratio								

Table 8: Atlantic City Electric (as of September 2, 2009)

All Programs	Small Commercial Direct Install	Non-Residential Efficiency Investment	Building Commissioning	Enhanced Residential HVAC	Residential Home Performance			
					Tier 1	Tier 2	Tier 3/Financing	
\$96,405,773	\$14,927,698	\$42,777,673	\$7,913,396	\$13,739,737	\$2,616,340	\$4,859,903	\$9,571,024	\$17,047,268
6.0	6.4	11.5	2.3	9.4	5.9	2.3	14.1	4.5
Ratio								
\$51,373,748	\$4,230,962	\$41,576,680	\$10,974,723	(\$1,006,934)	\$498,661	(\$170,615)	(\$4,729,728)	(\$4,401,682)
2.8	1.6	8.9	18.0	0.8	1.5	1.0	0.3	0.6
Ratio								
\$30,389,129	\$928,315	\$34,062,016	\$7,004,621	(\$3,618,997)	(\$585,889)	(\$1,924,209)	(\$5,476,730)	(\$7,986,827)
1.6	1.1	3.7	2.5	0.5	0.7	0.6	0.3	0.5
Ratio								
\$66,343,191	\$8,083,538	\$42,404,403	\$5,583,981	\$7,324,807	\$869,557	(\$170,615)	\$2,247,520	\$2,946,461
4.1	3.7	10.6	1.9	4.2	2.6	1.0	2.8	1.5
Ratio								
\$61,654,215	\$8,675,862	\$43,204,624	\$5,980,476	\$1,763,748	\$972,689	\$91,736	\$965,080	\$2,029,505
3.9	3.9	10.8	2.0	1.8	2.8	1.0	1.8	1.4
Ratio								

Table 9: Elizabethtown Gas (as of July 22, 2009)

	All Programs	Small Commercial	Large Commercial	Residential Expanded Gas HVAC				Total	Residential Whole House
				Gas HVAC	Gas Water Heater	Tankless Gas Water Heater			
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	
Program Administration	\$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	
Ratepayer Impact Measure	(\$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	
Total Resource	\$18,339,063	\$2,382,942	\$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	

Table 9 (a): Elizabethtown Gas Residential Whole House

	All Residential 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
Program Administration	(\$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
Ratepayer Impact Measure	(\$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
Total Resource	\$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

Table 10: Jersey Central Power & Light (as of November 5, 2009)

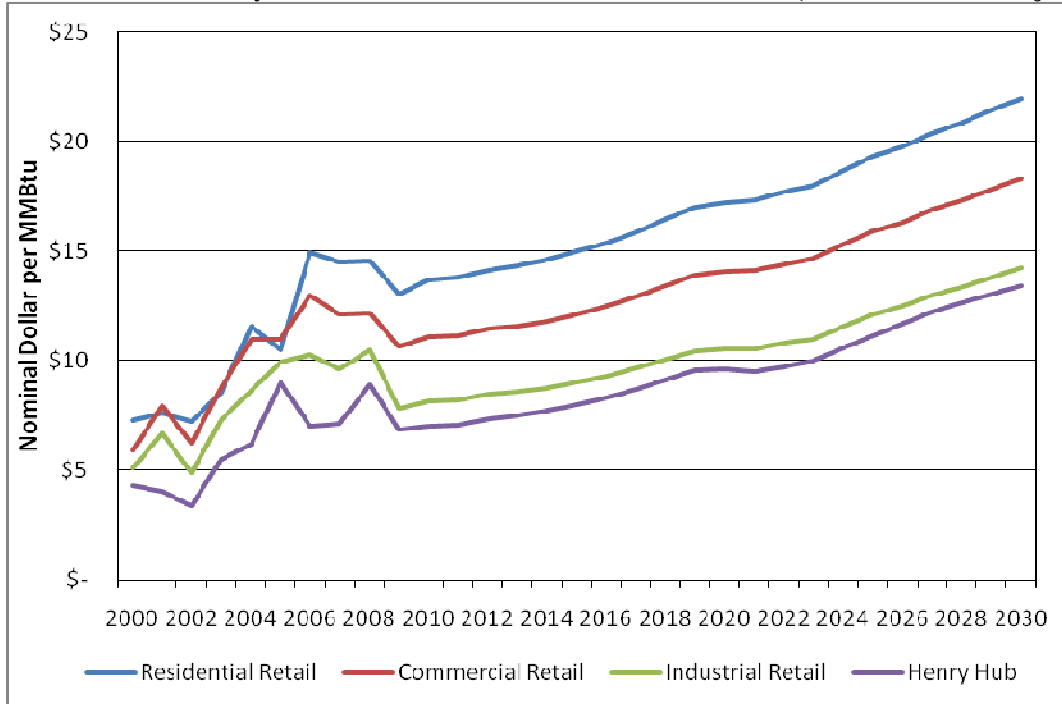
	All Programs	Matching Smart Start Rebates	Supplemental Energy Star Rebates	Retro-Commissioning	Appliance Early Retirement	Enhanced HVAC Rebate	Community Grants	Community Partners	Residential Home Performance
Participant	\$72,047,218	\$20,320,216	\$2,776,555	\$7,488,004	\$5,970,928	\$20,637,796	\$992,557	\$791,151	\$13,070,011
Ratio	7.9	22.2	20.0	4.7	40.8	9.3	0.0	0.0	3.9
Program Administration	\$30,251,478	\$15,228,872	\$2,624,366	\$9,184,819	\$3,279,106	\$2,069,906	\$90,503	\$67,877	\$113,334
Ratio	2.4	4.8	9.3	13.5	13.0	1.4	1.2	1.2	1.0
Ratepayer Impact Measure	\$13,283,981	\$11,540,446	\$2,060,856	\$7,488,182	\$395,148	(\$3,742,169)	(\$182,905)	(\$137,178)	(\$1,731,094)
Ratio	1.3	2.5	3.3	4.1	1.1	0.7	0.7	0.7	0.8
Total Resource	\$44,233,932	\$17,889,280	\$2,702,895	\$7,642,375	\$3,279,106	\$10,674,420	\$361,526	\$317,877	\$3,773,758
Ratio	4.0	14.2	12.4	4.4	13.0	4.5	3.5	6.1	1.8
Societal	\$39,752,217	\$18,379,805	\$2,777,836	\$7,830,211	\$3,694,060	\$5,412,717	\$397,501	\$344,859	\$3,322,534
Ratio	3.7	14.6	12.7	4.4	14.5	2.8	3.7	6.5	1.7

Table 10 (a): Jersey Central Power & Light (as of November 5, 2009)

	All Programs	Residential Home Performance		
		Tier 1	Tier 2	Tier 3
Participant	\$13,070,011	\$477,872	\$8,184,682	\$4,407,458
Ratio	3.9	1.9	3.2	14.8
Program Administration	\$113,334	(\$767,003)	\$3,177,770	(\$2,297,433)
Ratio	1.0	0.2	1.9	0.3
Ratepayer Impact Measure	(\$1,731,094)	(\$814,643)	\$1,615,240	(\$2,531,691)
Ratio	0.8	0.2	1.3	0.3
Total Resource	\$3,773,758	(\$387,765)	\$3,177,770	\$983,753
Ratio	1.8	0.3	1.9	2.7
Societal	\$3,322,534	(\$383,235)	\$3,298,747	\$407,022
Ratio	1.7	0.3	1.9	1.7

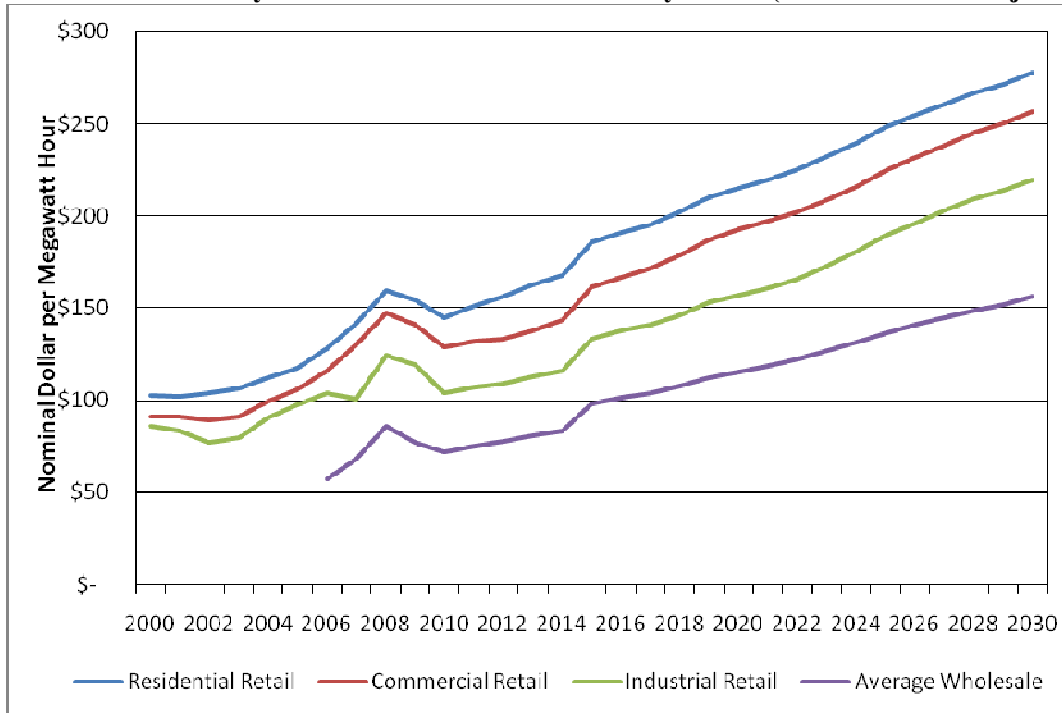
Appendix A: Commodity Price Projections

Chart 1: New Jersey Retail and Wholesale Natural Gas Prices (Historical and Projected)



Note: Data from 2000 – 2007 is historic. Data from 2008 – 2030 is projected.

Chart 2: New Jersey Retail and Wholesale Electricity Prices (Historical and Projections)



Note: Data from 2000 – 2008 is historic. Data from 2009 – 2030 is projected.

Appendix B: Emission Price and T&D Avoided Costs Projections

Table 11: Emission Permit Price Projections (\$/ton)

	SO2	NOx	CO2
2009	83.06	3,262.77	3.28
2010	100.59	2,394.08	3.28
2011	148.74	1,927.80	3.28
2012	341.39	1,732.47	3.23
2013	313.10	1,653.94	3.31
2014	219.57	808.33	3.39
2015	153.08	831.12	23.55
2016	157.41	854.62	25.98
2017	161.87	878.85	28.40
2018	166.59	904.48	30.83
2019	171.33	930.20	33.25
2020	176.24	956.83	35.68
2021	181.18	983.69	39.62
2022	186.32	1,011.58	43.57
2023	191.22	1,038.19	47.52
2024	196.05	1,064.40	51.46
2025	200.57	1,088.96	55.41
2026	205.45	1,115.45	59.36
2027	210.35	1,142.03	63.30
2028	215.62	1,170.67	67.25
2029	220.97	1,199.71	71.19
2030	226.32	1,228.76	75.14

Table 12: Natural Gas Transportation and Distribution Avoided Costs (Nominal \$/MMBtu)

	Transportation Price	Residential Distribution Avoided Costs	C&I Distribution Avoided Costs
2009	\$2.73	\$1.66	\$0.88
2010	\$2.80	\$1.68	\$0.89
2011	\$2.83	\$1.72	\$0.91
2012	\$2.93	\$1.76	\$0.93
2013	\$3.00	\$1.80	\$0.95
2014	\$3.09	\$1.85	\$0.98
2015	\$3.20	\$1.90	\$1.01
2016	\$3.32	\$1.95	\$1.03
2017	\$3.47	\$2.01	\$1.06
2018	\$3.65	\$2.07	\$1.09
2019	\$3.83	\$2.12	\$1.13
2020	\$3.84	\$2.18	\$1.16
2021	\$3.80	\$2.25	\$1.19
2022	\$3.89	\$2.31	\$1.22
2023	\$4.00	\$2.37	\$1.26
2024	\$4.24	\$2.43	\$1.29
2025	\$4.46	\$2.49	\$1.32
2026	\$4.67	\$2.55	\$1.35
2027	\$4.88	\$2.61	\$1.38
2028	\$5.07	\$2.67	\$1.42
2029	\$5.22	\$2.74	\$1.45
2030	\$5.37	\$2.81	\$1.49