



EAST KENTUCKY POWER COOPERATIVE

EKPC

IRP

2006-00471

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Integrated Resource Plan

Case No. 2006-00017

TECHNICAL
APPENDIX

October 21, 2006



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DEMAND-SIDE MANAGEMENT ANALYSIS

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Executive Summary

East Kentucky Power Cooperative (EKPC) evaluated 93 Demand-Side Management (DSM) measures for the 2006 Integrated Resource Plan (IRP). A two-step process was used in the evaluation: (1) Qualitative Screening, and (2) Quantitative Evaluation.

Thirty-four (34) measures passed the Qualitative Screen and were passed on to Quantitative Evaluation. In several cases, measures were combined so that a total of 27 DSM Programs were prepared for the Quantitative Evaluation.

The results for the cost-effectiveness tests were generally favorable for the DSM programs. Of the 27 DSM Programs that were evaluated, 24 produced a Total Resource Cost test benefit-cost ratio of greater than 1.0. Of the 24 cost-effective programs, 18 are considered "new" programs that would produce load impacts that are not reflected in the load forecast.

EKPC presents the following DSM Program Portfolio for the 2006 Integrated Resource Plan:

**Table DSM-1
Existing Programs**

Program Name	Class	Coin. Peak Demand Impact in 2006 (MW) ¹	Total Resource Cost Test Benefit/Cost Ratio	Participant Test Benefit/Cost Ratio
Electric Thermal Storage Propane	Residential	0.4	1.18	1.19
Electric Thermal Storage Furnace	Residential	-25.8	2.33	1.60
Electric Water Heater New Construction	Residential	-0.8	1.84	3.07
Electric Water Heater Retrofit	Residential	1.0	0.54	0.76
Geothermal Heating & Cooling	Residential	-23.4	4.64	1.85
Air Source Heat Pump New Construction	Residential	5.1	0.46	0.90
Air Source Heat Pump Retrofit	Residential	6.2	0.47	0.95
Tune-Up HVAC Maintenance	Residential	-5.0	4.20	3.22
Button-Up Weatherization	Residential	-16.4	6.80	2.95

¹ Negative value means a reduction in load requirements

**Table DSM-2
New Programs**

Program Name	Class	Coin. Peak Demand Savings in 2015 (MW) ²	Total Resource Cost Test Benefit/Cost Ratio	Participant Test Benefit/Cost Ratio
Compact Fluorescent Lighting	Residential	-4.1	21.47	Infinite
Touchstone Energy Geothermal Heat Pump Home	Residential	-3.4	4.68	1.36
Touchstone Energy Air Source Heat Pump Home	Residential	-1.4	1.65	0.84
Touchstone Energy Manufactured Home	Residential	-0.3	5.75	3.34
Direct Load Control for Air Conditioners and Water Heaters	Residential	-56.3	5.16	Infinite
ENERGY STAR Clothes Washer	Residential	-0.4	1.87	1.53
ENERGY STAR Room Air Conditioner	Residential	0.0	1.73	1.09
ENERGY STAR Refrigerator	Residential	-0.1	1.78	2.19
Programmable Thermostat with Electric Furnace Retrofit	Residential	0.0	4.77	5.34
Dual Fuel Air Source Heat Pump with Propane Retrofit	Residential	0.0	2.31	1.7
Commercial Lighting	Commercial	-3.0	2.55	2.25
C&I Demand Response	Commercial	-19.1	6.06	3.23
Commercial Efficient HVAC	Commercial	-0.2	2.37	1.81
Commercial Building Performance	Commercial	-0.9	1.48	1.69
Commercial New Construction	Commercial	-0.8	1.89	1.64
Commercial Efficient Refrigeration	Commercial	-0.5	4.31	4.04
Industrial Premium Motors	Industrial	-0.5	4.75	3.83
Industrial Variable Speed Drives	Industrial	-3.0	5.04	4.19

These new programs are projected to produce over \$150 million of net benefits (2006 \$) on a total resource basis over the lifetime of the cost-effectiveness study (20 years). They will require an investment of just under \$50 million (2006 \$) by EKPC, its member cooperatives, and participating customers in order to produce these savings.

² Negative value means a reduction in load requirements

Major Enhancements since last IRP

EKPC has made several improvements to its DSM planning since the 2003 IRP. They include:

- (1) More comprehensive set of DSM measures evaluated, incorporating feedback from the Attorney General, Kentucky Division of Energy, and other parties.
- (2) More explicit factoring of environmental costs.
- (3) Updated avoided costs for capacity to match current plans for transmission, distribution, and generation investment (including environmental compliance costs).
- (4) Changing load impacts to account for changes in Federal appliance efficiency standards.
- (5) New DSM program savings projections are based on technical potential estimates that made use of updated electricity sales and market share data.
- (6) Recognition of enhancements made to existing EKPC and member cooperative DSM programs (such as the Touchstone Energy homes).
- (7) Factoring updated national and regional results for load impacts and costs into new DSM program models.
- (8) New end-use load profiles, based on end-use metering where available, to more accurately model new DSM programs in the package.
- (9) More detailed modeling of retail and wholesale rates, including the new environmental surcharge.

Introduction

East Kentucky Power Cooperative (EKPC) evaluates the future electric service requirements for its member cooperatives with balanced consideration of demand-side and supply-side resource options. The purpose of this section is to describe the evaluation of demand-side management (DSM) resources for inclusion in the integrated analysis portion of the 2006 Integrated Resource Plan (IRP).

DSM resources consist of customer energy programs that seek to change the power consumption of customer facilities in a way that meets planning objectives. They include conservation, load management, and other demand-side programs.

EKPC's DSM analysis is conducted on an aggregate basis, with all member cooperatives combined, rather than on an individual cooperative basis.

EKPC has used a two-step process to screen and evaluate DSM resources for inclusion in this plan. The first step is a qualitative assessment of a large number of potential DSM measures. In the Qualitative Screening step, each measure is scored against four criteria. Measures which pass the Qualitative Screening move on to the second step, which is a more rigorous Quantitative Evaluation. Measures are turned into DSM programs. In some cases, measures are combined into one program. The Quantitative Evaluation considers all quantifiable benefits and costs of the program, and scores each program according to standard cost-effectiveness tests. DSM programs which pass the Quantitative Evaluation are passed on to the integrated analysis for inclusion in the IRP.

Comprehensive DSM Measure List

EKPC first developed a comprehensive list of 93 DSM measures to consider (see Exhibit DSM-1). This set of DSM measures covers all classes and major end-uses, and includes a robust set of available technologies and strategies for producing energy and capacity savings. This list was produced after careful review of several sources, including (1) PSC staff recommendations from the 2003 IRP; (2) feedback from Kentucky Department of Energy, the Attorney General's office, and other relevant state agencies; (3) the current programs and IRPs of other Kentucky utilities; and (4) best practice DSM programs offered by utilities around the country.

Qualitative Screening Process

Next, EKPC developed the criteria it would use to screen these 93 measures. The four criteria chosen capture the major considerations as to whether a measure is suitable for robust quantitative analysis. The criteria consider the customer, the measure itself, the savings, and the economics. Each potential DSM measure was evaluated based on a scale of 1 to 5 against each of the four criteria.

The four criteria and a description of each are shown as Exhibit DSM-2.

Qualitative Screening Results

The results of the qualitative screening process are shown in Exhibit DSM-3. DSM measures which received a combined score of 15 or higher were passed on to the next phase, the Quantitative Evaluation Process.

The following table summarizes the results of the qualitative screening process:

**Table DSM-3
Results of Qualitative Screening**

Class	Original # of Measures	# that PASSED Qualitative Screen
Residential	41	20
Commercial/Industrial	52	14
TOTAL	93	34

As the table shows, 34 DSM measures passed qualitative screening. These 34 options were then evaluated in the quantitative evaluation process.

Quantitative Evaluation Process

The 34 measures that passed the qualitative screening process were next transformed into DSM programs. Some programs consist of more than one measure, with a result that 27 DSM programs were prepared for the Quantitative Evaluation.

EKPC uses the EPRI *DSManager* software package to conduct the more detailed quantitative evaluation. *DSManager* calculates the impact of DSM programs on utilities and their customers. The software tracks both the physical changes, such as the level of power demand, and the dollar flows. *DSManager* produces a quantitative estimate of the costs and benefits for each of the parties using simplified but powerful and flexible models of the electric system and its customers.

The relationships are straightforward. DSM programs change the way customers use energy. *DSManager* traces these changes through the energy system to determine, for example, how the amount of electricity generated changes over time. Using input values which describe how these changes impact costs and detailed descriptions of the costs and rates (prices) for energy, *DSManager* translates these physical measures into dollars, and ultimately into costs and benefits.

DSManager determines the cost-effectiveness of DSM programs by reporting results according to the cost-benefit tests established in the California Standard Practice Manual for Economic Analysis of Demand Side Programs³.

EKPC uses these tests to examine cost-effectiveness from three major perspectives: participant cost (PC), ratepayer impact measure (RIM), and total resource cost (TRC). A fourth perspective, the societal cost (SC), is treated as a variation on the TRC test. The results of each perspective can be expressed in a variety of ways, but in all cases, it is necessary to calculate the net present value of program impacts over the life cycle of those impacts. *DSManager* uses this information to calculate the benefit/cost (b/c) ratio for each of these four tests.

These tests are not intended to be used individually or in isolation. The results of tests that measure efficiency, such as the TRC and the SC, must be compared not only to each other, but also to the RIM test. This multi-perspective approach will require reviewers to consider tradeoffs between the various tests.

EKPC is a full requirements Generation and Transmission provider for its 16 member cooperatives. Each cooperative is an independent non-profit corporation and operates distinct from EKPC. As a result, it is necessary to examine the impacts of DSM programs separately for EKPC and for the typical distribution cooperative. *DSManager*

³ California Public Utilities Commission and California Energy Commission, "Standard Practice Manual for Economic Analysis of Demand-Side Management Programs," Document Number P400-87-006, December 1987.

has the functionality to enable the user to separately report the RIM test for EKPC and for the distribution cooperative.

Time is a critical element in DSM analysis. It is important to represent time within a year and over a period of many years. *DSManager* divides the year into seasons and representative days. These days are usually related to weather and to patterns of human activity. EKPC has selected 48 representative days to model the calendar year, four for each month. Each day is modeled using 24 hourly loads. This is true both for the utility system, individual end-uses, and DSM program impacts.

The daytypes are: High Weekday, Medium Weekday, Low Weekday, and Weekend. High, medium, and low refer to the EKPC system loads.

Each of the 27 DSM programs was modeled in detail with *DSManager*. The model includes for each DSM program:

- 48-daytype hourly load profiles for targeted end-uses with and without the program
- Lifetime of the measure savings
- Incremental measure costs (participant costs)
- EKPC and distribution cooperative administrative costs
- Rebates to customers, and from EKPC to the cooperative
- Detailed retail and wholesale rate schedules
- Customer participation levels

In addition to the detailed modeling of the DSM programs, *DSManager* also includes a detailed model of the supply side costs. Major categories of supply side costs that are accounted for by the model include:

- Marginal energy costs (by year, daytype, and hour)
- Marginal generation capacity costs (by category and year, including seasonal allocation)
- Marginal transmission & distribution capacity costs (by year, incl. seasonal allocation)
- Fossil fuel (natural gas & propane) costs (by year)
- Environmental externality costs (costs not internalized in energy or capacity costs; chiefly carbon related)

Exhibit DSM-4 provides assumptions sheets for each of the nine existing DSM programs that were evaluated, and Exhibit DSM-5 provides the assumptions sheets for each of the eighteen new DSM programs that were evaluated.

Quantitative Screening Results

DSManager calculates the net present value of the costs and benefits of each DSM program and presents the results in terms of the California Tests. Detailed results of the Quantitative Screening can be found in Exhibit DSM-6 and Exhibit DSM-7. Exhibit DSM-6 contains summary sheets for each of the nine existing DSM programs. Exhibit DSM-7 contains summary sheets for each of the eighteen new DSM programs.

The following table summarizes the results:

Table DSM-4
Results of Quantitative Screening

	Total	TRC > 1.0	PC>1.0	Coop RIM>1.0	EKPC RIM > 1.0
Existing Residential	9	6	6	2	5
New Residential	10	10	9	2	9
New Commercial/ Industrial	8	8	8	1	8
TOTAL	27	24	23	5	22

As this table shows, the results for the cost-effectiveness tests were generally favorable for the DSM programs. Of the 27 DSM Programs that were evaluated, 24 produced a Total Resource Cost test benefit-cost ratio of greater than 1.0. Eighteen of these are new DSM programs.

Exhibit DSM-8 provides program descriptions for each of the existing programs, while Exhibit DSM-9 provides program descriptions for each of the new programs.

Recommendations

As a result of the favorable cost-effectiveness results from the Quantitative Screening, all 18 new DSM programs were considered in the integrated analysis portion of the IRP. The integrated analysis determines the direction that EKPC should take in meeting the future needs of its member cooperatives and their customers.

EKPC presents the following DSM Program Portfolio for the 2006 Integrated Resource Plan:

**Table DSM-5
Existing Programs**

Program Name	Class	Coin. Peak Demand Impact in 2006 (MW) ⁴	Total Resource Cost Test Benefit/Cost Ratio	Participant Test Benefit/Cost Ratio
Electric Thermal Storage Propane	Residential	0.4	1.18	1.19
Electric Thermal Storage Furnace	Residential	-25.8	2.33	1.60
Electric Water Heater New Construction	Residential	-0.8	1.84	3.07
Electric Water Heater Retrofit	Residential	1.0	0.54	0.76
Geothermal Heating & Cooling	Residential	-23.4	4.64	1.85
Air Source Heat Pump New Construction	Residential	5.1	0.46	0.90
Air Source Heat Pump Retrofit	Residential	6.2	0.47	0.95
Tune-Up HVAC Maintenance	Residential	-5.0	4.20	3.22
Button-Up Weatherization	Residential	-16.4	6.80	2.95

⁴ Negative value means a reduction in load requirements

Table DSM-6
New Programs (not already in place at projected levels)

Program Name	Class	Coin. Peak Demand Savings in 2015 (MW) ⁵	Total Resource Cost Test Benefit/Cost Ratio	Participant Test Benefit/Cost Ratio
Compact Fluorescent Lighting	Residential	-4.1	21.47	Infinite
Touchstone Energy Geothermal Heat Pump Home	Residential	-3.4	4.68	1.36
Touchstone Energy Air Source Heat Pump Home	Residential	-1.4	1.65	0.84
Touchstone Energy Manufactured Home	Residential	-0.3	5.75	3.34
Direct Load Control for Air Conditioners and Water Heaters	Residential	-56.3	5.16	Infinite
ENERGY STAR Clothes Washer	Residential	-0.4	1.87	1.53
ENERGY STAR Room Air Conditioner	Residential	0.0	1.73	1.09
ENERGY STAR Refrigerator	Residential	-0.1	1.78	2.19
Programmable Thermostat with Electric Furnace Retrofit	Residential	0.0	4.77	5.34
Dual Fuel Air Source Heat Pump with Propane Retrofit	Residential	0.0	2.31	1.7
Commercial Lighting	Commercial	-3.0	2.55	2.25
C&I Demand Response	Commercial	-19.1	6.06	3.23
Commercial Efficient HVAC	Commercial	-0.2	2.37	1.81
Commercial Building Performance	Commercial	-0.9	1.48	1.69
Commercial New Construction	Commercial	-0.8	1.89	1.64
Commercial Efficient Refrigeration	Commercial	-0.5	4.31	4.04
Industrial Premium Motors	Industrial	-0.5	4.75	3.83
Industrial Variable Speed Drives	Industrial	-3.0	5.04	4.19

These new programs are projected to produce over \$150 million of net benefits (2006 \$) on a total resource basis over the lifetime of the cost-effectiveness study (20 years). They will require an investment of just under \$50 million (2006 \$) by EKPC, its member cooperatives, and participating customers in order to produce these savings.

⁵ Negative value means a reduction in load requirements

DSM program design and implementation are complex and dynamic undertakings. It is possible that DSM programs that are selected through this evaluation process may not be implemented as they have been described in this document. DSM programs that are ultimately launched will first be subjected to a much more rigorous program design effort. In certain cases, a demonstration or pilot project may precede full-scale implementation to test the validity of the program concept. This could mean that certain program concepts are modified, and some may not ultimately be implemented.

Estimated Impacts

This section provides the estimated impacts of both the Existing and New DSM programs in utility sales and coincident peak demands. Impacts for Existing DSM programs are accounted for in the load forecast. Impacts for New DSM programs are accounted for in the integrated resource plan.

The following table provides the historic and forecasted estimated impacts of the Existing DSM programs. Negative values denote reductions in load requirements while positive values denote increases in load requirements.

Table DSM-7
Load Impacts of Existing Programs
(negative value= reduction in load)

Year	Impact on Energy Requirements (MWh)	Impact on Winter Peak (MW)	Impact on Summer Peak (MW)
1998	7,545	-40.6	-7.3
1999	8,139	-44.3	-8.2
2000	9,393	-48.3	-9.2
2001	9,487	-51.2	-10.1
2002	9,131	-53.3	-11.0
2003	8,712	-54.8	-12.0
2004	7,765	-55.7	-13.0
2005	7,807	-57.2	-13.8
2006	7,671	-58.7	-14.7
2007	7,671	-58.7	-14.7
2008	7,671	-58.7	-14.7
2009	7,671	-58.7	-14.7
2010	7,671	-58.7	-14.7
2011	7,671	-58.7	-14.7
2012	7,671	-58.7	-14.7
2013	7,671	-58.7	-14.7
2014	7,671	-58.7	-14.7
2015	7,671	-58.7	-14.7
2016	7,671	-58.7	-14.7
2017	7,671	-58.7	-14.7
2018	7,671	-58.7	-14.7
2019	7,671	-58.7	-14.7
2020	7,671	-58.7	-14.7
2021	7,671	-58.7	-14.7

The following table provides the projected estimated impacts of the New DSM programs. Negative values denote reductions in load requirements while positive values denote increases in load requirements.

Table DSM-8
Load Impacts of New Programs
(negative value = reduction in load)

Year	Impact on Energy Requirements (MWh)	Impact on Winter Peak (MW)	Impact on Summer Peak (MW)
2006	-15,911	-13.4	-15.5
2007	-32,396	-28.7	-32.8
2008	-48,307	-42.0	-48.3
2009	-62,502	-49.8	-58.0
2010	-76,698	-57.5	-67.8
2011	-90,893	-65.2	-77.5
2012	-105,088	-72.9	-87.3
2013	-114,917	-79.9	-96.5
2014	-124,740	-86.9	-105.7
2015	-134,571	-93.9	-114.8
2016	-126,958	-92.8	-113.8
2017	-118,813	-91.7	-112.7
2018	-110,478	-90.6	-111.5
2019	-102,145	-89.6	-110.4
2020	-93,808	-88.5	-109.3
2021	-80,662	-87.0	-107.5

Year by year impacts for each individual program are provided in Exhibit DSM-10.

Factoring Environmental Cost Considerations into DSM Evaluation

EKPC has explicitly factored environmental costs into this evaluation of DSM resources. There are three major categories of environmental cost: (1) the cost of purchasing allowances; (2) the capital costs of compliance at power plants; and (3) externality costs.

EKPC has accounted for all three categories of environmental cost in its DSM evaluation. The following table describes how this was accomplished:

Table DSM-9
Accounting for Environmental Costs

Environmental Cost	Where accounted for	Specifics
Allowance purchases	Marginal energy costs	SOx and NOx
Capital investments for compliance	Marginal capacity costs	Primarily Scrubbers, SCRs, other controls
Externalities	Externality adder	Used in Societal Cost test; value is set to \$10/MWh. Value determined by examining allowance prices in markets (primarily Europe) with cap and trade policies for carbon.

Complete List of DSM Measures

Residential

1	Button-Up
2	Tune-Up
3	Geothermal Touchstone Energy Home
4	Geothermal Heat Pump
5	Air Source Heat Pump Touchstone Energy Home
6	Air Source Heat Pump Retrofit
7	Air Source Heat Pump New construction
8	Water heater - new construction
9	Water heater – retrofit
10	Electric Thermal Storage – Furnace
11	Electric Thermal Storage – Propane
12	Touchstone Energy Manufactured Home Program
13	Compact Fluorescent Lighting
14	Direct Load Control - air conditioners
15	Direct Load Control - water heaters
16	Dual fuel heating
17	Cold climate heat pump
18	High efficiency furnace fan motors
19	Low income weatherization
20	Ceiling Fans
21	Programmable thermostats
22	Polarized Refrigerant oxidant agent
23	ENERGY STAR Refrigerator
24	ENERGY STAR Room Air Conditioner
25	ENERGY STAR Clothes Washers
26	ENERGY STAR Central Air Conditioner
27	ENERGY STAR Dishwashers
28	Refrigerator/Freezer Recycling
29	Efficient pool pump
30	Well water pump
31	High efficiency outdoor lighting
32	Direct load control - pool pump
33	Direct load control - smart thermostat
34	Multi-family program
35	Mobile home program
36	Time of use rates
37	Inclining block rates
38	Passive Solar (new construction)
39	Solar water heater
40	Photovoltaics
41	Wind turbine

Commercial

1	Commercial Lighting
2	Demand Response
3	Commercial HVAC
4	Geothermal heat pump
5	Cool roof program
6	High performance glazings
7	Heat pump & A.C. Tune-up
8	Duct sealing
9	Polarized Refrigerant Oxidant Agent
10	Efficient refrigeration equipment
11	Efficient cooking equipment
12	Efficient clothes washers
13	ENERGY STAR Vending machines
14	LED exit signs
15	Energy Management Systems
16	DLC of irrigation pumps
17	DLC of central air conditioners
18	Thermal energy storage
19	Commercial New Construction
20	Energy efficient schools
21	Retro-commissioning
22	Farms program: fans, pumps, irrigation
23	Time of use rates
24	Combined heat & power
25	Stand-by generation program
26	Daylighting
27	Solar hot water
28	Photovoltaics
29	Wind turbine

Industrial/Other

1	Demand Response
2	Motors
3	Variable speed drives
4	Compressed air
5	Industrial process
6	Process cooling
7	Refrigerated Warehouse
8	High efficiency transformers
9	Automotive and transportation sector equipment
10	Livestock, equine, poultry and meat processing sector
11	Chemicals sector
12	Machinery/machine tools sector
13	Aluminum sector
14	Plastics sector
15	Computer and electronics sector
16	Interruptible Rates
17	Combined heat and power
18	Other onsite generation (conventional)
19	Photovoltaics
20	Wind turbine
21	LED Traffic signals
22	Water/Wastewater Treatment facilities
23	Conservation Voltage Reduction

Qualitative Screening criteria

Scoring system: 1 – 5, where 1 means POOR and 5 means EXCELLENT

Criteria	Comments/Examples
<p>1. Customer Acceptance</p>	<p>What will the response of customers be to the offer to participate in the program or to install the measure(s) in their facilities? POOR = measures that reduce the quality of the energy service equipment, are excessively difficult to install, or might interfere with vital activities in the establishment (home, business, industrial plant). Example: Retailer would be unlikely to put in window shades to reduce cooling loads because they want the product displays to be visible.</p>
<p>2. Measure Applicability</p>	<p>Have the efficiency gains been superseded by standards or code requirements? Example: SEER 12 central air conditioners are no longer an efficiency measure because Federal appliance efficiency standards require a minimum SEER of 13. Is the measure commercially available today? Measures that are still in the R&D stage or that are no longer manufactured would score low on this criteria. Will the measure save energy or demand in the EKPC climate? Is the measure a good fit for the DSM objectives that EKPC has? Is there a better measure available for the same end-use application? Example: Triple glazed windows versus low e double pane window.</p>
<p>3. Savings Potential</p>	<p>How substantial are the savings likely to be? How measurable or quantifiable are the savings? Is the measure technically reliable such that savings are assured? Is the marketplace capturing the savings already without a utility program? POOR = Savings are small or not easily quantified</p>
<p>4. Cost Effectiveness</p>	<p>Given typical savings, typical measure costs, and a conservative (high) estimate of future avoided energy and capacity costs, how cost effective is this program likely to be using the Total Resource Cost test? POOR = clearly below 1 (say 0.3 on the TRC using a high estimate of future avoided costs) EXCELLENT = clearly above 1 (say 3-5 or higher on the TRC)</p>

Results of Qualitative Screen
Measures with a score of 15 or better PASS and are IN BOLD

Residential

		Customer Acceptance	Measure Applicability	Savings Potential	Cost Effectiveness	Total Score
1	Button-Up	5	5	5	5	20
2	Tune-Up	5	5	5	5	20
3	Geothermal Touchstone Energy	4	5	5	4	18
4	Geothermal Heat Pump	4	5	5	4	18
5	ASHP Touchstone Energy	5	5	5	4	19
6	Air Source Heat Pump Retrofit	5	5	3	2	15
7	Air Source Heat Pump New Const.	5	5	3	2	15
8	Water heater - new construction	4	4	3	4	15
9	Water heater – retrofit	5	5	3	2	15
10	ETS- Furnace	5	3	4	4	16
11	ETS - Propane	5	3	4	4	16
12	Touchstone Energy Manuf. Home	3	4	5	5	17
13	Compact Fluorescent Lighting	3	5	5	5	18
14	DLC - air conditioners	3	4	5	4	16
15	DLC - water heaters	4	4	5	4	17
16	Dual fuel heating	3	5	4	4	16
17	Cold climate heat pump	3	2	4	3	12
18	High efficiency furnace fan motors	4	4	2	3	13
19	Low income weatherization	5	5	2	2	14
20	Ceiling Fans	3	4	2	3	12
21	Programmable thermostats	5	5	5	5	20
22	Polarized Refrigerant oxidant agent	3	2	3	4	12
23	ENERGY STAR Refrigerator	5	5	4	3	17
24	ENERGY STAR Room A. C.	5	5	3	3	16
25	ENERGY STAR Clothes Washers	4	5	3	4	16
26	ENERGY STAR Central A.C.	4	4	3	3	14
27	ENERGY STAR Dishwashers	4	4	3	3	14
28	Refrigerator/Freezer Recycling	4	1	4	3	12
29	Efficient pool pump	4	3	3	3	13
30	Well water pump	4	3	3	3	13
31	High efficiency outdoor lighting	5	4	2	3	14
32	Direct load control - pool pump	3	4	3	3	13
33	Direct load control - smart thermostat	4	3	4	3	14
34	Multi-family program	5	4	3	2	14
35	Mobile home program	4	2	4	3	13
36	Time of use rates	3	4	2	4	13
37	Inclining block rates	2	3	2	4	11
38	Passive Solar (new construction)	3	3	3	3	12
39	Solar water heater	3	3	5	3	14
40	Photovoltaics	4	3	4	1	12
41	Wind turbine	2	3	3	2	10

Results of Qualitative Screen
Measures with a score of 15 or better PASS and are IN BOLD

Commercial

		Customer Acceptance	Measure Applicability	Savings Potential	Cost Effectiveness	Total Score
1	Commercial Lighting	5	5	5	5	20
2	Demand Response	3	4	5	5	17
3	Commercial HVAC	5	5	5	5	20
4	Geothermal heat pump	3	3	3	3	12
5	Cool roof program	4	3	3	3	13
6	High performance glazings	2	3	2	3	10
7	Heat pump & A.C. Tune-up¹	5	5	3	3	16
8	Duct sealing²	5	5	4	3	17
9	Polarized Refrig. Oxidant Agent	3	2	3	3	11
10	Efficient refrigeration equipment	4	4	4	5	17
11	Efficient cooking equipment	3	3	3	3	12
12	Efficient clothes washers	4	4	3	3	14
13	E. STAR Vending machines³	4	4	4	4	16
14	LED exit signs⁴	4	5	5	5	19
15	Energy Management Systems	3	4	3	4	14
16	DLC of irrigation pumps	1	1	1	3	6
17	DLC of central air conditioners	2	3	4	4	13
18	Thermal energy storage	3	3	3	4	13
19	Commercial New Construction	5	5	5	5	20
20	Energy efficient schools⁵	4	5	3	4	16
21	Retro-commissioning⁶	4	5	5	4	18
22	Farms program	4	3	3	3	13
23	Time of use rates	3	3	3	4	13
24	Combined heat & power	4	3	3	3	13
25	Stand-by generation program	4	3	3	3	13
26	Daylighting	3	3	2	2	10
27	Solar hot water	3	3	3	3	12
28	Photovoltaics	4	3	3	1	11
29	Wind turbine	3	3	2	3	11

¹ Included in Commercial Building Performance

² Included in Commercial Building Performance

³ Included in Commercial Refrigeration

⁴ Included in Commercial Lighting

⁵ Included in Commercial New Construction

⁶ Included in Commercial Building Performance

Industrial/Other

		Customer Acceptance	Measure Applicability	Savings Potential	Cost Effectiveness	Total Score
1	Demand Response	4	4	4	4	16
2	Motors	5	5	5	5	20
3	Variable speed drives	4	4	4	5	17
4	Compressed air	4	3	3	4	14
5	Industrial process	3	4	3	3	13
6	Process cooling	4	3	3	3	13
7	Refrigerated Warehouse	4	4	3	3	14
8	High efficiency transformers	5	3	3	3	14
9	Automotive & transportation	3	4	2	4	13
10	Livestock & meat processing	3	4	2	4	13
11	Chemicals sector	3	4	2	4	13
12	Machinery/machine tools sector	3	4	2	4	13
13	Aluminum sector	3	4	2	4	13
14	Plastics sector	3	4	2	4	13
15	Computer and electronics sector	3	4	2	4	13
16	Interruptible Rates	3	3	3	4	13
17	Combined heat and power	4	3	3	3	13
18	Other onsite generation	4	3	3	3	13
19	Photovoltaics	3	3	3	1	10
20	Wind turbine	3	3	2	2	10
21	LED Traffic signals	3	4	2	4	13
22	Water/Wastewater facilities	4	4	2	3	13
23	Conservation Voltage Reduction	3	4	3	4	14

Exhibit DSM-4
Existing DSM Programs
Assumption Sheets

ETS Propane Program

2006 IRP

Source

Assumption

<p>Load Impacts Before Participant 0 kWh, 0.00 kW (coincident with winter system peak), 533 gallons</p> <p>After Participant 11,159 kWh, 0.11 kW (coincident with winter system peak), 73 gallons</p>	<p>Typical Propane furnace in 1625 square foot home. Derived from electric furnace loads in the 1996-98 metering study, using 85% combustion efficiency and 91,600 BTU per gallon</p> <p>ETS unit in 1625 square foot home adjusted for larger ETS unit size (10 kW) in propane group. Propane furnace with ETS derived from electric furnace loads in metering study, adjusted to 10 kW/1625 square feet.</p>
<p>Lifetime of savings</p>	<p>20 Years</p>
<p>Generation Capacity Cost - Peak</p>	<p>Hours split and cost values from BIP analysis approved 8/25/2006. There are two categories: Peak and Blend. Peak is assigned to programs that provide savings in 2,887 hours of the year or fewer.</p>
<p>Participant Costs \$ 1,899</p>	<p>Includes installation, ETS unit cost, and new TOU meter.</p>
<p>Administrative Cost EK \$15,214 fixed annual (2006-2015), \$65 per new participant Co-op \$214 per new participant</p>	<p>All cost estimates provided by EKPC Marketing/Communications, June 2005. Cost information provided by 2 Coops (InterCo. and South KY) 2003.</p>
<p>Rate Schedule - Retail BEFORE: South Kentucky A rate, w/ FAC \$0.00879, ES \$0.00471 AFTER: South Kentucky ETS rate Propane rate is \$ 1.84 per gallon</p> <p>Rate Schedule - Wholesale East Kentucky E-2 rate, w/ FAC \$0.00833, ES \$0.00446</p>	<p>Retail Rates Workbook, Pricing Group, 7/04, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006. Midrange of retail prices, July 2006 (Armstrong). Retail Rates Workbook, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Participation - 130 per year, 10 years (2006-2015)</p>	<p>2005 participation was 127 where primary heating system fuel was fossil.</p>
<p>Rebates Co-op to Participant \$600 EK to Co-op \$300</p>	<p>\$60 per kW times 10 kW. EKPC Marketing Summary of Coop Rebates dated April 2006: Rebates range from \$25 - \$100 per kW. Avg EKPC rebate to coops in 2005 was \$283 per participant. Partners Plus Reimbursement</p>

2006 IRP

ETS Furnace Program

Assumption

Source

<p>Load Impacts Before Participant 12,675 kWh, 9.62 kW (coincident with winter system peak), 0 therms</p>	<p>Typical electric furnace (metered study) adjusted for avg square footage of participants (1708 square feet)</p>
<p>After Participant 13,307 kWh, 2.83 kW (coincident with winter system peak), 0 therms</p>	<p>ETS unit, 1708 square foot home. Electric furnace with ETS in the home, 1708 square foot home. Both loads come from the EKPC end use metering study (1996-1998).</p>
<p>Lifetime of savings</p>	<p>20 Years</p>
<p>Generation Capacity Cost - Peak</p>	<p>Hours split and cost values from BIP analysis approved 8/25/2006. There are two categories: Peak and Blend. Peak is assigned to programs that provide savings in 2,887 hours of the year or fewer.</p>
<p>Participant Costs \$ 1,899</p>	<p>Billy Abner 3/02. Typical system size 9 kW. Includes \$500 installation cost, \$1,184 for the unit, \$40 for the meter base, and \$175 for the TOU meter.</p>
<p>Administrative Cost EK \$15,214 fixed annual (2006-2015), \$65 per new participant</p>	<p>All cost estimates provided by EKPC Marketing/Communications, June 2005.</p>
<p>Co-op \$214 per new participant</p>	<p>Cost information provided by 2 Coops (InterCo. and South KY) 2003.</p>
<p>Rate Schedule - Retail</p>	
<p>BEFORE = South Kentucky A rate, w/ FAC \$0.00879, ES \$0.00471</p>	<p>Retail Rates Workbook, Pricing Group, 7/04, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006. same as above.</p>
<p>AFTER = South Kentucky ETS rate</p>	
<p>Rate Schedule - Wholesale East Kentucky E-2 rate, w/ FAC \$0.00833, ES \$0.00446</p>	<p>Retail Rates Workbook, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Participation - 120 per year, 10 years (2006-2015)</p>	<p>2005 participation was 117 where primary heating system source was electricity</p>
<p>Rebates</p>	
<p>Co-op to Participant \$540 EK to Co-op \$270</p>	<p>\$60 per kW of installed capacity times 9 kW. EKPC Marketing Summary of Coop Rebates dated April 2006: Rebates range from \$25 - \$100 per kW. Avg EKPC rebate to coops in 2005 was \$283 per participant. Partners Plus Reimbursement</p>

Electric Water Heater New Construction Program

2006 IRP

<u>Assumption</u>	<u>Source</u>
<p>Load Impacts Before Participant 4,821 kWh, 1.12 kW (coincident with winter system peak), 0 therms</p>	<p>Standard electric hot water heater (TVA metering study).</p>
<p>After Participant 4,433 kWh, 1.03 kW (coincident with winter system peak), 0 therms</p>	<p>High efficiency electric hot water heater (8% savings per Abner 3/02).</p>
<p>Lifetime of savings</p>	<p>12 Years</p>
<p>Generation Capacity Cost - Blend</p>	<p>Hours split and cost values from BIP analysis approved 8/25/2006. There are two categories: Peak and Blend. Peak is assigned to programs that provide savings in 2,887 hours of the year or fewer.</p>
<p>Participant Costs \$ 115</p>	<p>Difference between cost of a typical electric water heater and a high efficient water heater. Per Miller, Blue Grass Energy 3/02.</p>
<p>Administrative Cost EK \$2,449 fixed annual (2006-2015), \$0 per new participant</p>	<p>All cost estimates provided by EKPC Marketing/Communications, June 2005.</p>
<p>Co-op \$ 65 per new participant</p>	<p>Cost information provided by 7 Coops (Shelby, Clark, InterCo., Salt River, South KY, and Blue Grass) 2002.</p>
<p>Rate Schedule - Retail South Kentucky A rate, w/ FAC \$0.00879, ES \$0.00471</p>	<p>Retail Rates Workbook, Pricing Group, 7/04, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Rate Schedule - Wholesale East Kentucky E-2 rate, w/ FAC \$0.00833, ES \$0.00446</p>	<p>Retail Rates Workbook, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Participation - 640 per year, 10 years (2006-2015)</p>	<p>Average participation for 2004, 2005 is 638.</p>
<p>Rebates Co-op to Participant \$150 EK to Co-op \$75</p>	<p>EKPC Marketing Summary of Coop Rebates dated April 2006. Range is \$100 - \$200. In 2005 avg EKPC rebate to coop was \$75 per participant.2 Partners Plus Reimbursement</p>

Electric Water Heater Retrofit Program

2006 IRP

Source

Assumption

Load Impacts

Before Participant
0 kWh, 0.00 kW (coincident with winter system peak), 228 therms

After Participant
4,433 kWh, 1.03 kW (coincident with winter system peak), 0 therms

Natural Gas water heater. Source: LBL Energy Data Sourcebook, Table 4.2

High efficiency electric water heater.

12 Years

Lifetime of savings

Hours split and cost values from BIP analysis approved 8/25/2006. There are two categories: Peak and Blend. Peak is assigned to programs that provide savings in 2,887 hours of the year or fewer.

Generation Capacity Cost - Blend

Difference between cost of a high efficiency electric water heater and a gas water heater.
Source: Miller, Blue Grass Energy (3/02).

Participant Costs \$ 125

Administrative Cost

EK \$916 fixed annual (2006-2015), \$0 per new participant

All cost estimates provided by EKPC Marketing/Communications, June 2005.

Cost information provided by 7 Coops (Shelby, Clark, InterCo., Salt River, South KY, and Blue Grass) 2002.

Co-op \$65 per new participant

Rate Schedule - Retail

South Kentucky A rate, w/ FAC \$0.00879, ES \$0.00471

Columbia Gas rate GSR \$11.88/MMBTU

Rate Schedule - Wholesale

East Kentucky E-2 rate, w/ FAC \$0.00833, ES \$0.00446

Retail Rates Workbook, Pricing Group, 7/04, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.

Columbia Gas rate tariff effective May 31, 2006.

Retail Rates Workbook, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.

Participation - 50 per year, 10 years (2006-2015)

Average participation for 2004,2005 is 44.

Rebates

Co-op to Participant \$150
EK to Co-op \$75

EKPC Marketing Summary of Coop Rebates dated April 2006. Range is \$100 - \$200. 2005 avg EKPC rebate to coop was \$75 per participant.
Partners Plus Reimbursement

Geothermal Heat Pump program

2006 IRP

Source

Assumption

<p>Load Impacts Before Participant 13,458 kWh, 9.38 kW (coincident with winter system peak), 206 therms</p> <p>After Participant 10,796 kWh, 4.66 kW (coincident with winter system peak), 0 therms</p>	<p>HVAC end use technology choices in new construction market in absence of program. Natural gas furnace (25%), central air conditioning (25%), and standard efficiency new air source heat pump - SEER 13, HSPF 7.7 (75%). Shares were consensus of coop staff (5/02). Scaled for typical square footage for participants - 2,500 square feet. electric hot water heater</p> <p>Geothermal heat pump in 2500 square foot homeconstructed to all seasons comfort home standards. Includes water heater consumption modified by desuperheater of the geothermal heat pump.</p>
<p>Lifetime of savings</p>	<p>20 Years</p>
<p>Generation Capacity Cost - Blend</p>	<p>Hours split and cost values from BIP analysis approved 8/25/2006. There are two categories: Peak and Blend. Peak is assigned to programs that provide savings in 2,887 hours of the year or fewer.</p>
<p>Participant Costs \$ 2,038</p>	<p>Cost premium associated with the installed cost of the geothermal system over and above what the installed costs of the default system(s) would be. Default system cost used is weighted cost of various technologies otherwise installed.</p>
<p>Administrative Cost EK \$10,426 fixed per year (2006 - 2015); \$34 variable</p> <p>Co-op \$254 per new participant</p>	<p>All cost estimates provided by EKPC Marketing/Communications, June 2005.</p> <p>Cost information provided by 7 Coops (Shelby, Clark, InterCo., Salt River, South KY, and Blue Grass) 2002.</p>
<p>Rate Schedule - Retail</p> <p>South Kentucky A rate, w/ FAC \$0.00879, ES \$0.00471 Columbia Gas rate GSR \$11.88/MMBTU</p> <p>Rate Schedule - Wholesale East Kentucky E-2 rate, w/ FAC \$0.00833, ES \$0.00446</p>	<p>Retail Rates Workbook, Pricing Group, 7/04, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006. Columbia Gas rate tariff effective May 31, 2006.,</p> <p>Retail Rates Workbook, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Participation - 150 per year, 10 years (2006-2015)</p>	<p>Average participation for 2004,2005 is 151.</p>
<p>Rebates Co-op to Participant \$450 EK to Co-op \$225</p>	<p>EKPC Marketing Summary of Coop Rebates dated April 2006; confirmed by 2005 Tracking data Partners Plus Reimbursement</p>

2006 IRP Air Source Heat Pump New Construction Program

Assumption

<p>Load Impacts Before Participant 6,275 kWh, 6.09 kW (coincident with winter system peak), 150 therms</p>	<p>HVAC end use technology choices in new construction market in absence of program. Natural gas furnace (25%), central air conditioning (25%), and standard efficiency new air source heat pump - SEER 13, HSPF 7.7 (75%). Shares were consensus of coop staff (5/02).</p>
<p>After Participant 6,865 kWh, 8.12 kW (coincident with winter system peak), 0 therms</p>	<p>High efficiency heat pump: SEER 15, HSPF 8.5</p>
<p>Lifetime of savings</p>	<p>20 Years</p>
<p>Generation Capacity Cost - Blend</p>	<p>Hours split and cost values from BIP analysis approved 8/25/2006. There are two categories: Peak and Blend. Peak is assigned to programs that provide savings in 2,887 hours of the year or fewer.</p>
<p>Participant Costs \$ 1,400</p>	<p>Difference between installed cost of SEER 15 heat pump -new construction (\$7,300) and the weighted installed cost of the default set of HVAC technologies (\$5,900).</p>
<p>Administrative Cost EK \$2,449</p>	<p>All cost estimates provided by EKPC Marketing/Communications, June 2005.</p>
<p>Co-op \$182 per new participant</p>	<p>Cost information provided by 7 Coops (Shelby, Clark, InterCo., Salt River, South KY, and Blue Grass) 2002.</p>
<p>Rate Schedule - Retail South Kentucky A rate, w/ FAC \$0.00879, ES \$0.00471 Columbia Gas rate GSR \$11.88/MMBTU Rate Schedule - Wholesale East Kentucky E-2 rate, w/ FAC \$0.00833, ES \$0.00446</p>	<p>Retail Rates Workbook, Pricing Group, 7/04, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006. Columbia Gas rate tariff effective May 31, 2006. Retail Rates Workbook, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Participation - 320 per year, 10 years (2006-2015)</p>	<p>Average participation for 2004,2005 is 322.</p>
<p>Rebates Co-op to Participant \$300 EK to Co-op \$150</p>	<p>EKPC Marketing Summary of Coop Rebates dated December 2004 Partners Plus Reimbursement</p>

Air Source Heat Pump Retrofit Program

2006 IRP

Source

Assumption

<p>Load Impacts Before Participant 5,996 kWh, 5.69 kW (coincident with winter system peak), 180 therms</p>	<p>HVAC end use technology choices in this retrofit market in absence of program. Natural gas furnace (30%), central air conditioning (30%), and standard efficiency new air source heat pump - SEER 13, HSPF 7.7 (70%). Shares were derived from 2005 tracking data.</p>
<p>After Participant 6,865 kWh, 8.12 kW (coincident with winter system peak), 0 therms</p>	<p>High efficiency heat pump: SEER 15, HSPF 8.5</p>
<p>Lifetime of savings</p>	<p>20 Years</p>
<p>Generation Capacity Cost - Blend</p>	<p>Hours split and cost values from BIP analysis approved 8/25/2006. There are two categories: Peak and Blend. Peak is assigned to programs that provide savings in 2,887 hours of the year or fewer.</p>
<p>Participant Costs \$ 1,400</p>	<p>Difference between installed cost of SEER 15 heat pump and weighted average installed cost of set of HVAC technology choices in absence of the program.</p>
<p>Administrative Cost EK \$916 fixed annual (2006-2015)</p> <p>Co-op \$182 per new participant</p>	<p>All cost estimates provided by EKPC Marketing/Communications, June 2005. Cost information provided by 7 Coops (Shelby, Clark, InterCo., Salt River, South KY, and Blue Grass) 2002.</p>
<p>Rate Schedule - Retail South Kentucky A rate, w/ FAC \$0.00879, ES \$0.00471 Columbia Gas rate GSR \$11.88/MMBTU Rate Schedule - Wholesale East Kentucky E-2 rate, w/ FAC \$0.00833, ES \$0.00446</p>	<p>Retail Rates Workbook, Pricing Group, 7/04, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006. Columbia Gas rate tariff effective May 31, 2006., Retail Rates Workbook, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Participation - 340 per year, 10 years (2006-2015)</p>	<p>Average participation for 2004,2005 is 344.</p>
<p>Rebates Co-op to Participant \$300 EK to Co-op \$150</p>	<p>EKPC Marketing Summary of Coop Rebates dated December 2004 Partners Plus Reimbursement</p>

Tune-Up HVAC Maintenance Program

2006 IRP

<u>Assumption</u>	<u>Source</u>
<p>Load Impacts Before Participant 11,286 kWh, 8.96 kW (coincident with winter system peak)</p>	<p>HVAC loads for a typical heat pump in typical residence</p>
<p>After Participant 9,932 kWh, 7.89 kW (coincident with winter system peak)</p>	<p>HVAC loads for a typical heat pump home reduced by 12% savings. 12 % savings derived from ACEEE report and site specific blower door results.</p>
<p>Lifetime of savings</p>	<p>12 Years</p>
<p>Generation Capacity Cost - Blend</p>	<p>Hours split and cost values from BIP analysis approved 8/25/2006. There are two categories: Peak and Blend. Peak is assigned to programs that provide savings in 2,887 hours of the year or fewer.</p>
<p>Participant Costs \$ 300.00</p>	<p>Average payment to contractors for performing the measures in the program. Source: EKPC Marketing Department - based on Jackson program</p>
<p>Administrative Cost EK \$3,409 Co-op \$260 per customer</p>	<p>All cost estimates provided by EKPC Marketing/Communications, June 2005. Cost information provided by 4 Coops (InterCo., Nolin, South KY, and Blue Grass) 2003.</p>
<p>Rate Schedule - Retail South Kentucky A rate, w/ FAC \$0.00879, ES \$0.00471</p>	<p>Retail Rates Workbook, Pricing Group, 7/04, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Rate Schedule - Wholesale East Kentucky E-2 rate, w/ FAC \$0.00833, ES \$0.00446</p>	<p>Retail Rates Workbook, updated for fuel cost roll-in (May 2005), updated FAC , ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Participation - 350 per year, 10 years (2006-2015)</p>	<p>Average participation over 4 years (2002 - 2005) is 338 per year</p>
<p>Rebates Co-op to Participant \$260 EK to Co-op \$130</p>	<p>Average payment to contractors is \$300; participating member pays \$40. Partners Plus Reimbursement (50% of coop rebate)</p>

Button-Up Weatherization Program

2006 IRP

Source

Assumption

<p>Load Impacts Before Participant 11286 kWh, 8.96 kW (coincident with winter system peak)</p>	<p>Typical heat pump in typical residence</p>
<p>After Participant 8882 kWh, 7.05 kW (coincident with winter system peak)</p>	<p>21.3% savings applied to typical heat pump. Savings derived from site specific engineering estimates and impact.</p>
<p>Lifetime of savings</p>	<p>15 Years</p>
<p>Generation Capacity Cost - Blend</p>	<p>Hours split and cost values from BIP analysis approved 8/25/2006. There are two categories: Peak and Blend. Peak is assigned to programs that provide savings in 2,887 hours of the year or fewer.</p>
<p>Participant Costs \$ 563</p>	<p>Farmers RECC 4/02.</p>
<p>Administrative Cost EK \$4,038 Co-op \$140 per new participant</p>	<p>All cost estimates provided by EKPC Marketing/Communications, June 2005. Cost information provided by 4 Coops (InterCo., Nolin, South KY, and Blue Grass) 2003.</p>
<p>Rate Schedule - Retail South Kentucky A rate, w/ FAC \$0.00879, ES \$0.00471</p>	<p>Retail Rates Workbook, Pricing Group, 7/04, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Rate Schedule - Wholesale East Kentucky E-2 rate, w/ FAC \$0.00833, ES \$0.00446</p>	<p>Retail Rates Workbook, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Participation - 500 per year, 10 years (2006-2015)</p>	<p>Average participation over 8 years (1998 - 2005) is 509 per year</p>
<p>Rebates Co-op to Participant \$300 EK to Co-op \$150</p>	<p>EKPC Marketing Summary of Coop Rebates dated December 2004 Partners Plus Reimbursement</p>

Exhibit DSM-5
New DSM Programs
Assumption Sheets

Compact Fluorescent Lighting Program

2006 IRP

<u>Assumption</u>	<u>Source</u>
<p>Load Impacts Before Participant 130 kWh, 0.02 kW (coincident with winter system peak), 0 therms</p>	<p>2 standard incandescent bulbs. 2 @ 65 kWh each. 60 watts times 3 hours a day times 365 days per year</p>
<p>After Participant 30 kWh, 0.005 kW (coincident with winter system peak), 0 therms</p>	<p>2 compact fluorescent light bulbs at 15 kWh each (14 watts).</p>
<p>Lifetime of savings</p>	<p>7 Years. 9,000 hour rated life, 20% attrition (removals)</p>
<p>Generation Capacity Cost - Blend</p>	<p>Hours split and cost values from BIP analysis approved 8/25/2006. There are two categories: Peak and Blend. Peak is assigned to programs that provide savings in 2,887 hours of the year or fewer.</p>
<p>Participant Costs \$ 0</p>	<p>Two pack of bulbs are given out to each member at the annual meetings.</p>
<p>Administrative Cost EK \$850 fixed annual (2006-2015), \$ 2.20 per new participant</p>	<p>All cost estimates provided by EKPC Marketing/Communications, Jeff H, May 2006. At 2006 annual meeting, EK subsidized the KAEC cost by \$1.10 per bulb. Co-ops would otherwise be providing standard bulbs, so incremental admin costs are zero. Coops cover the remaining \$0.70 per bulb, which represents the cost of a standard light bulb. Thus, incremental product costs for the coop are also zero (covered by EKPC).</p>
<p>Co-op \$0 per new participant</p>	
<p>Rate Schedule - Retail</p>	
<p>South Kentucky A rate, w/ FAC \$0.00879, ES \$0.00471</p>	<p>Retail Rates Workbook, Pricing Group, 7/04, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Rate Schedule - Wholesale East Kentucky E-2 rate, w/ FAC \$0.00833, ES \$0.00446</p>	<p>Retail Rates Workbook, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Participation - 37,700 per year, 10 years (2006-2015). Units are two-pack bulbs. 10% free riders.</p>	<p>Based on # of bulbs purchased for 2006 annual meetings. Free rider estimate is from California PUC Energy Efficiency Policy Manual. Free rider is defined as a program participant who would have installed the measure anyway even without the program.</p>
<p>Rebates Co-op to Participant \$0 EK to Co-op \$)</p>	<p>Rebates are not a feature of this program Rebates are not a feature of this program</p>

2006 IRP

Touchstone Energy Geothermal Home

Assumption

Source

Load Impacts Before Participant 15,378 kWh, 12.17 kW (coincident with winter system peak), 0 therms	Baseline efficiency heat pump: SEER 13, HSPF 7.7. Scaled for a 2,500 square foot home. All Seasons Comfort Home standards. Standard electric hot water heater.
After Participant 9,772 kWh, 4.05 kW (coincident with winter system peak), 0 therms	Geothermal heat pump for 2,500 square foot home built to Touchstone Energy Home standards, Electric water heater with desuperheater from geothermal.
Lifetime of savings	20 Years
Generation Capacity Cost - Blend	Hours split and cost values from BIP analysis approved 8/25/2006. There are two categories: Peak and Blend. Peak is assigned to programs that provide savings in 2,887 hours of the year or fewer.
Participant Costs \$ 2,950	Participant cost includes (1) Cost premium associated with the installed cost of the geothermal system over and above the installed cost of the default system; and (2) incremental costs of going from ASCH to Touchstone Energy standards.
Administrative Cost EK \$2,111 fixed annual (2006 - 2015); \$99 per new participant	All cost estimates provided by EKPC Marketing/Communications, June 2005.
Co-op \$182 per new participant	Cost information provided by 7 Coops (Shelby, Clark, InterCo., Salt River, South KY, and Blue Grass) 2002.
Rate Schedule - Retail	
South Kentucky A rate, w/ FAC \$0.00879, ES \$0.00471	Retail Rates Workbook, Pricing Group, 7/04, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.
Rate Schedule - Wholesale East Kentucky E-2 rate, w/ FAC \$0.00833, ES \$0.00446	Retail Rates Workbook, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.
Participation - 40 per year, 10 years (2006-2015)	Actual participation in 2005.
Rebates Co-op to Participant \$700 EK to Co-op \$350	EKPC Marketing Summary of Coop Rebates dated April 2006; confirmed by 2005 tracking data Partners Plus Reimbursement

Touchstone Energy Home with Air Source Heat Pump

2006 IRP

<u>Assumption</u>	<u>Source</u>
<p>Load Impacts Before Participant 12,490 kWh, 9.11 kW (coincident with winter system peak), 0 therms</p>	<p>Baseline efficiency heat pump: SEER 13, HSPF 7.7, 1700 square foot home, built to All Seasons Comfort Home standards. Standard electric hot water heater.</p>
<p>After Participant 10,308 kWh, 7.82 kW (coincident with winter system peak), 0 therms</p>	<p>High efficiency air source heat pump: SEER 15, HSPF 8.5, 1700 square foot home, built to Touchstone Energy Home standards. Efficient electric hot water heater.</p>
<p>Lifetime of savings</p>	<p>20 Years</p>
<p>Generation Capacity Cost - Blend</p>	<p>Hours split and cost values from BIP analysis approved 8/25/2006. There are two categories: Peak and Blend. Peak is assigned to programs that provide savings in 2,887 hours of the year or fewer.</p>
<p>Participant Costs \$ 2,125</p>	<p>Includes (1) incremental cost of SEER 15 heat pump compared to SEER 13 one; (2) costs associated with bringing ASCH to Touchstone Energy standards; and (3) incremental cost of an efficient water heater. Cost estimates from DOE analysis, marketing dept sources, and Blue Grass tracking data (water heater).</p>
<p>Administrative Cost EK \$13,535 fixed annual (2006-2015), \$ 99 per new participant</p>	<p>All cost estimates provided by EKPC Marketing/Communications, June 2005.</p>
<p>Co-op \$182 per new participant</p>	<p>Cost information provided by 7 Coops (Shelby, Clark, InterCo., Salt River, South KY, and Blue Grass) 2002.</p>
<p>Rate Schedule - Retail South Kentucky A rate, w/ FAC \$0.00879, ES \$0.00471</p>	<p>Retail Rates Workbook, Pricing Group, 7/04, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Rate Schedule - Wholesale East Kentucky E-2 rate, w/ FAC \$0.00833, ES \$0.00446</p>	<p>Retail Rates Workbook, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Participation - 100 per year, 10 years (2006-2015)</p>	<p>Actual participation for 2005 was 92. Program is in third year, still ramping up its participation.</p>
<p>Rebates Co-op to Participant \$500 EK to Co-op \$250</p>	<p>EKPC Marketing Summary of Coop Rebates dated April 2006 Partners Plus Reimbursement</p>

Touchstone Energy Manufactured Home

2006 IRP

Source

Assumption

Load Impacts

Before Participant
17,194 kWh, 9.73 kW (coincident with
winter system peak), 3.11 kW (summer)

Heating & cooling electricity loads for a standard efficiency manufactured home

After Participant

12,036 kWh, 6.81 kW (coincident with
winter system peak), 2.18 kW (summer)

30% savings achieved by Manufactured Home conforming to Touchstone Energy standards
(Marketing 2002)

Lifetime of savings

20 Years

Hours split and cost values from BIP analysis approved 8/25/2006. There are two categories:
Peak and Blend. Peak is assigned to programs that provide savings in 2,887 hours of the year
or fewer.

Generation Capacity Cost - Blend

Participant Costs \$ 1,000

Marketing Dept 2002 (Moller memo 3/02)

Administrative Cost

EK \$ 3183 fixed annual (2006-2015), \$0
per new participant

All cost estimates provided by EKPC Marketing/Communications, June 2005.

Cost information provided by 7 Coops (Shelby, Clark, InterCo., Salt River, South KY, and Blue
Grass) 2002.

Rate Schedule - Retail

South Kentucky A rate, w/ FAC \$0.00879,
ES \$0.00471

Retail Rates Workbook, Pricing Group, 7/04, updated for fuel cost roll-in (May 2005), updated
FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.

Rate Schedule - Wholesale

East Kentucky E-2 rate, w/ FAC \$0.00833,
ES \$0.00446

Retail Rates Workbook, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006.
Escalation factors derived from financial forecast as of June 2006.

Participation - 10 per year, 10 years (2006-
2015)

Average participation for 2004, 2005 is 7.

Rebates

Co-op to Participant \$300
EK to Co-op \$150

EKPC Marketing Summary of Coop Rebates dated April 2006
Partners Plus Reimbursement

DLC Program for AC and DHW combined

2006 IRP

Source

Assumption

<p>Load Impacts Before Participant 6,702 kWh, 1.03 kW (coincident with winter system peak), 2.70 kW (summer)</p> <p>After Participant 6,688 kWh, 0.00 kW (coincident with winter system peak), 1.30 kW (summer)</p>	<p>Typical residential central air conditioner & efficient electric water heater</p> <p>CAC load control is 50% cycling on peak days June through Sept. Water heater load control is 3 hour curtailment on peak days every month of the year.</p>
<p>Lifetime of savings</p>	<p>20 Years.</p>
<p>Generation Capacity Cost - Peaking</p>	<p>Hours split and cost values from BIP analysis approved 8/25/2006. There are two categories: Peak and Blend. Peak is assigned to programs that provide savings in 2,887 hours of the year or fewer.</p>
<p>Participant Costs \$ 0</p>	<p>Participant does not bear any direct costs in this program.</p>
<p>Administrative Cost EK: \$80,000 one time for each new coop, \$5,150 fixed annual per coop through 2025, \$150 per new participant (one time) and \$1 per participant (each year)</p> <p>Coop: \$80,000 one time for each new coop, \$5,150 fixed annual per coop through 2025, \$150 per new participant (one time) and \$1 per participant (each year)</p>	<p>Note: all admin costs are escalated at 3% per year. Values here are for 2006.</p> <p>Based on DLC demonstration program as filed with PSC in January 2006. Assume 8 coops participate, added in 1 per year from 2006 through 2013. Modelled as 50% cost sharing with coops (EKPC pays 50% and the coops pay 50% of these fixed costs). Uses existing AMFR system at each coop.</p> <p>50% cost sharing with EKPC.</p>
<p>Rate Schedule - Retail South Kentucky A rate, w/ FAC \$0.00879, ES \$0.00471</p>	<p>Retail Rates Workbook, Pricing Group, 7/04, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Rate Schedule - Wholesale East Kentucky E-2 rate, w/ FAC \$0.00833, ES \$0.00446</p>	<p>Retail Rates Workbook, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Participation - 5,000 new per year, 10 years (2006-2015)</p>	<p>Assumes 20% penetration rate for 50% of the eligible population (8 participating coops). Total of 50,000 ultimate participants by 2015.</p>
<p>Rebates Co-op to Participant \$30 per year EK to Co-op \$15 per year</p>	<p>As filed; this is for two appliances (CAC and water heater). Partners Plus Reimbursement</p>

ENERGY STAR Clothes Washer Rebate Program

2006 IRP

<u>Assumption</u>	<u>Source</u>
<p>Load Impacts Before Participant 5,450 kWh, 1.29 kW (coincident with winter system peak), 0.47 kW (summer)</p>	<p>Typical electric water heater with typical electric dryer. Electricity savings from ENERGY STAR Clothes washers come from lower water heating and clothes drying energy.</p>
<p>After Participant 5,100 kWh, 1.20 kW (coincident with winter system peak), 0.44 kW (summer)</p>	<p>ENERGY STAR clothes washers save on average 250 kWh on water heating and 100 kWh on clothes drying each year.</p>
<p>Lifetime of savings 12 years</p>	<p>Source: Northeast Energy Efficiency Partnership (NEEP) planning document (Sept 2004).</p>
<p>Generation Capacity Cost - Blend</p>	<p>Hours split and cost values from BIP analysis approved 8/25/2006. There are two categories: Peak and Blend. Peak is assigned to programs that provide savings in 2,887 hours of the year or fewer.</p>
<p>Participant Costs \$240 one time; -20 per year O&M cost</p>	<p>Difference between retail price of an ENERGY STAR clothes washer and a new standard efficiency washer. Source: NEEP (2004). The negative \$20 per year O&M cost represents savings in water and sewer costs by using less water.</p>
<p>Administrative Cost EK \$2000 fixed annual (2006-2015), \$0 per new participant Co-op \$10 per new participant</p>	<p>Marketing with Trade Allies. Rebate program with mail in form. Form processing time.</p>
<p>Rate Schedule - Retail South Kentucky A rate, w/ FAC \$0.00879, ES \$0.00471</p>	<p>Retail Rates Workbook, Pricing Group, 7/04, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Rate Schedule - Wholesale East Kentucky E-2 rate, w/ FAC \$0.00833, ES \$0.00446</p>	<p>Retail Rates Workbook, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Participation - 500 per year, 10 years (2006-2015)</p>	<p>Share increase of 7% in target market assuming multiplier effect of 3:1 (although free drivers not modelled).</p>
<p>Rebates Co-op to Participant \$50 EK to Co-op \$25</p>	<p>Based on survey of current utility programs in US Partners Plus Reimbursement</p>

ENERGY STAR Room AC Program

2006 IRP

Source

Assumption

<p>Load Impacts Before Participant 1,100 kWh, 0.00 kW (coincident with winter system peak), 1.80 kW (summer)</p> <p>After Participant 1,000 kWh, 0.00 kW (coincident with winter system peak), 1.64 kW (summer)</p> <p>Lifetime of savings</p> <p>Generation Capacity Cost - Peak</p>	<p>Standard efficiency new Room Air Conditioner</p> <p>ENERGY STAR Room Air Conditioner</p> <p>15 Years</p> <p>Hours split and cost values from BIP analysis approved 8/25/2006. There are two categories: Peak and Blend. Peak is assigned to programs that provide savings in 2,887 hours of the year or fewer.</p>
<p>Participant Costs \$ 75</p>	<p>Difference between cost of ENERGY STAR Room AC and standard new Room AC. Source: ENERGY STAR, DEEM</p>
<p>Administrative Cost EK \$2000 fixed annual (2006-2015), \$0 per new participant</p> <p>Co-op \$10 per new participant</p>	<p>Marketing with Trade Allies. Rebate program with mail in form.</p> <p>Form processing time.</p>
<p>Rate Schedule - Retail South Kentucky A rate, w/ FAC \$0.00879, ES \$0.00471</p>	<p>Retail Rates Workbook, Pricing Group, 7/04, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Rate Schedule - Wholesale East Kentucky E-2 rate, w/ FAC \$0.00833, ES \$0.00446</p> <p>Participation - 600 per year, 10 years (2006-2015)</p>	<p>Retail Rates Workbook, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p> <p>Targetting 10% of the new Room AC purchase market each year.</p>
<p>Rebates Co-op to Participant \$25 EK to Co-op \$12.50</p>	<p>Survey of current REC programs in US Partners Plus Reimbursement</p>

ENERGY STAR Refrigerator Rebate Program

2006 IRP

<u>Assumption</u>	<u>Source</u>
<p>Load Impacts Before Participant 600 kWh, 0.057 kW (coincident with winter system peak), 0.087 kW (summer)</p>	<p>New refrigerator meeting current Federal standards for efficiency</p>
<p>After Participant 500 kWh, 0.047 kW (coincident with winter system peak), 0.072 kW (summer)</p>	<p>New ENERGY STAR Refrigerator. Source: USDOE Technical Analysis of Amended Standards for Residential Refrigerator-Freezers, October 2005.</p>
<p>Lifetime of savings</p>	<p>15 Years</p>
<p>Generation Capacity Cost - Blend</p>	<p>Hours split and cost values from BIP analysis approved 8/25/2006. There are two categories: Peak and Blend. Peak is assigned to programs that provide savings in 2,887 hours of the year or fewer.</p>
<p>Participant Costs \$ 35</p>	<p>Incremental cost for the more efficient ENERGY STAR model. Source: USDOE Technical Analysis of Amended Standards for Residential Refrigerator-Freezers, October 2005.</p>
<p>Administrative Cost EK \$2000 fixed annual (2006-2015), \$0 per new participant</p>	<p>Marketing with Trade Allies. Rebate program with mail in form.</p>
<p>Co-op \$10 per new participant</p>	<p>Form processing time.</p>
<p>Rate Schedule - Retail</p>	<p>Retail Rates Workbook, Pricing Group, 7/04, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Rate Schedule - Wholesale East Kentucky E-2 rate, w/ FAC \$0.00833, ES \$0.00446</p>	<p>Retail Rates Workbook, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Participation - 900 per year, 10 years (2006-2015), 10% free riders (90 per year)</p>	<p>4% penetration of annual purchase market for new refrigerators. Free rider estimate is from California PUC Energy Efficiency Policy Manual. Free rider is defined as a program participant who would have installed the measure anyway even without the program.</p>
<p>Rebates Co-op to Participant \$20 EK to Co-op \$10</p>	<p>Based on survey of current utility programs in US Partners Plus Reimbursement</p>

Programmable Thermostat with Electric Furnace Retrofit Program

2006 IRP

Source

<u>Assumption</u>	
Load Impacts Before Participant 14,936 kWh, 9.62 kW (coincident with winter system peak), 2.05 kW (summer)	Typical electric furnace with standard efficiency central air conditioner in existing 1700 square foot home
After Participant 14,187 kWh, 9.62 kW (coincident with winter system peak), 1.95 kW (summer)	5 % savings on annual kWh from operation of programmable thermostat.
Lifetime of savings	11 Years
Generation Capacity Cost - Blend	Hours split and cost values from BIP analysis approved 8/25/2006. There are two categories: Peak and Blend. Peak is assigned to programs that provide savings in 2,887 hours of the year or fewer.
Participant Costs \$ 75	Installed cost of a programmable thermostat.
Administrative Cost EK \$1000 fixed annual (2006-2015), \$0 per new participant	Rebate program with mail in form.
Co-op \$10 per new participant	Form processing time.
Rate Schedule - Retail South Kentucky A rate, w/ FAC \$0.00879, ES \$0.00471	Retail Rates Workbook, Pricing Group, 7/04, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.
Rate Schedule - Wholesale East Kentucky E-2 rate, w/ FAC \$0.00833, ES \$0.00446	Retail Rates Workbook, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.
Participation - 650 per year, 10 years (2006-2015)	Achieves 10% increase in penetration of programmable thermostats among existing homes with electric furnace and central AC by 2015.
Rebates Co-op to Participant \$25 EK to Co-op \$12.50	Based on survey of current utility programs in US Partners Plus Reimbursement

2006 IRP

Dual Fuel Air Source Heat Pump with Propane Retrofit Program

Assumption

Load Impacts

Before Participant
0 kWh, 0.00 kW (coincident with winter system peak), 775 gallons

After Participant
4,003 kWh, 0.00 kW (coincident with winter system peak), 104 gallons

Lifetime of savings

20 Years

Generation Capacity Cost - Blend

Hours split and cost values from BIP analysis approved 8/25/2006. There are two categories: Peak and Blend. Peak is assigned to programs that provide savings in 2,887 hours of the year or fewer.

Participant Costs \$ 3,500

Includes add-on heat pump components, new thermostat, and installation costs. Provided by Roy Honican October 2005.

Administrative Cost

EK \$916 fixed annual (2006-2015), \$0 per new participant

All cost estimates provided by EKPC Marketing/Communications, June 2005. Based on heat pump retrofit program

Co-op \$182 per new participant

Cost information provided by 7 Coops (Shelby, Clark, InterCo., Salt River, South KY, and Blue Grass) 2002.

Rate Schedule - Retail

South Kentucky A rate, w/ FAC \$0.00879, ES \$0.00471

Retail Rates Workbook, Pricing Group, 7/04, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006. Midrange of retail prices, July 2006 (Armstrong).

Propane rate is \$ 1.84 per gallon

Rate Schedule - Wholesale

East Kentucky E-2 rate, w/ FAC \$0.00833, ES \$0.00446

Retail Rates Workbook, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.

Participation - 100 per year, 10 years (2006-2015)

Based on planning estimates used by coops considering the program.

Rebates

Co-op to Participant \$300
EK to Co-op \$150

EKPC Marketing Summary of Coop Rebates dated April 2006. Based on heat pump retrofit program. Partners Plus Reimbursement

Commercial Lighting Program

2006 IRP

<u>Assumption</u>	<u>Source</u>
<p>Load Impacts Before Participant 21,000 kWh, 2.24 kW (coincident with winter system peak), 4.19 kW (summer)</p>	<p>Lighting load for typical 3,500 square foot commercial building. EUI of 6 kWh per square foot (sources: EPRI Market Profiles, Duke Power end use metering study).</p>
<p>After Participant 16,275 kWh, 1.73 kW (coincident with winter system peak), 3.25 kW (summer)</p>	<p>Lighting load for 3,500 square foot building with 22.5% savings applied. Based on achievable potential reported by several sources: EPA, utility impact evaluations.</p>
<p>Lifetime of savings</p>	<p>10 Years (source: DEEM database)</p>
<p>Generation Capacity Cost - Blend</p>	<p>Hours split and cost values from BIP analysis approved 8/25/2006. There are two categories: Peak and Blend. Peak is assigned to programs that provide savings in 2,887 hours of the year or fewer.</p>
<p>Participant Costs \$ 1,200 per customer</p>	<p>Midrange of reported values from several programs in NY, CA, MA, Northeast, and national. Used \$0.255 per annual saved kWh (NEEP 2004).</p>
<p>Administrative Cost EK \$ 20,000 fixed annual (2006-2015), \$150 per new participant</p>	<p>Survey of utility programs - includes setup, marketing, contractor relations, monitoring & eval, customer field work</p>
<p>Co-op \$ 0 per new participant</p>	<p>EKPC manages rebates, QC and marketing</p>
<p>Rate Schedule - Retail South Kentucky B rate, w/ FAC \$0.00879, ES \$0.00471</p>	<p>Retail Rates Workbook, Pricing Group, 7/04, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Rate Schedule - Wholesale East Kentucky E-2 rate, w/ FAC \$0.00833, ES \$0.00446</p>	<p>Retail Rates Workbook, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Participation - 570 per year, 10 years (2006-2015), 5% free riders</p>	<p>This rate brings cumulative participation to 20% of commercial customers over the 10 years. Free rider based on studies done by CA PUC and National Grid. Free rider is a participant who would have installed the measure anyway in the absence of the program.</p>
<p>Rebates Co-op to Participant \$266 EK to Co-op \$665</p>	<p>C&I Energy Services offers \$213 per kW of reduced lighting load. Used 90% coincidence factor 100% of the rebate to participant plus transfer payment of \$320 per kW (revenue loss).</p>

C&I Demand Response Program

2006 IRP

Source

Assumption

<p>Load Impacts Before Participant 10,500 kWh, 35.0 kW (coincident with winter system peak), 35.0 kW (summer)</p> <p>After Participant 0 kWh, 0.0 kW (coincident with winter system peak), 0.0 kW (summer)</p>	<p>This is the curtailable load, consisting of a 35 kW load during the 300 highest priced hours using marginal energy costs. 36 kW represents 15% of the average peak demand for the EKPC customer base with peak demands above 50 kW. Source: load research and billing data.</p> <p>Zero load, since the curtailable load is curtailed.</p>
<p>Lifetime of savings</p>	<p>20 Years</p> <p>Hours split and cost values from BIP analysis approved 8/25/2006. There are two categories: Peak and Blend. Peak is assigned to programs that provide savings in 2,887 hours of the year or fewer.</p>
<p>Generation Capacity Cost - Peaker</p>	<p>One time cost is the metering cost; annual cost is for program administration and communications: receiving curtailment notices, responding, accounting. Onsite generation is not assumed, and so costs for operating on-site generation (fuel or O&M) are not included.</p>
<p>Participant Costs \$ 500 one time per new participant; \$500 per participant per year</p>	<p>One time cost is to design program, purchase & install curtailment infrastructure (software, hardware, training). Annual cost is for administering the program each year.</p>
<p>Administrative Cost</p>	<p>Marketing, customer assistance, coordination</p>
<p>Co-op \$300 annual per participant per year</p>	<p>Marketing, customer assistance, coordination</p>
<p>Rate Schedule - Retail South Kentucky B rate, w/ FAC \$0.00879, ES \$0.00471</p>	<p>Retail Rates Workbook, Pricing Group, 7/04, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Rate Schedule - Wholesale East Kentucky E-2 rate, w/ FAC \$0.00833, ES \$0.00446</p>	<p>Retail Rates Workbook, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Participation - add 150 in 2006, add 200 in 2007, add 150 in 2008</p> <p>Rebates Co-op to Participant \$500 one-time; \$875 per year EK to Co-op \$500 one-time; \$875 per year</p>	<p>After ramp up, 10% of the eligible customers, or 500 customers, participate.</p> <p>One time rebate for meter cost; annual is payment of \$25 per kW-year 100% reimbursement</p>

Commercial Efficient HVAC Program

2006 IRP

Source

Assumption

Load Impacts

Before Participant
11,875 kWh, 1.87 kW (coincident with winter system peak), 3.52 kW (summer)

After Participant
10,482 kWh, 1.73 kW (coincident with winter system peak), 3.05 kW (summer)

Lifetime of savings 15 years

Generation Capacity Cost - Blend

Participant Costs \$ 650

Administrative Cost

EK \$4000 fixed annual (2006-2015), \$0 per new participant

Co-op \$10 per new participant

Rate Schedule - Retail

South Kentucky B rate, w/ FAC \$0.00879, ES \$0.00471
Columbia Gas rate GSR \$11.88/MMBTU

Rate Schedule - Wholesale
East Kentucky E-2 rate, w/ FAC \$0.00833, ES \$0.00446

Participation - 150 per year, 10 years (2006-2015)

Rebates

Co-op to Participant \$325

EK to Co-op \$402.50

Typical 2,500 square foot commercial building, 50% unitary AC, 50% heat pump, standard efficiency HVAC = SEER 13, HSPF 7.7

Typical 2,500 square foot commercial building, 50% unitary AC, 50% heat pump, high efficiency HVAC = SEER 15, HSPF 8.3.

15 Years (Northeast Energy Efficiency Partnership, Minn. Municipal Utilities, CA PUC)

Hours split and cost values from BIP analysis approved 8/25/2006. There are two categories: Peak and Blend. Peak is assigned to programs that provide savings in 2,887 hours of the year or fewer.

NEEP

Marketing, Trade Allies, Tracking, Processing, Eval, Cust Svc. Rebate program with mail in form.

Form processing time.

Retail Rates Workbook, Pricing Group, 7/04, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006. Columbia Gas rate tariff effective May 31, 2006.

Retail Rates Workbook, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.

Targeting 10% market share of HVAC replacement market.

Industry practice is 50% of incremental cost 50% reimbursement of customer rebate, plus \$60 per SEER increase, \$60 per 0.3 HSPF increase to compensate for lost revenues (EKPC C&I Energy Services program)

2006 IRP

Commercial Building Performance Program
{Tune Up for small buildings; Retro-Commissioning for large buildings - combined }

Assumption

Source

Load Impacts

Before Participant
13,875 kWh, 2.77 kW (coincident with
winter system peak), 3.07 kW (summer)

Typical 2,500 square foot commercial building, 50% unitary AC, 50% heat pump: heating,
cooling and ventilation loads

After Participant
10,800 kWh, 2.16 kW (coincident with
winter system peak), 2.39 kW (summer)

Same building after building performance measures are done: savings are 1.23 kWh per square
foot.

Lifetime of savings 7 years

ACEEE, NEEP

Generation Capacity Cost - Blend

Hours split and cost values from BIP analysis approved 8/25/2006. There are two categories:
Peak and Blend. Peak is assigned to programs that provide savings in 2,887 hours of the year
or fewer.

Participant Costs \$ 1,075

\$0.43 per square foot; based on Dorthwest Energy Efficiency Alliance study.

Administrative Cost

EK \$4000 fixed annual (2006-2015), \$0 per
new participant

Marketing, Trade Allies, Tracking, Onsite, Eval, Cust Svc.

Co-op \$260 per new participant

Based on Residential Tune-Up program

Rate Schedule - Retail

South Kentucky B rate, w/ FAC \$0.00879,
ES \$0.00471

Retail Rates Workbook, Pricing Group, 7/04, updated for fuel cost roll-in (May 2005), updated
FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.

Rate Schedule - Wholesale

East Kentucky E-2 rate, w/ FAC \$0.00833,
ES \$0.00446

Retail Rates Workbook, updated for fuel cost roll-in (May 2005), updated FAC , ES for 2006.
Escalation factors derived from financial forecast as of June 2006.

Participation - 200 per year, 10 years (2006
2015)

Achieves 10% penetration of applicable market in 10 years

Rebates

Co-op to Participant \$538
EK to Co-op \$509

50% of measure costs
Tune-Up 5 ton rebate to coop for lost revenues (\$240) plus 50% of participant rebate

Commercial New Construction Program

2006 IRP

<u>Assumption</u>	<u>Source</u>
<p>Load Impacts Before Participant 100,000 kWh, 13.57 kW (coincident with winter system peak), 27.00 kW (summer)</p>	<p>New construction 5,000 square foot facility, 20% heat pump heat</p>
<p>After Participant 90,000 kWh, 12.21 kW (coincident with winter system peak), 24.30 kW (summer)</p>	<p>New construction 5,000 square foot facility with 10% savings in lighting, cooling, and heating</p>
<p>Lifetime of savings 20 years</p>	<p>Northeast Energy Efficiency Partnership, Sept 2004 (NEEP).</p>
<p>Generation Capacity Cost - Blend</p>	<p>Hours split and cost values from BIP analysis approved 8/25/2006. There are two categories: Peak and Blend. Peak is assigned to programs that provide savings in 2,887 hours of the year or fewer.</p>
<p>Participant Costs \$ 5,600</p>	<p>Based on \$0.56 per annual kWh reported costs (NEEP)</p>
<p>Administrative Cost EK \$4000 fixed annual (2006-2015), \$ 100 per new participant</p>	<p>Fixed annual: marketing, trade ally, tracking & processing, customer support. The per participant cost is based on the Touchstone Energy Geothermal program.</p>
<p>Co-op \$200 per new participant</p>	<p>Based on Touchstone Energy Geothermal program (residential new construction).</p>
<p>Rate Schedule - Retail South Kentucky B rate, w/ FAC \$0.00879, ES \$0.00471</p>	<p>Retail Rates Workbook, Pricing Group, 7/04, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Rate Schedule - Wholesale East Kentucky E-2 rate, w/ FAC \$0.00833, ES \$0.00446</p>	<p>Retail Rates Workbook, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Participation - 80 per year, 10 years (2006-2015)</p>	<p>Annual commercial new construction floorspace from employment forecast. Targeting 20% penetration each year.</p>
<p>Rebates Co-op to Participant \$2,800 EK to Co-op \$3,400</p>	<p>Industry practice is 50% of incremental cost 50% reimbursement of customer rebate, plus reimbursement to compensate for lost revenues (EKPC C&I Energy Services program)</p>

Commercial Efficient Refrigeration

2006 IRP

Source

Assumption

<p>Load Impacts Before Participant 40,000 kWh, 4.02 kW (coincident with winter system peak), 5.98 kW (summer)</p> <p>After Participant 28,000 kWh, 2.81 kW (coincident with winter system peak), 4.18 kW (summer)</p>	<p>Typical 2,500 square foot commercial building, with standard efficiency refrigeration equivalent to energy intensity of grocery store refrigeration (kWh per square foot)</p> <p>2,500 square foot commercial building with Energy Star level efficiency refrigeration</p>
<p>Lifetime of savings 10 years</p>	<p>ACEEE 2002 report</p>
<p>Generation Capacity Cost - Blend</p>	<p>Hours split and cost values from BIP analysis approved 8/25/2006. There are two categories: Peak and Blend. Peak is assigned to programs that provide savings in 2,887 hours of the year or fewer.</p>
<p>Participant Costs \$ 1,750</p>	<p>Based on cost per annual kWh in AD Little 1996 report adjusted to 2006 \$</p>
<p>Administrative Cost EK \$4000 fixed annual (2006-2015), \$0 per new participant</p> <p>Co-op \$10 per new participant</p>	<p>Marketing, Trade Ally, Tracking & Processing, Customer support</p> <p>Rebate processing</p>
<p>Rate Schedule - Retail South Kentucky B rate, w/ FAC \$0.00879, ES \$0.00471</p>	<p>Retail Rates Workbook, Pricing Group, 7/04, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Rate Schedule - Wholesale East Kentucky E-2 rate, w/ FAC \$0.00833, ES \$0.00446</p>	<p>Retail Rates Workbook, updated for fuel cost roll-in (May 2005), updated FAC , ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Participation - 35 per year, 10 years (2006-2015)</p>	<p>Achieves 20% penetration in 10 years</p>
<p>Rebates Co-op to Participant \$875 EK to Co-op \$ 2,838</p>	<p>Industry practice is 50% of incremental cost 50% reimbursement of customer rebate, plus reimbursement to compensate for lost revenues (EKPC C&I Energy Services program)</p>

Industrial Premium Motors Rebate Program

2006 IRP

Source

Assumption

<p>Load Impacts Before Participant 500,000 kWh, 54.3 kW (coincident with winter system peak), 98.7 kW (summer)</p> <p>After Participant 487,600 kWh, 53.0 kW (coincident with winter system peak), 96.3 kW (summer)</p>	<p>Motor load for a typical 200 HP facility with inventory matching market size shares, and standard efficiency (EPAct)</p> <p>Motor load for 200 HP facility with premium efficiency motors. Savings weighted across market shares by size.</p>
<p>Lifetime of savings 15 years</p>	<p>Source: Northeast Energy Efficiency Partnership (NEEP), Strategic Review, Sept 2004</p>
<p>Generation Capacity Cost - Blend</p>	<p>Hours split and cost values from BIP analysis approved 8/25/2006. There are two categories: Peak and Blend. Peak is assigned to programs that provide savings in 2,887 hours of the year or fewer.</p>
<p>Participant Costs \$ 2,238.</p>	<p>Incremental cost for the premium efficiency motors compared to standard efficiency motors, weighted by market distribution. Source: NEEP</p>
<p>Administrative Cost EK \$2000 fixed annual (2006-2015), \$0 per new participant</p> <p>Co-op \$10 per new participant</p>	<p>Marketing, Trade Allies, Tracking, Processing, Eval, Cust Svc. Rebate program with mail in form.</p> <p>Form processing time.</p>
<p>Rate Schedule - Retail South Kentucky B rate, w/ FAC \$0.00879, ES \$0.00471</p>	<p>Retail Rates Workbook, Pricing Group, 7/04, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Rate Schedule - Wholesale East Kentucky E-2 rate, w/ FAC \$0.00833, ES \$0.00446</p>	<p>Retail Rates Workbook, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Participation - 50 per year, 10 years (2006-2015)</p>	<p>Achieves 25% share in the non-OEM motor purchase market</p>
<p>Rebates Co-op to Participant \$1,000 EK to Co-op \$3,000</p>	<p>\$5 rebate per HP - based on review of other utility program 50% reimbursement of customer rebate, plus compensation for lost revenues (EKPC C&I Energy Services program schedule)</p>

2006 IRP

Industrial Variable Speed Drives Program

Source

Assumption

<p>Load Impacts Before Participant 240,000 kWh, 26.1 kW (coincident with winter system peak), 47.4 kW (summer)</p> <p>After Participant 141,600 kWh, 15.4 kW (coincident with winter system peak), 28.0 kW (summer)</p>	<p>Motor load for a typical 100 HP set of motors where variable speed drives apply, with inventory matching market size shares, and high efficiency.</p> <p>Motor load for a typical 100 HP set of motors with variable speed drives (VSDs). 41% savings compared to motor load without VSDs. Source: Northeast Energy Efficiency Partnership (NEEP), Strategic Review, Sept 2004.</p>
<p>Lifetime of savings 15 years</p>	<p>Source: Northeast Energy Efficiency Partnership (NEEP), Strategic Review, Sept 2004</p>
<p>Generation Capacity Cost - Blend</p>	<p>Hours split and cost values from BIP analysis approved 8/25/2006. There are two categories: Peak and Blend. Peak is assigned to programs that provide savings in 2,887 hours of the year or fewer.</p>
<p>Participant Costs \$ 16,728</p>	<p>Cost of the variable speed drive measure, \$0.17 per annual kWh saved. Source: NEEP, 2004.</p>
<p>Administrative Cost EK \$10000 fixed annual (2006-2015), \$0 per new participant</p> <p>Co-op \$10 per new participant</p>	<p>Marketing, Trade Allies, Tracking, Processing, Eval, Cust Svc. Includes efforts to promote wider application of VSDs. Rebate program with mail in form.</p> <p>Form processing time.</p>
<p>Rate Schedule - Retail South Kentucky B rate, w/ FAC \$0.00879, ES \$0.00471</p>	<p>Retail Rates Workbook, Pricing Group, 7/04, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Rate Schedule - Wholesale East Kentucky E-2 rate, w/ FAC \$0.00833, ES \$0.00446</p>	<p>Retail Rates Workbook, updated for fuel cost roll-in (May 2005), updated FAC, ES for 2006. Escalation factors derived from financial forecast as of June 2006.</p>
<p>Participation - 35 per year, 10 years (2006-2015)</p>	<p>Achieves 25% share of the applicable non-OEM annual motor purchase market.</p>
<p>Rebates Co-op to Participant \$ 9,840 EK to Co-op \$25,000</p>	<p>\$0.10 per annual saved kWh - based on review of other utility programs 50% reimbursement of customer rebate, plus compensation for lost revenues (EKPC C&I Energy Services program schedule)</p>

Exhibit DSM-6
Existing DSM Programs
Summary Sheets

ETS Propane Program

Distribution System Benefits		Distribution System Costs	
Revenue Increase	\$5,835,361	Power Bill Increases	(\$4,817,210)
Rebates From EK	\$298,588	Administrative Costs	(\$212,993)
		Rebates Paid To Consumers	(\$597,176)
Total Benefits	\$6,133,949	Total Costs	(\$5,627,379)
Benefit / Cost Ratio: 1.09			

Participant Benefits		Participant Costs	
Gas Bill Decreases	\$5,266,858	Electric Bill Increases	(\$3,331,995)
Rebates From Distribution System	\$478,269	Up Front Investment	(\$1,513,722)
Total Benefits	\$5,745,127	Total Costs	(\$4,845,717)
Benefit / Cost Ratio: 1.19			

Total Resource Benefits		Total Resource Costs	
Gas Bill Decreases	\$9,336,043	Up Front Customer Investment	(\$1,890,062)
		Distribution System Admin. Costs	(\$212,993)
		EK Administrative Costs	(\$181,174)
		Increased Cost of Production	(\$5,477,673)
		Increased Cost of Capacity	(\$89,682)
		T&D Cost Increases	(\$80,637)
Total Benefits	\$9,336,043	Total Costs	(\$7,932,221)
Benefit / Cost Ratio: 1.18			

EK Benefits		EK Costs	
Rate E Revenue Increases	\$4,817,210	T&D Cost Increases	(\$80,637)
		Rebates Paid	(\$298,588)
		Administrative Costs	(\$116,480)
		Increased Cost of Production	(\$5,477,673)
		Increased Cost of Capacity	(\$89,682)
		EK Administrative Costs	(\$64,694)
Total Benefits	\$4,817,210	Total Costs	(\$6,127,754)
Benefit / Cost Ratio: 0.79			

Societal Benefits		Societal Costs	
Gas Bill Decreases	\$10,850,175	Up Front Customer Investment	(\$2,001,578)
		Distribution System Admin. Costs	(\$225,560)
		EK Administrative Costs	(\$191,863)
		T&D Cost Increases	(\$93,823)
		Increased Cost of Production	(\$6,332,450)
		Increased Cost of Capacity	(\$104,563)
		External Environmental Costs	(\$1,440,524)
Total Benefits	\$10,850,175	Total Costs	(\$10,390,361)
Benefit / Cost Ratio: 1.04			

ETS Furnace Program

Distribution System Benefits		Distribution System Costs	
Revenue Increase	\$1,888,539	Power Bill Increases	(\$3,221,745)
Rebates From EK	\$248,058	Administrative Costs	(\$196,609)
		Rebates Paid To Consumers	(\$496,116)
Total Benefits	\$2,136,597	Total Costs	(\$3,914,470)
Benefit / Cost Ratio: 0.55			

Participant Benefits		Participant Costs	
Electric Bill Decreases	\$1,835,912	Up Front Investment	(\$1,397,282)
Rebates From Distribution System	\$397,331		
Total Benefits	\$2,233,243	Total Costs	(\$1,397,282)
Benefit / Cost Ratio: 1.60			

Total Resource Benefits		Total Resource Costs	
Avoided Distribution Expense	\$1,449,404	Up Front Customer Investment	(\$1,744,673)
Avoided Energy Costs	\$471,916	Distribution System Admin. Costs	(\$196,609)
Avoided Capacity Costs	\$2,351,649	EK Administrative Costs	(\$176,198)
Avoided Transmission Expense	\$664,665		
Total Benefits	\$4,937,634	Total Costs	(\$2,117,480)
Benefit / Cost Ratio: 2.33			

EK Benefits		EK Costs	
Avoided Distribution Expense	\$1,449,404	Decrease in Revenue	(\$1,888,548)
Avoided Energy Costs	\$471,916	Rebates Paid	(\$248,058)
Avoided Capacity Costs	\$2,351,649	Administrative Costs	(\$176,198)
Avoided Transmission Expense	\$664,665		
Rate E Revenue Increases	\$5,239		
Total Benefits	\$4,942,873	Total Costs	(\$2,312,804)
Benefit / Cost Ratio: 2.14			

Societal Benefits		Societal Costs	
Avoided Distribution Expense	\$1,687,180	Up Front Customer Investment	(\$1,847,610)
Avoided Energy Costs	\$553,279	Distribution System Admin. Costs	(\$208,209)
Avoided Capacity Costs	\$2,743,021	EK Administrative Costs	(\$186,593)
Avoided Transmission Expense	\$773,704	External Environmental Costs	(\$75,401)
Total Benefits	\$5,757,184	Total Costs	(\$2,317,813)
Benefit / Cost Ratio: 2.48			

Electric Water Heater New Construction Program

Distribution System Benefits		Distribution System Costs	
Power Bill Declines	\$964,361	Revenue Declines	(\$1,301,521)
Rebates From EK	\$367,493	Administrative Costs	(\$318,494)
		Rebates Paid To Consumers	(\$734,986)
Total Benefits	\$1,331,854	Total Costs	(\$2,355,001)
Benefit / Cost Ratio: 0.57			

Participant Benefits		Participant Costs	
Electric Bill Declines	\$795,011	Up Front Investment	(\$451,290)
Rebates From Distribution System	\$588,639		
Total Benefits	\$1,383,650	Total Costs	(\$451,290)
Benefit / Cost Ratio: 3.07			

Total Resource Benefits		Total Resource Costs	
Avoided Distribution Expense	\$133,649	Up Front Customer Investment	(\$563,489)
Avoided Energy Costs	\$899,070	Distribution System Admin. Costs	(\$318,494)
Avoided Capacity Costs	\$559,353	EK Administrative Costs	(\$18,750)
Avoided Transmission Expense	\$61,289		
Total Benefits	\$1,653,361	Total Costs	(\$900,733)
Benefit / Cost Ratio: 1.84			

EK Benefits		EK Costs	
Avoided Distribution Expense	\$133,649	Decrease In Revenue	(\$964,361)
Avoided Energy Costs	\$899,070	Rebates Paid	(\$367,493)
Avoided Capacity Costs	\$559,353	Administrative Costs	(\$18,750)
Avoided Transmission Expense	\$61,289		
Total Benefits	\$1,653,361	Total Costs	(\$1,350,604)
Benefit / Cost Ratio: 1.22			

Societal Benefits		Societal Costs	
Avoided Distribution Expense	\$152,566	Up Front Customer Investment	(\$596,736)
Avoided Energy Costs	\$1,019,221	Distribution System Admin. Costs	(\$337,285)
Avoided Capacity Costs	\$639,608	EK Administrative Costs	(\$19,856)
Avoided Transmission Expense	\$69,963		
External Environmental Benefits	\$203,091		
Total Benefits	\$2,084,449	Total Costs	(\$953,877)
Benefit / Cost Ratio: 2.19			

Electric Water Heater Retrofit Program

Distribution System Benefits		Distribution System Costs	
Revenue Increase	\$1,162,880	Power Bill Increases	(\$861,634)
Rebates From EK	\$28,710	Administrative Costs	(\$24,882)
		Rebates Paid To Consumers	(\$57,421)
Total Benefits	\$1,191,590	Total Costs	(\$943,937)
Benefit / Cost Ratio: 1.26			

Participant Benefits		Participant Costs	
Gas Bill Decreases	\$524,528	Electric Bill Increases	(\$710,324)
Rebates From Distribution System	\$45,987	Up Front Investment	(\$38,323)
Total Benefits	\$570,515	Total Costs	(\$748,647)
Benefit / Cost Ratio: 0.76			

Total Resource Benefits		Total Resource Costs	
Gas Bill Decreases	\$844,866	Up Front Customer Investment	(\$47,851)
		Distribution System Admin. Costs	(\$24,882)
		EK Administrative Costs	(\$7,013)
		Increased Cost of Production	(\$803,298)
		Increased Cost of Capacity	(\$499,769)
		T&D Cost Increases	(\$174,173)
Total Benefits	\$844,866	Total Costs	(\$1,556,986)
Benefit / Cost Ratio: 0.54			

EK Benefits		EK Costs	
Rate E Revenue Increases	\$861,635	T&D Cost Increases	(\$174,173)
		Rebates Paid	(\$28,710)
		Administrative Costs	(\$7,013)
		Increased Cost of Production	(\$803,298)
		Increased Cost of Capacity	(\$499,769)
Total Benefits	\$861,635	Total Costs	(\$1,512,963)
Benefit / Cost Ratio: 0.57			

Societal Benefits		Societal Costs	
Gas Bill Decreases	(\$957,504)	Up Front Customer Investment	(\$50,674)
		Distribution System Admin. Costs	(\$26,350)
		EK Administrative Costs	(\$7,427)
		T&D Cost Increases	(\$198,824)
		Increased Cost of Production	(\$910,650)
		Increased Cost of Capacity	(\$571,475)
		External Environmental Costs	(\$181,457)
Total Benefits	(\$957,504)	Total Costs	(\$1,946,857)
Benefit / Cost Ratio: 0.49			

Geothermal Heat Pump New Construction Program

Distribution System Benefits		Distribution System Costs	
Revenue Increase	\$2,713,630	Power Bill Increases	(\$2,531,394)
Rebates From EK	\$258,394	Administrative Costs	(\$291,698)
		Rebates Paid To Consumers	(\$516,787)
Total Benefits	\$2,972,024	Total Costs	(\$3,339,879)
Benefit / Cost Ratio: 0.89			

Participant Benefits		Participant Costs	
Gas Bill Decreases	\$1,610,077	Up Front Investment	(\$1,874,447)
Electric Bill Decreases	\$1,445,239		
Rebates From Distribution System	\$413,887		
Total Benefits	\$3,469,203	Total Costs	(\$1,874,447)
Benefit / Cost Ratio: 1.85			

Total Resource Benefits		Total Resource Costs	
Avoided Distribution Expense	\$1,438,184	Up Front Customer Investment	(\$2,340,471)
Avoided Energy Costs	\$1,923,207	Distribution System Admin. Costs	(\$291,698)
Avoided Capacity Costs	\$5,955,382	EK Administrative Costs	(\$118,869)
Avoided Transmission Expense	\$659,520		
Gas Costs Decrease	\$2,784,009		
Total Benefits	\$12,760,302	Total Costs	(\$2,751,038)
Benefit / Cost Ratio: 4.64			

EK Benefits		EK Costs	
Avoided Distribution Expense	\$1,438,184	Decrease in Revenue	(\$2,713,630)
Avoided Energy Costs	\$1,923,207	Rebates Paid	(\$258,394)
Avoided Capacity Costs	\$5,955,382	Administrative Costs	(\$118,869)
Avoided Transmission Expense	\$659,520		
Total Benefits	\$9,976,293	Total Costs	(\$3,090,893)
Benefit / Cost Ratio: 3.23			

Societal Benefits		Societal Costs	
Avoided Distribution Expense	\$1,673,322	Up Front Customer Investment	(\$2,478,561)
Avoided Energy Costs	\$2,227,311	Distribution System Admin. Costs	(\$308,908)
Avoided Capacity Costs	\$6,942,933	EK Administrative Costs	(\$125,882)
Avoided Transmission Expense	\$767,350		
External Environmental Benefits	\$396,592		
Gas Costs Decrease	\$3,219,453		
Total Benefits	\$15,226,961	Total Costs	(\$2,913,351)
Benefit / Cost Ratio: 5.23			

Air-Source Heat Pump New Construction Program

Distribution System Benefits		Distribution System Costs	
Revenue Increase	\$1,196,004	Power Bill Increases	(\$1,407,301)
Rebates From EK	\$367,493	Administrative Costs	(\$445,892)
		Rebates Paid To Consumers	(\$734,986)
Total Benefits	\$1,563,497	Total Costs	(\$2,588,179)
Benefit / Cost Ratio: 0.60			

Participant Benefits		Participant Costs	
Gas Bill Decreases	\$2,495,517	Electric Bill Increases	(\$682,830)
Rebates From Distribution System	\$588,639	Up Front Investment	(\$2,746,981)
Total Benefits	\$3,084,156	Total Costs	(\$3,429,811)
Benefit / Cost Ratio: 0.90			

Total Resource Benefits		Total Resource Costs	
Gas Bill Decreases	\$4,315,039	Up Front Customer Investment	(\$3,429,935)
		Distribution System Admin. Costs	(\$445,892)
		EK Administrative Costs	(\$18,750)
		Increased Cost of Production	(\$863,115)
		Increased Cost of Capacity	(\$3,307,800)
		T&D Cost Increases	(\$1,270,153)
Total Benefits	\$4,315,039	Total Costs	(\$9,335,645)
Benefit / Cost Ratio: 0.46			

EK Benefits		EK Costs	
Rate E Revenue Increases	\$1,407,301	T&D Cost Increases	(\$1,270,153)
		Rebates Paid	(\$367,493)
		Administrative Costs	(\$18,750)
		Increased Cost of Production	(\$863,115)
		Increased Cost of Capacity	(\$3,307,800)
Total Benefits	\$1,407,301	Total Costs	(\$5,827,311)
Benefit / Cost Ratio: 0.24			

Societal Benefits		Societal Costs	
Gas Bill Decreases	\$4,989,950	Up Front Customer Investment	(\$3,632,304)
		Distribution System Admin. Costs	(\$472,200)
		EK Administrative Costs	(\$19,856)
		T&D Cost Increases	(\$1,478,468)
		Increased Cost of Production	(\$1,000,314)
		Increased Cost of Capacity	(\$3,858,182)
		External Environmental Costs	(\$187,377)
Total Benefits	\$4,989,950	Total Costs	(\$10,648,701)
Benefit / Cost Ratio: 0.47			

Air-Source Heat Pump Retrofit Program

Distribution System Benefits		Distribution System Costs	
Revenue Increase	\$1,871,681	Power Bill Increases	(\$2,080,037)
Rebates From EK	\$390,461	Administrative Costs	(\$473,760)
		Rebates Paid To Consumers	(\$780,923)
Total Benefits	\$2,262,142	Total Costs	(\$3,334,720)
Benefit / Cost Ratio: 0.68			

Participant Benefits		Participant Costs	
Gas Bill Decreases	\$3,181,785	Electric Bill Increases	(\$1,068,591)
Rebates From Distribution System	\$625,429	Up Front Investment	(\$2,918,668)
Total Benefits	\$3,807,214	Total Costs	(\$3,987,259)
Benefit / Cost Ratio: 0.95			

Total Resource Benefits		Total Resource Costs	
Gas Bill Decreases	\$5,501,675	Up Front Customer Investment	(\$3,644,306)
		Distribution System Admin. Costs	(\$473,760)
		EK Administrative Costs	(\$7,013)
		Increased Cost of Production	(\$1,352,900)
		Increased Cost of Capacity	(\$4,513,439)
		T&D Cost Increases	(\$1,715,121)
Total Benefits	\$5,501,675	Total Costs	(\$11,706,539)
Benefit / Cost Ratio: 0.47			

EK Benefits		EK Costs	
Rate E Revenue Increases	\$2,080,037	T&D Cost Increases	(\$1,715,121)
		Rebates Paid	(\$390,461)
		Administrative Costs	(\$7,013)
		Increased Cost of Production	(\$1,352,900)
		Increased Cost of Capacity	(\$4,513,439)
Total Benefits	\$2,080,037	Total Costs	(\$7,978,934)
Benefit / Cost Ratio: 0.26			

Societal Benefits		Societal Costs	
Gas Bill Decreases	\$6,362,186	Up Front Customer Investment	(\$3,859,323)
		Distribution System Admin. Costs	(\$501,712)
		EK Administrative Costs	(\$7,427)
		T&D Cost Increases	(\$1,996,407)
		Increased Cost of Production	(\$1,567,377)
		Increased Cost of Capacity	(\$5,264,403)
		External Environmental Costs	(\$293,235)
Total Benefits	\$6,362,186	Total Costs	(\$13,489,884)
Benefit / Cost Ratio: 0.47			

Tune-Up Program

Distribution System Benefits		Distribution System Costs	
Power Bill Declines	\$2,339,752	Revenue Declines	(\$2,485,419)
Rebates From EK	\$348,353	Administrative Costs	(\$696,705)
		Rebates Paid To Consumers	(\$696,705)
Total Benefits	\$2,688,105	Total Costs	(\$3,878,829)
Benefit / Cost Ratio: 0.69			

Participant Benefits		Participant Costs	
Electric Bill Declines	\$1,518,174	Up Front Investment	(\$643,824)
Rebates From Distribution System	\$557,981		
Total Benefits	\$2,076,155	Total Costs	(\$643,824)
Benefit / Cost Ratio: 3.22			

Total Resource Benefits		Total Resource Costs	
Avoided Distribution Expense	\$807,745	Up Front Customer Investment	(\$803,891)
Avoided Energy Costs	\$1,822,623	Distribution System Admin. Costs	(\$696,705)
Avoided Capacity Costs	\$3,413,371	EK Administrative Costs	(\$26,100)
Avoided Transmission Expense	\$370,414		
Total Benefits	\$6,414,153	Total Costs	(\$1,526,696)
Benefit / Cost Ratio: 4.20			

EK Benefits		EK Costs	
Avoided Distribution Expense	\$807,745	Decrease In Revenue	(\$2,339,753)
Avoided Energy Costs	\$1,822,623	Rebates Paid	(\$348,353)
Avoided Capacity Costs	\$3,413,371	Administrative Costs	(\$26,100)
Avoided Transmission Expense	\$370,414		
Total Benefits	\$6,414,153	Total Costs	(\$2,714,206)
Benefit / Cost Ratio: 2.36			

Societal Benefits		Societal Costs	
Avoided Distribution Expense	\$921,536	Up Front Customer Investment	(\$851,321)
Avoided Energy Costs	\$2,066,482	Distribution System Admin. Costs	(\$737,812)
Avoided Capacity Costs	\$3,900,443	EK Administrative Costs	(\$27,640)
Avoided Transmission Expense	\$422,595		
External Environmental Benefits	\$387,827		
Total Benefits	\$7,698,883	Total Costs	(\$1,616,773)
Benefit / Cost Ratio: 4.76			

Button-Up Program

Distribution System Benefits		Distribution System Costs	
Power Bill Declines	\$6,683,812	Revenue Declines	(\$7,098,344)
Rebates From EK	\$574,208	Administrative Costs	(\$535,927)
		Rebates Paid To Consumers	(\$1,148,416)
Total Benefits	\$7,258,020	Total Costs	(\$8,782,687)
Benefit / Cost Ratio: 0.83			

Participant Benefits		Participant Costs	
Electric Bill Declines	\$4,165,545	Up Front Investment	(\$1,726,061)
Rebates From Distribution System	\$919,748		
Total Benefits	\$5,085,293	Total Costs	(\$1,726,061)
Benefit / Cost Ratio: 2.95			

Total Resource Benefits		Total Resource Costs	
Avoided Distribution Expense	\$2,329,716	Up Front Customer Investment	(\$2,155,193)
Avoided Energy Costs	\$5,213,459	Distribution System Admin. Costs	(\$535,927)
Avoided Capacity Costs	\$9,891,072	EK Administrative Costs	(\$30,915)
Avoided Transmission Expense	\$1,068,355		
Total Benefits	\$18,502,602	Total Costs	(\$2,722,035)
Benefit / Cost Ratio: 6.80			

EK Benefits		EK Costs	
Avoided Distribution Expense	\$2,329,716	Decrease In Revenue	(\$6,683,813)
Avoided Energy Costs	\$5,213,459	Rebates Paid	(\$574,208)
Avoided Capacity Costs	\$9,891,072	Administrative Costs	(\$30,915)
Avoided Transmission Expense	\$1,068,355		
Total Benefits	\$18,502,602	Total Costs	(\$7,288,936)
Benefit / Cost Ratio: 2.54			

Societal Benefits		Societal Costs	
Avoided Distribution Expense	\$2,689,024	Up Front Customer Investment	(\$2,282,352)
Avoided Energy Costs	\$5,980,968	Distribution System Admin. Costs	(\$567,548)
Avoided Capacity Costs	\$11,437,349	EK Administrative Costs	(\$32,739)
Avoided Transmission Expense	\$1,233,125		
External Environmental Benefits	\$1,110,381		
Total Benefits	\$22,450,847	Total Costs	(\$2,882,639)
Benefit / Cost Ratio: 7.79			

Exhibit DSM-7
New DSM Programs
Summary Sheets

Compact Fluorescent Lighting Program

Distribution System Benefits		Distribution System Costs	
Power Bill Declines	\$8,338,286	Revenue Declines	(\$11,781,855)
Total Benefits	\$8,338,286	Total Costs	(\$11,781,855)
Benefit / Cost Ratio: 0.71			

Participant Benefits		Participant Costs	
Electric Bill Declines	\$8,894,132		
Total Benefits	\$8,894,132	Total Costs	\$0
Benefit / Cost Ratio: #DIV/0!			

Total Resource Benefits		Total Resource Costs	
Avoided Distribution Expense	\$1,007,358	EK Administrative Costs	(\$641,505)
Avoided Energy Costs	\$8,027,199		
Avoided Capacity Costs	\$4,278,170		
Avoided Transmission Expense	\$461,955		
Total Benefits	\$13,774,682	Total Costs	(\$641,505)
Benefit / Cost Ratio: 21.47			

EK Benefits		EK Costs	
Avoided Distribution Expense	\$1,007,358	Decrease in Revenue	(\$8,311,260)
Avoided Energy Costs	\$8,027,199	Administrative Costs	(\$641,505)
Avoided Capacity Costs	\$4,278,170		
Avoided Transmission Expense	\$461,955		
Total Benefits	\$13,774,682	Total Costs	(\$8,952,765)
Benefit / Cost Ratio: 1.54			

Societal Benefits		Societal Costs	
Avoided Distribution Expense	\$1,114,546	EK Administrative Costs	(\$679,355)
Avoided Energy Costs	\$8,822,673		
Avoided Capacity Costs	\$4,738,438		
Avoided Transmission Expense	\$511,109		
External Environmental Benefits	\$1,821,465		
Total Benefits	\$17,008,231	Total Costs	(\$679,355)
Benefit / Cost Ratio: 25.04			

Touchstone Energy Geothermal Heat Pump New Construction Program

Distribution System Benefits		Distribution System Costs	
Revenue Increase	\$1,425,323	Power Bill Increases	(\$1,421,034)
Rebates From EK	\$107,185	Administrative Costs	(\$55,736)
		Rebates Paid To Consumers	(\$214,371)
Total Benefits	\$1,532,508	Total Costs	(\$1,691,141)
Benefit / Cost Ratio: 0.91			

Participant Benefits		Participant Costs	
Electric Bill Decreases	\$811,305	Up Front Investment	(\$723,535)
Rebates From Distribution System	\$171,686		
Total Benefits	\$982,991	Total Costs	(\$723,535)
Benefit / Cost Ratio: 1.36			

Total Resource Benefits		Total Resource Costs	
Avoided Distribution Expense	\$655,391	Up Front Customer Investment	(\$903,420)
Avoided Energy Costs	\$1,053,656	Distribution System Admin. Costs	(\$55,736)
Avoided Capacity Costs	\$2,692,743	EK Administrative Costs	(\$46,480)
Avoided Transmission Expense	\$300,548		
Total Benefits	\$4,702,338	Total Costs	(\$1,005,636)
Benefit / Cost Ratio: 4.68			

EK Benefits		EK Costs	
Avoided Distribution Expense	\$655,391	Decrease in Revenue	(\$1,425,323)
Avoided Energy Costs	\$1,053,656	Rebates Paid	(\$107,185)
Avoided Capacity Costs	\$2,692,743	Administrative Costs	(\$46,480)
Avoided Transmission Expense	\$300,548		
Total Benefits	\$4,702,338	Total Costs	(\$1,578,988)
Benefit / Cost Ratio: 2.98			

Societal Benefits		Societal Costs	
Avoided Distribution Expense	\$762,700	Up Front Customer Investment	(\$956,723)
Avoided Energy Costs	\$1,219,830	Distribution System Admin. Costs	(\$59,025)
Avoided Capacity Costs	\$3,139,962	EK Administrative Costs	(\$49,223)
Avoided Transmission Expense	\$349,758		
External Environmental Benefits	\$222,633		
Total Benefits	\$5,694,883	Total Costs	(\$1,064,971)
Benefit / Cost Ratio: 5.35			

Touchstone Energy Home with Air-Source Heat Pump Program

Distribution System Benefits		Distribution System Costs	
Revenue Increase	\$1,226,948	Power Bill Increases	(\$1,383,201)
Rebates From EK	\$191,403	Administrative Costs	(\$139,341)
		Rebates Paid To Consumers	(\$382,805)
Total Benefits	\$1,418,351	Total Costs	(\$1,905,347)
Benefit / Cost Ratio: 0.74			

Participant Benefits		Participant Costs	
Electric Bill Decreases	\$789,705	Up Front Investment	(\$1,302,977)
Rebates From Distribution System	\$306,583		
Total Benefits	\$1,096,288	Total Costs	(\$1,302,977)
Benefit / Cost Ratio: 0.84			

Total Resource Benefits		Total Resource Costs	
Avoided Distribution Expense	\$385,534	Up Front Customer Investment	(\$1,626,922)
Avoided Energy Costs	\$1,002,702	Distribution System Admin. Costs	(\$139,341)
Avoided Capacity Costs	\$1,642,618	EK Administrative Costs	(\$179,420)
Avoided Transmission Expense	\$176,797		
Total Benefits	\$3,207,651	Total Costs	(\$1,945,683)
Benefit / Cost Ratio: 1.65			

EK Benefits		EK Costs	
Avoided Distribution Expense	\$385,534	Decrease in Revenue	(\$1,226,948)
Avoided Energy Costs	\$1,002,702	Rebates Paid	(\$191,403)
Avoided Capacity Costs	\$1,642,618	Administrative Costs	(\$179,420)
Avoided Transmission Expense	\$176,797		
Total Benefits	\$3,207,651	Total Costs	(\$1,597,771)
Benefit / Cost Ratio: 2.01			

Societal Benefits		Societal Costs	
Avoided Distribution Expense	\$448,759	Up Front Customer Investment	(\$1,722,912)
Avoided Energy Costs	\$1,160,027	Distribution System Admin. Costs	(\$147,562)
Avoided Capacity Costs	\$1,915,915	EK Administrative Costs	(\$190,006)
Avoided Transmission Expense	\$205,791		
External Environmental Benefits	\$216,705		
Total Benefits	\$3,947,197	Total Costs	(\$2,060,480)
Benefit / Cost Ratio: 1.92			

Touchstone Energy Manufactured Home Program

Distribution System Benefits		Distribution System Costs	
Power Bill Decrease	\$272,281	Revenue Decrease	(\$326,916)
Rebates From EK	\$11,484	Administrative Costs	(\$13,934)
		Rebates Paid To Consumers	(\$22,968)
Total Benefits	\$283,765	Total Costs	(\$363,818)
Benefit / Cost Ratio: 0.78			

Participant Benefits		Participant Costs	
Electric Bill Decreases	\$186,645	Up Front Investment	(\$61,317)
Rebates From Distribution System	\$18,395		
Total Benefits	\$205,040	Total Costs	(\$61,317)
Benefit / Cost Ratio: 3.34			

Total Resource Benefits		Total Resource Costs	
Avoided Distribution Expense	\$75,406	Up Front Customer Investment	(\$76,561)
Avoided Energy Costs	\$233,362	Distribution System Admin. Costs	(\$13,934)
Avoided Capacity Costs	\$317,495	EK Administrative Costs	(\$24,369)
Avoided Transmission Expense	\$34,580		
Total Benefits	\$660,843	Total Costs	(\$114,864)
Benefit / Cost Ratio: 5.75			

EK Benefits		EK Costs	
Avoided Distribution Expense	\$75,406	Decrease in Revenue	(\$272,281)
Avoided Energy Costs	\$233,362	Rebates Paid	(\$11,484)
Avoided Capacity Costs	\$317,495	Administrative Costs	(\$24,369)
Avoided Transmission Expense	\$34,580		
Total Benefits	\$660,843	Total Costs	(\$308,134)
Benefit / Cost Ratio: 2.14			

Societal Benefits		Societal Costs	
Avoided Distribution Expense	\$87,772	Up Front Customer Investment	(\$81,078)
Avoided Energy Costs	\$270,002	Distribution System Admin. Costs	(\$14,756)
Avoided Capacity Costs	\$370,313	EK Administrative Costs	(\$25,807)
Avoided Transmission Expense	\$40,250		
External Environmental Benefits	\$51,218		
Total Benefits	\$819,555	Total Costs	(\$121,641)
Benefit / Cost Ratio: 6.74			

DLC Program for AC and DHW Combined

Distribution System Benefits		Distribution System Costs	
Power Bill Decrease	\$32,552,887	Revenue Decrease	(\$443,552)
Rebates From EK	\$5,920,745	Administrative Costs	(\$8,066,519)
		Rebates Paid To Consumers	(\$11,841,491)
Total Benefits	\$38,473,632	Total Costs	(\$20,351,562)
Benefit / Cost Ratio: 1.89			

Participant Benefits		Participant Costs	
Electric Bill Decreases	\$253,235		
Rebates From Distribution System	\$6,863,227		
Total Benefits	\$7,116,462	Total Costs	\$0
Benefit / Cost Ratio: #DIV/0!			

Total Resource Benefits		Total Resource Costs	
Avoided Distribution Expense	\$25,121,327		
Avoided Energy Costs	\$631,761	Distribution System Admin. Costs	(\$8,066,519)
Avoided Capacity Costs	\$45,964,603	EK Administrative Costs	(\$8,066,519)
Avoided Transmission Expense	\$11,520,098		
Total Benefits	\$83,237,789	Total Costs	(\$16,133,038)
Benefit / Cost Ratio: 5.16			

EK Benefits		EK Costs	
Avoided Distribution Expense	\$25,121,327	Decrease in Revenue	(\$32,552,888)
Avoided Energy Costs	\$631,761	Rebates Paid	(\$5,920,745)
Avoided Capacity Costs	\$45,964,603	Administrative Costs	(\$8,066,519)
Avoided Transmission Expense	\$11,520,098		
Total Benefits	\$83,237,789	Total Costs	(\$46,540,152)
Benefit / Cost Ratio: 1.79			

Societal Benefits		Societal Costs	
Avoided Distribution Expense	\$29,239,587	Distribution System Admin. Costs	(\$8,665,213)
Avoided Energy Costs	\$729,600	EK Administrative Costs	(\$8,665,213)
Avoided Capacity Costs	\$53,613,203		
Avoided Transmission Expense	\$13,408,642		
External Environmental Benefits	\$69,491		
Total Benefits	\$97,060,523	Total Costs	(\$17,330,426)
Benefit / Cost Ratio: 5.60			

ENERGY STAR Clothes Washer Rebate Program

Distribution System Benefits		Distribution System Costs	
Power Bill Declines	\$673,770	Revenue Declines	(\$917,590)
Rebates From EK	\$95,701	Administrative Costs	(\$38,281)
		Rebates Paid To Consumers	(\$191,403)
Total Benefits	\$769,471	Total Costs	(\$1,147,274)
Benefit / Cost Ratio: 0.67			

Participant Benefits		Participant Costs	
Electric Bill Declines	\$560,493	Up Front Investment	(\$735,799)
Rebates From Distribution System	\$153,291		
Non-Energy Benefits	\$409,152		
Total Benefits	\$1,122,936	Total Costs	(\$735,799)
Benefit / Cost Ratio: 1.53			

Total Resource Benefits		Total Resource Costs	
Avoided Distribution Expense	\$90,227	Up Front Customer Investment	(\$918,732)
Avoided Energy Costs	\$642,098	Distribution System Admin. Costs	(\$38,281)
Avoided Capacity Costs	\$381,953	EK Administrative Costs	(\$15,312)
Avoided Transmission Expense	\$41,376		
Non-Energy Benefits	\$662,404		
Total Benefits	\$1,818,058	Total Costs	(\$972,325)
Benefit / Cost Ratio: 1.87			

EK Benefits		EK Costs	
Avoided Distribution Expense	\$90,227	Decrease In Revenue	(\$673,770)
Avoided Energy Costs	\$642,098	Rebates Paid	(\$95,701)
Avoided Capacity Costs	\$381,953	Administrative Costs	(\$15,312)
Avoided Transmission Expense	\$41,376		
Total Benefits	\$1,155,654	Total Costs	(\$784,783)
Benefit / Cost Ratio: 1.47			

Societal Benefits		Societal Costs	
Avoided Distribution Expense	\$102,943	Up Front Customer Investment	(\$972,939)
Avoided Energy Costs	\$727,756	Distribution System Admin. Costs	(\$40,539)
Avoided Capacity Costs	\$436,499	EK Administrative Costs	(\$16,216)
Avoided Transmission Expense	\$47,207		
External Environmental Benefits	\$143,182		
Total Benefits	\$1,457,587	Total Costs	(\$1,029,694)
Benefit / Cost Ratio: 1.42			

ENERGY STAR Room AC Program

Distribution System Benefits		Distribution System Costs	
Power Bill Declines	\$354,250	Revenue Declines	(\$354,339)
Rebates From EK	\$57,421	Administrative Costs	(\$45,937)
		Rebates Paid To Consumers	(\$114,842)
Total Benefits	\$411,671	Total Costs	(\$515,118)
Benefit / Cost Ratio: 0.80			

Participant Benefits		Participant Costs	
Electric Bill Declines	\$207,938	Up Front Investment	(\$275,924)
Rebates From Distribution System	\$91,975		
Total Benefits	\$299,913	Total Costs	(\$275,924)
Benefit / Cost Ratio: 1.09			

Total Resource Benefits		Total Resource Costs	
Avoided Distribution Expense	\$124,058	Up Front Customer Investment	(\$344,525)
Avoided Energy Costs	\$275,417	Distribution System Admin. Costs	(\$45,937)
Avoided Capacity Costs	\$247,134	EK Administrative Costs	(\$15,312)
Avoided Transmission Expense	\$56,890		
Total Benefits	\$703,499	Total Costs	(\$405,774)
Benefit / Cost Ratio: 1.73			

EK Benefits		EK Costs	
Avoided Distribution Expense	\$124,058	Decrease in Revenue	(\$354,250)
Avoided Energy Costs	\$275,417	Rebates Paid	(\$57,421)
Avoided Capacity Costs	\$247,134	Administrative Costs	(\$15,312)
Avoided Transmission Expense	\$56,890		
Total Benefits	\$703,499	Total Costs	(\$426,983)
Benefit / Cost Ratio: 1.65			

Societal Benefits		Societal Costs	
Avoided Distribution Expense	\$143,025	Up Front Customer Investment	(\$364,852)
Avoided Energy Costs	\$315,576	Distribution System Admin. Costs	(\$48,647)
Avoided Capacity Costs	\$285,439	EK Administrative Costs	(\$16,216)
Avoided Transmission Expense	\$65,588		
External Environmental Benefits	\$55,429		
Total Benefits	\$865,057	Total Costs	(\$429,715)
Benefit / Cost Ratio: 2.01			

ENERGY STAR Refrigerator Rebate Program

Distribution System Benefits		Distribution System Costs	
Power Bill Declines	\$329,157	Revenue Declines	(\$478,357)
Rebates From EK	\$68,905	Administrative Costs	(\$68,905)
		Rebates Paid To Consumers	(\$137,810)
Total Benefits	\$398,062	Total Costs	(\$685,072)
Benefit / Cost Ratio: 0.58			

Participant Benefits		Participant Costs	
Electric Bill Declines	\$311,907	Up Front Investment	(\$193,147)
Rebates From Distribution System	\$110,370		
Total Benefits	\$422,277	Total Costs	(\$193,147)
Benefit / Cost Ratio: 2.19			

Total Resource Benefits		Total Resource Costs	
Avoided Distribution Expense	\$37,693	Up Front Customer Investment	(\$217,051)
Avoided Energy Costs	\$310,421	Distribution System Admin. Costs	(\$68,905)
Avoided Capacity Costs	\$169,765	EK Administrative Costs	(\$15,312)
Avoided Transmission Expense	\$17,285		
Total Benefits	\$535,164	Total Costs	(\$301,268)
Benefit / Cost Ratio: 1.78			

EK Benefits		EK Costs	
Avoided Distribution Expense	\$37,693	Decrease In Revenue	(\$329,157)
Avoided Energy Costs	\$310,421	Rebates Paid	(\$68,905)
Avoided Capacity Costs	\$169,765	Administrative Costs	(\$15,312)
Avoided Transmission Expense	\$17,285		
Total Benefits	\$535,164	Total Costs	(\$413,374)
Benefit / Cost Ratio: 1.29			

Societal Benefits		Societal Costs	
Avoided Distribution Expense	\$43,516	Up Front Customer Investment	(\$229,857)
Avoided Energy Costs	\$356,024	Distribution System Admin. Costs	(\$72,970)
Avoided Capacity Costs	\$196,358	EK Administrative Costs	(\$16,216)
Avoided Transmission Expense	\$19,955		
External Environmental Benefits	\$74,829		
Total Benefits	\$690,682	Total Costs	(\$319,043)
Benefit / Cost Ratio: 2.16			

Programmable Thermostat with Electric Furnace Retrofit Program

Distribution System Benefits		Distribution System Costs	
Power Bill Declines	\$1,487,653	Revenue Declines	(\$2,406,005)
Rebates From EK	\$62,206	Administrative Costs	(\$49,765)
		Rebates Paid To Consumers	(\$124,412)
Total Benefits	\$1,549,859	Total Costs	(\$2,580,182)
Benefit / Cost Ratio: 0.60			

Participant Benefits		Participant Costs	
Electric Bill Declines	\$1,496,820	Up Front Investment	(\$298,918)
Rebates From Distribution System	\$99,639		
Total Benefits	\$1,596,459	Total Costs	(\$298,918)
Benefit / Cost Ratio: 5.34			

Total Resource Benefits		Total Resource Costs	
Avoided Distribution Expense	\$103,046	Up Front Customer Investment	(\$373,235)
Avoided Energy Costs	\$1,406,636	Distribution System Admin. Costs	(\$49,765)
Avoided Capacity Costs	\$497,978	EK Administrative Costs	(\$7,656)
Avoided Transmission Expense	\$47,255		
Total Benefits	\$2,054,915	Total Costs	(\$430,656)
Benefit / Cost Ratio: 4.77			

EK Benefits		EK Costs	
Avoided Distribution Expense	\$103,046	Decrease In Revenue	(\$1,487,653)
Avoided Energy Costs	\$1,406,636	Rebates Paid	(\$62,206)
Avoided Capacity Costs	\$497,978	Administrative Costs	(\$7,656)
Avoided Transmission Expense	\$47,255		
Total Benefits	\$2,054,915	Total Costs	(\$1,557,515)
Benefit / Cost Ratio: 1.32			

Societal Benefits		Societal Costs	
Avoided Distribution Expense	\$116,936	Up Front Customer Investment	(\$395,258)
Avoided Energy Costs	\$1,588,159	Distribution System Admin. Costs	(\$52,701)
Avoided Capacity Costs	\$565,950	EK Administrative Costs	(\$8,108)
Avoided Transmission Expense	\$53,624		
External Environmental Benefits	\$375,043		
Total Benefits	\$2,699,712	Total Costs	(\$456,065)
Benefit / Cost Ratio: 5.92			

Dual Fuel Air Source Heat Pump with Propane Retrofit Program

Distribution System Benefits		Distribution System Costs	
Revenue Increase	\$2,537,112	Power Bill Increases	(\$1,709,105)
Rebates From EK	\$114,842	Administrative Costs	(\$139,341)
		Rebates Paid To Consumers	(\$229,683)
Total Benefits	\$2,651,954	Total Costs	(\$2,078,129)
Benefit / Cost Ratio: 1.28			

Participant Benefits		Participant Costs	
Gas Bill Decreases	\$5,917,089	Electric Bill Increases	(\$1,448,503)
Rebates From Distribution System	\$183,950	Up Front Investment	(\$2,146,079)
Total Benefits	\$6,101,039	Total Costs	(\$3,594,582)
Benefit / Cost Ratio: 1.70			

Total Resource Benefits		Total Resource Costs	
Gas Bill Decreases	\$10,488,645	Up Front Customer Investment	(\$2,679,636)
		Distribution System Admin. Costs	(\$139,341)
		EK Administrative Costs	(\$7,013)
		Increased Cost of Production	(\$1,704,751)
Total Benefits	\$10,488,645	Total Costs	(\$4,530,741)
Benefit / Cost Ratio: 2.31			

EK Benefits		EK Costs	
Rate E Revenue Increases	\$1,709,104	Rebates Paid	(\$114,842)
		EK Administrative Costs	(\$7,013)
		Increased Cost of Production	(\$1,704,751)
Total Benefits	\$1,709,104	Total Costs	(\$1,826,606)
Benefit / Cost Ratio: 0.94			

Societal Benefits		Societal Costs	
Gas Bill Decreases	\$12,189,708	Up Front Customer Investment	(\$2,837,738)
		Distribution System Admin. Costs	(\$147,562)
		EK Administrative Costs	(\$7,427)
		Increased Cost of Production	(\$1,971,707)
		External Environmental Costs	(\$397,488)
Total Benefits	\$12,189,708	Total Costs	(\$5,361,922)
Benefit / Cost Ratio: 2.27			

Commercial Lighting Program

Distribution System Benefits		Distribution System Costs	
Power Bill Declines	\$8,251,095	Revenue Declines	(\$12,745,360)
Rebates From EK	\$2,902,046	Rebates Paid To Consumers	(\$1,160,819)
Total Benefits	\$11,153,141	Total Costs	(\$13,906,179)
Benefit / Cost Ratio: 0.80			

Participant Benefits		Participant Costs	
Electric Bill Declines	\$8,522,922	Up Front Investment	(\$4,194,052)
Rebates From Distribution System	\$929,682		
Total Benefits	\$9,452,604	Total Costs	(\$4,194,052)
Benefit / Cost Ratio: 2.25			

Total Resource Benefits		Total Resource Costs	
Avoided Distribution Expense	\$1,088,605	Up Front Customer Investment	(\$4,974,937)
Avoided Energy Costs	\$8,269,425	EK Administrative Costs	(\$807,719)
Avoided Capacity Costs	\$4,878,544		
Avoided Transmission Expense	\$499,212		
Total Benefits	\$14,735,786	Total Costs	(\$5,782,656)
Benefit / Cost Ratio: 2.55			

EK Benefits		EK Costs	
Avoided Distribution Expense	\$1,088,605	Decrease In Revenue	(\$8,247,569)
Avoided Energy Costs	\$8,269,425	Rebates Paid	(\$2,902,046)
Avoided Capacity Costs	\$4,878,544	Administrative Costs	(\$807,719)
Avoided Transmission Expense	\$499,212		
Total Benefits	\$14,735,786	Total Costs	(\$11,957,334)
Benefit / Cost Ratio: 1.23			

Societal Benefits		Societal Costs	
Avoided Distribution Expense	\$1,224,011	Up Front Customer Investment	(\$5,268,463)
Avoided Energy Costs	\$9,258,983	EK Administrative Costs	(\$855,375)
Avoided Capacity Costs	\$5,491,814		
Avoided Transmission Expense	\$561,306		
External Environmental Benefits	\$1,832,930		
Total Benefits	\$18,369,044	Total Costs	(\$6,123,838)
Benefit / Cost Ratio: 3.00			

C & I Demand Response Program

<u>Distribution System Benefits</u>		<u>Distribution System Costs</u>	
Power Bill Decrease	\$8,821,913	Revenue Decrease	(\$4,818,663)
Rebates From EK	\$4,939,467	Administrative Costs	(\$1,612,953)
		Rebates Paid To Consumers	(\$4,939,467)
Total Benefits	\$13,761,380	Total Costs	(\$11,371,083)
Benefit / Cost Ratio: 1.21			

<u>Participant Benefits</u>		<u>Participant Costs</u>	
Electric Bill Decreases	\$3,076,157	Up Front Investment	(\$1,965,353)
Rebates From Distribution System	\$3,272,693		
Total Benefits	\$6,348,850	Total Costs	(\$1,965,353)
Benefit / Cost Ratio: 3.23			

<u>Total Resource Benefits</u>		<u>Total Resource Costs</u>	
Avoided Distribution Expense	\$7,941,752	Up Front Customer Investment	(\$2,923,276)
Avoided Energy Costs	\$4,484,717	Distribution System Admin. Costs	(\$1,612,953)
Avoided Capacity Costs	\$14,126,678	EK Administrative Costs	(\$443,368)
Avoided Transmission Expense	\$3,641,906		
Total Benefits	\$30,195,053	Total Costs	(\$4,979,597)
Benefit / Cost Ratio: 6.06			

<u>EK Benefits</u>		<u>EK Costs</u>	
Avoided Distribution Expense	\$7,941,752	Decrease in Revenue	(\$8,821,913)
Avoided Energy Costs	\$4,484,717	Rebates Paid	(\$4,939,467)
Avoided Capacity Costs	\$14,126,678	Administrative Costs	(\$443,368)
Avoided Transmission Expense	\$3,641,906		
Total Benefits	\$30,195,053	Total Costs	(\$14,204,748)
Benefit / Cost Ratio: 2.13			

<u>Societal Benefits</u>		<u>Societal Costs</u>	
Avoided Distribution Expense	\$9,029,969	Up Front Customer Investment	(\$238,265)
Avoided Energy Costs	\$5,036,462	Distribution System Admin. Costs	(\$1,814,941)
Avoided Capacity Costs	\$16,101,148	EK Administrative Costs	(\$477,133)
Avoided Transmission Expense	\$4,140,938		
External Environmental Benefits	\$692,258		
Total Benefits	\$35,000,775	Total Costs	(\$2,530,339)
Benefit / Cost Ratio: 13.83			

Commercial Efficient HVAC Program

Distribution System Benefits		Distribution System Costs	
Power Bill Decrease	\$928,614	Revenue Decrease	(\$1,335,164)
Rebates From EK	\$462,237	Administrative Costs	(\$11,484)
		Rebates Paid To Consumers	(\$373,235)
Total Benefits	\$1,390,851	Total Costs	(\$1,719,883)
Benefit / Cost Ratio: 0.81			

Participant Benefits		Participant Costs	
Electric Bill Decreases	\$783,436	Up Front Investment	(\$597,836)
Rebates From Distribution System	\$298,918		
Total Benefits	\$1,082,354	Total Costs	(\$597,836)
Benefit / Cost Ratio: 1.81			

Total Resource Benefits		Total Resource Costs	
Avoided Distribution Expense	\$167,895	Up Front Customer Investment	(\$746,470)
Avoided Energy Costs	\$839,986	Distribution System Admin. Costs	(\$11,484)
Avoided Capacity Costs	\$782,867	EK Administrative Costs	(\$30,624)
Avoided Transmission Expense	\$76,993		
Total Benefits	\$1,867,741	Total Costs	(\$788,578)
Benefit / Cost Ratio: 2.37			

EK Benefits		EK Costs	
Avoided Distribution Expense	\$167,895	Decrease in Revenue	(\$928,614)
Avoided Energy Costs	\$839,986	Rebates Paid	(\$462,237)
Avoided Capacity Costs	\$782,867	Administrative Costs	(\$30,624)
Avoided Transmission Expense	\$76,993		
Total Benefits	\$1,867,741	Total Costs	(\$1,421,475)
Benefit / Cost Ratio: 1.31			

Societal Benefits		Societal Costs	
Avoided Distribution Expense	\$193,682	Up Front Customer Investment	(\$790,513)
Avoided Energy Costs	\$963,130	Distribution System Admin. Costs	(\$12,162)
Avoided Capacity Costs	\$904,729	EK Administrative Costs	(\$32,431)
Avoided Transmission Expense	\$88,818		
External Environmental Benefits	\$193,030		
Total Benefits	\$2,343,389	Total Costs	(\$835,106)
Benefit / Cost Ratio: 2.81			

Commercial Building Performance Program

Distribution System Benefits		Distribution System Costs	
Power Bill Decrease	\$1,582,177	Revenue Decrease	(\$2,310,780)
Rebates From EK	\$779,391	Administrative Costs	(\$398,117)
		Rebates Paid To Consumers	(\$823,797)
Total Benefits	\$2,361,568	Total Costs	(\$3,532,694)
Benefit / Cost Ratio: 0.67			

Participant Benefits		Participant Costs	
Electric Bill Decreases	\$1,569,653	Up Front Investment	(\$1,318,306)
Rebates From Distribution System	\$659,766		
Total Benefits	\$2,229,419	Total Costs	(\$1,318,306)
Benefit / Cost Ratio: 1.69			

Total Resource Benefits		Total Resource Costs	
Avoided Distribution Expense	\$272,895	Up Front Customer Investment	(\$1,646,062)
Avoided Energy Costs	\$1,479,336	Distribution System Admin. Costs	(\$398,117)
Avoided Capacity Costs	\$1,191,502	EK Administrative Costs	(\$30,624)
Avoided Transmission Expense	\$125,145		
Total Benefits	\$3,068,878	Total Costs	(\$2,074,803)
Benefit / Cost Ratio: 1.48			

EK Benefits		EK Costs	
Avoided Distribution Expense	\$272,895	Decrease in Revenue	(\$1,577,278)
Avoided Energy Costs	\$1,479,336	Rebates Paid	(\$779,391)
Avoided Capacity Costs	\$1,191,502	Administrative Costs	(\$30,624)
Avoided Transmission Expense	\$125,145		
Total Benefits	\$3,068,878	Total Costs	(\$2,387,293)
Benefit / Cost Ratio: 1.29			

Societal Benefits		Societal Costs	
Avoided Distribution Expense	\$301,830	Up Front Customer Investment	(\$1,743,182)
Avoided Energy Costs	\$1,625,717	Distribution System Admin. Costs	(\$421,607)
Avoided Capacity Costs	\$1,319,112	EK Administrative Costs	(\$32,431)
Avoided Transmission Expense	\$138,413		
External Environmental Benefits	\$330,151		
Total Benefits	\$3,715,223	Total Costs	(\$2,197,220)
Benefit / Cost Ratio: 1.69			

Commercial New Construction Program

Distribution System Benefits		Distribution System Costs	
Power Bill Decrease	\$3,662,740	Revenue Decrease	(\$5,485,036)
Rebates From EK	\$2,082,460	Administrative Costs	(\$122,498)
		Rebates Paid To Consumers	(\$1,714,967)
Total Benefits	\$5,745,200	Total Costs	(\$7,322,501)
Benefit / Cost Ratio: 0.78			

Participant Benefits		Participant Costs	
Electric Bill Decreases	\$3,131,496	Up Front Investment	(\$2,746,981)
Rebates From Distribution System	\$1,373,491		
Total Benefits	\$4,504,987	Total Costs	(\$2,746,981)
Benefit / Cost Ratio: 1.64			

Total Resource Benefits		Total Resource Costs	
Avoided Distribution Expense	\$555,131	Up Front Customer Investment	(\$3,429,935)
Avoided Energy Costs	\$3,515,603	Distribution System Admin. Costs	(\$122,498)
Avoided Capacity Costs	\$2,565,954	EK Administrative Costs	(\$91,873)
Avoided Transmission Expense	\$254,571		
Total Benefits	\$6,891,259	Total Costs	(\$3,644,306)
Benefit / Cost Ratio: 1.89			

EK Benefits		EK Costs	
Avoided Distribution Expense	\$555,131	Decrease in Revenue	(\$3,662,740)
Avoided Energy Costs	\$3,515,603	Rebates Paid	(\$2,082,460)
Avoided Capacity Costs	\$2,565,954	Administrative Costs	(\$91,873)
Avoided Transmission Expense	\$254,571		
Total Benefits	\$6,891,259	Total Costs	(\$5,837,073)
Benefit / Cost Ratio: 1.18			

Societal Benefits		Societal Costs	
Avoided Distribution Expense	\$644,470	Up Front Customer Investment	(\$3,632,304)
Avoided Energy Costs	\$4,063,754	Distribution System Admin. Costs	(\$129,725)
Avoided Capacity Costs	\$2,984,623	EK Administrative Costs	(\$97,294)
Avoided Transmission Expense	\$295,540		
External Environmental Benefits	\$794,381		
Total Benefits	\$8,782,768	Total Costs	(\$3,859,323)
Benefit / Cost Ratio: 2.28			

Commercial Efficient Refrigeration Program

Distribution System Benefits		Distribution System Costs	
Power Bill Decrease	\$1,326,542	Revenue Decrease	(\$2,092,190)
Rebates From EK	\$760,481	Administrative Costs	(\$2,680)
		Rebates Paid To Consumers	(\$234,468)
Total Benefits	\$2,087,023	Total Costs	(\$2,329,338)
Benefit / Cost Ratio: 0.90			

Participant Benefits		Participant Costs	
Electric Bill Decreases	\$1,329,111	Up Front Investment	(\$375,564)
Rebates From Distribution System	\$187,782		
Total Benefits	\$1,516,893	Total Costs	(\$375,564)
Benefit / Cost Ratio: 4.04			

Total Resource Benefits		Total Resource Costs	
Avoided Distribution Expense	\$154,078	Up Front Customer Investment	(\$468,936)
Avoided Energy Costs	\$1,252,357	Distribution System Admin. Costs	(\$2,680)
Avoided Capacity Costs	\$686,395	EK Administrative Costs	(\$30,624)
Avoided Transmission Expense	\$70,657		
Total Benefits	\$2,163,487	Total Costs	(\$502,240)
Benefit / Cost Ratio: 4.31			

EK Benefits		EK Costs	
Avoided Distribution Expense	\$154,078	Decrease in Revenue	(\$1,325,963)
Avoided Energy Costs	\$1,252,357	Rebates Paid	(\$760,481)
Avoided Capacity Costs	\$686,395	Administrative Costs	(\$30,624)
Avoided Transmission Expense	\$70,657		
Total Benefits	\$2,163,487	Total Costs	(\$2,117,068)
Benefit / Cost Ratio: 1.02			

Societal Benefits		Societal Costs	
Avoided Distribution Expense	\$173,738	Up Front Customer Investment	(\$496,604)
Avoided Energy Costs	\$1,403,050	Distribution System Admin. Costs	(\$2,838)
Avoided Capacity Costs	\$775,030	EK Administrative Costs	(\$32,431)
Avoided Transmission Expense	\$79,673		
External Environmental Benefits	\$300,881		
Total Benefits	\$2,732,372	Total Costs	(\$531,873)
Benefit / Cost Ratio: 5.14			

Industrial Premium Motors Rebate Program

Distribution System Benefits		Distribution System Costs	
Power Bill Decrease	\$2,432,522	Revenue Decrease	(\$3,961,721)
Rebates From EK	\$1,148,416	Administrative Costs	(\$3,828)
		Rebates Paid To Consumers	(\$382,805)
Total Benefits	\$3,580,938	Total Costs	(\$4,348,354)
Benefit / Cost Ratio: 0.82			

Participant Benefits		Participant Costs	
Electric Bill Decreases	\$2,324,626	Up Front Investment	(\$686,132)
Rebates From Distribution System	\$306,583		
Total Benefits	\$2,631,209	Total Costs	(\$686,132)
Benefit / Cost Ratio: 3.83			

Total Resource Benefits		Total Resource Costs	
Avoided Distribution Expense	\$280,655	Up Front Customer Investment	(\$856,718)
Avoided Energy Costs	\$2,478,645	Distribution System Admin. Costs	(\$3,828)
Avoided Capacity Costs	\$1,275,544	EK Administrative Costs	(\$15,312)
Avoided Transmission Expense	\$128,702		
Total Benefits	\$4,163,546	Total Costs	(\$875,858)
Benefit / Cost Ratio: 4.75			

EK Benefits		EK Costs	
Avoided Distribution Expense	\$280,655	Decrease in Revenue	(\$2,432,522)
Avoided Energy Costs	\$2,478,645	Rebates Paid	(\$1,148,416)
Avoided Capacity Costs	\$1,275,544	Administrative Costs	(\$15,312)
Avoided Transmission Expense	\$128,702		
Total Benefits	\$4,163,546	Total Costs	(\$3,596,250)
Benefit / Cost Ratio: 1.16			

Societal Benefits		Societal Costs	
Avoided Distribution Expense	\$321,215	Up Front Customer Investment	(\$907,265)
Avoided Energy Costs	\$2,841,219	Distribution System Admin. Costs	(\$4,054)
Avoided Capacity Costs	\$1,461,780	EK Administrative Costs	(\$16,216)
Avoided Transmission Expense	\$147,302		
External Environmental Benefits	\$572,762		
Total Benefits	\$5,344,278	Total Costs	(\$927,535)
Benefit / Cost Ratio: 5.76			

Industrial Variable Speed Drives Program

Distribution System Benefits		Distribution System Costs	
Power Bill Decrease	\$13,512,265	Revenue Decrease	(\$22,006,723)
Rebates From EK	\$6,699,091	Administrative Costs	(\$2,680)
		Rebates Paid To Consumers	(\$2,636,762)
Total Benefits	\$20,211,356	Total Costs	(\$24,646,165)
Benefit / Cost Ratio: 0.82			

Participant Benefits		Participant Costs	
Electric Bill Decreases	\$12,912,922	Up Front Investment	(\$3,589,961)
Rebates From Distribution System	\$2,111,742		
Total Benefits	\$15,024,664	Total Costs	(\$3,589,961)
Benefit / Cost Ratio: 4.19			

Total Resource Benefits		Total Resource Costs	
Avoided Distribution Expense	\$1,534,359	Up Front Customer Investment	(\$4,482,496)
Avoided Energy Costs	\$13,768,475	Distribution System Admin. Costs	(\$2,680)
Avoided Capacity Costs	\$6,966,825	EK Administrative Costs	(\$76,561)
Avoided Transmission Expense	\$703,622		
Total Benefits	\$22,973,281	Total Costs	(\$4,561,737)
Benefit / Cost Ratio: 5.04			

EK Benefits		EK Costs	
Avoided Distribution Expense	\$1,534,359	Decrease in Revenue	(\$13,512,265)
Avoided Energy Costs	\$13,768,475	Rebates Paid	(\$6,699,091)
Avoided Capacity Costs	\$6,966,825	Administrative Costs	(\$76,561)
Avoided Transmission Expense	\$703,622		
Total Benefits	\$22,973,281	Total Costs	(\$20,287,917)
Benefit / Cost Ratio: 1.13			

Societal Benefits		Societal Costs	
Avoided Distribution Expense	\$1,755,447	Up Front Customer Investment	(\$4,746,967)
Avoided Energy Costs	\$15,782,512	Distribution System Admin. Costs	(\$2,838)
Avoided Capacity Costs	\$7,980,832	EK Administrative Costs	(\$81,078)
Avoided Transmission Expense	\$805,008		
External Environmental Benefits	\$3,181,599		
Total Benefits	\$29,505,398	Total Costs	(\$4,830,883)
Benefit / Cost Ratio: 6.11			

Program Descriptions for Existing DSM Programs

Introduction

For over 20 years, EKPC and its 16 member systems have promoted the cost-effective use of energy by offering conservation and other marketing programs to the retail customer. These programs were designed to meet the needs of the customer, and to delay the need for additional generating capacity.

This section of the IRP describes the existing DSM programs. These programs are implemented and administered by the member distribution systems. EKPC supports the member systems with analysis, promotional material, incentives, and other support services. EKPC considers the programs as part of its overall supply portfolio, with the *understanding that the programs impact EKPC indirectly, through its member systems.*

Current DSM programs offered by EKPC's member systems which are being treated as Existing programs in this IRP are listed below and described in this exhibit:

- Tune-Up HVAC Maintenance Program
- Geothermal Heating & Cooling Incentive Program
- Electric Thermal Storage Incentive Program
- Electric Water Heater Incentive Program
- Air-Source Heat Pump Incentive Program
- Button-up Weatherization Program

Detailed assumptions sheets for each of these programs are found in Exhibit DSM-4.

New DSM programs are discussed in Exhibit DSM-9.

Tune-Up HVAC Maintenance Program

Program Description

This program offers the follow measures:

- Cleaning indoor and outdoor heat exchanger coils
- Changing filters
- Measuring the temperature differential across the indoor coil to determine proper compressor operation
- Checking the thermostat to verify operation and proper staging
- Measuring air flows to ensure proper conditioned air distribution
- Sealing the ductwork, either through traditional mastic sealers or with the *Aeroseal* duct sealing program.

Duct losses are to be reduced to 10% or less. Duct loss measurement requires the use of a blower door test and the blower door subtraction method, or the approved duct loss measurement test associated with the *Aeroseal* duct sealing program. Only contractors trained and certified by EKPC may be used.

Target Markets

The program is targeted to single-family homes using electric furnaces or electric heat pumps that have exhibited high energy use. It is also available to multi-family residences, churches, and commercial facilities heated by electric furnaces, electric heat pumps, and geothermal units. All facilities must have duct systems that are at least two years old to qualify for incentive payments.

Geothermal Heating & Cooling Incentive Program

Program Description

The program is designed to encourage homeowners to choose efficient geothermal heating and cooling systems rather than less efficient forms of heating and cooling.

Target Markets

The incentives are available to any residential retail member of participating EKPC cooperatives. The primary market consists of retail members who are constructing new stick-built homes, as well as retail member homeowners who currently heat with electric furnaces, ceiling cables, baseboard heat or fossil fuels.

Electric Thermal Storage Incentive Program

Program Description

Electric Thermal Storage provides retail members with a cost-efficient means of using electricity for space heating. A discounted rate for ETS energy encourages retail members to use electricity for heating during off peak hours. This improves the utility's load factor, reduces energy costs for the retail member, and delays the need for new peak load capacity expenses.

Target Market

The incentives are available to any retail member, but are primarily designed for retail members who currently use electricity (including heat pumps, baseboard, ceiling cable, or electric furnace heating systems) as their primary source for space heating. The secondary market includes retail members who use wood, coal, propane, or kerosene as primary or secondary sources for space heating.

Electric Water Heater Incentive Program

Program Description

The electric water heater incentive is designed to encourage residential retail members to choose a high efficiency electric water heater over other available options. It is also designed to encourage retail members using a fossil-fuel water heater to convert to a high-efficiency electric water heater. By reducing the cost of purchasing a high efficiency water heater, cooperatives contribute to lower long-term energy costs and improved satisfaction among residential retail members.

Target Market

The incentive is available to any residential retail member of a participating EKPC cooperative who is building a new home and installing that home's initial water heater. The incentive is also available to any residential retail member who replaces an existing gas or propane water heater with an electric water heater that meets the defined program standards.

Air-Source Heat Pump Incentive Program

Program Description

This program provides incentives for residential customers to install a high efficiency air source heat pump instead of a less efficient alternative on the market. For the 2006 plan, the program impacts reflect the higher baseline efficiencies brought about by the new Federal standards for heat pumps and air conditioners.

Target Markets

The primary targets for this program are retail members who are building new homes in areas where natural gas heat is an option. An important secondary market is the HVAC retrofit market, where the objective is to have retail members replace electric furnaces, natural gas heat, or propane heat with high-efficiency electric heat pumps.

Button-Up Weatherization Program

Program Description

The program requires the installation of insulation materials or the use of other weatherization techniques to reduce heat loss in the home. Any retail member who resides in a stick-built or manufactured home that is at least two years old and uses electricity as the primary source for space heat is eligible.

Target Markets

The primary program targets are older homes exhibiting unusually high electricity usage.

Program Descriptions for New DSM Programs

Introduction

This section of the IRP describes the new DSM programs. These programs are in the planning stage, and appear cost-effective as designed to this point.

DSM program design and implementation are complex and dynamic undertakings. It is possible that DSM programs that are selected through this evaluation process may not be implemented as they have been described in this document. DSM programs that are ultimately launched will first be subjected to a much more rigorous program design effort. In certain cases, a demonstration or pilot project may precede full-scale implementation to test the validity of the program concept. This could mean that certain program concepts are modified, and some may not ultimately be implemented.

DSM programs that are included as New programs for this IRP are listed below and are also described in this exhibit:

- Compact Fluorescent Lighting (Residential) *
- Touchstone Energy Geothermal Home (Residential) *
- Touchstone Energy Heat Pump Home (Residential) *
- Touchstone Energy Manufactured Home (Residential) *
- Direct Load Control for Air Conditioners and Water Heaters (Residential)
- ENERGY STAR Clothes Washer (Residential)
- ENERGY STAR Room Air Conditioner (Residential)
- ENERGY STAR Refrigerator (Residential)
- Programmable Thermostat with Electric Furnace Retrofit (Residential)
- Dual Fuel Air Source Heat Pump Retrofit (Residential)
- Commercial Lighting *
- Commercial & Industrial Demand Response
- Commercial Efficient HVAC *
- Commercial Building Performance *
- Commercial New Construction
- Commercial Efficient Refrigeration
- Industrial Premium Motors *
- Industrial Variable Speed Drives

Programs with an asterisk (*) next to them are currently being offered in some form by EKPC member systems to retail customers. They are treated as New programs in this IRP for one of three reasons:

1. They have been in the field for less than three years.
2. Projected participation rates are much higher than historic participation.
3. The planned program is significantly different in design than the historic program.

Detailed assumptions sheets for each of these programs are provided as Exhibit DSM-5.

Compact Fluorescent Lighting Program

Program Description

This program provides compact fluorescent bulbs to retail members at the annual meetings held by the distribution cooperatives every year. Each registered member receives a two-pack of 14-watt compact fluorescent bulbs that replace 2 60-watt incandescent light bulbs. EKPC pays the price premium for the compact fluorescent bulbs over and above the cost of the incandescent bulbs.

Target Markets

The program is targeted to all residential members.

Touchstone Energy Geothermal Home

Program Description

The program is designed to encourage new homes to be built to higher standards for thermal integrity and equipment efficiency, as well as to choose efficient geothermal heating and cooling systems rather than less efficient forms of heating and cooling. Homes built to Touchstone Energy Home Standards typically use 30% less energy than the same home built to typical construction standards. Plans are submitted and heat loss/heat gain calculations are made before the home is built, and a blower door test is administered after the home is built to verify that the home meets the standard.

Target Markets

This program is designed to serve the residential new construction market. The incentives are available to any residential retail member of participating EKPC cooperatives. The primary market consists of retail members who are constructing new stick-built homes.

Touchstone Energy Heat Pump Home

Program Description

The program is designed to encourage new homes to be built to higher standards for thermal integrity and equipment efficiency, as well as to choose a high efficiency air source heat pump (SEER 15, HSPF 8.5) rather than less efficient forms of heating and cooling. Homes built to Touchstone Energy Home Standards typically use 30% less energy than the same home built to typical construction standards. Plans are submitted and heat loss/heat gain calculations are made before the home is built, and a blower door test is administered after the home is built to verify that the home meets the standard.

Target Markets

This program is designed to serve the residential new construction market. The incentives are available to any residential retail member of participating EKPC cooperatives. The primary market consists of retail members who are constructing new stick-built homes.

Touchstone Energy Manufactured Home

Program Description

The Touchstone Energy Manufactured Home is an all-electric manufactured home that is built to Energy Star® specifications. A manufactured home that is built to these standards typically uses 30% less energy. The Touchstone Energy Home includes a sealed duct system, energy efficient double-pane windows, added insulation in the roof and wall, and an improved gasket that seals the halves of the home together. Buyers of qualified manufactured homes receive a rebate from their local cooperative.

Target Markets

This program is designed to serve the new manufactured home market. The incentives are available to any residential retail member of participating EKPC cooperatives.

Direct Load Control for Air Conditioners and Water Heaters

Program Description

This program installs switches to control residential air conditioning and water heating loads during peak demand periods in order to reduce peak load requirements. This program design deploys switches that are engineered for Automated Meter Reading (AMR) systems already in use at the member cooperatives. Central air conditioning and heat pump units are cycled on and off, while water heater loads are curtailed. The typical control duration is four hours. Participating customers receive an annual bill credit incentive.

Target Market

The incentive is available to any residential retail member of a participating EKPC cooperative who has a qualifying central air conditioner. Qualifying water heaters must have a minimum capacity of 40 gallons in order to ensure that the interruption does not affect customer comfort.

Energy Star® Clothes Washers

Program Description

This program is designed to provide incentives to residential retail members to purchase ENERGY STAR qualified clothes washers. Through superior design and system features, ENERGY STAR qualified clothes washers clean clothes using 50% less energy than standard washers. ENERGY STAR clothes washers use less water per load, saving energy needed to heat the hot water. In addition, ENERGY STAR clothes washers extract more water from clothes during the spin cycle. This reduces drying time, thereby saving energy needed to dry clothes.

Target Market

The program is designed to reach residential customers who are purchasing new clothes dryers.

Energy Star® Room Air Conditioners

Program Description

This program is designed to provide incentives to residential retail members to purchase ENERGY STAR qualified room air conditioners.

Target Market

The program is designed to reach residential customers who are purchasing new room air conditioners.

Energy Star® Refrigerators

Program Description

This program is designed to provide incentives to residential retail members to purchase ENERGY STAR qualified new refrigerators. ENERGY STAR qualified refrigerators use an estimated 15% less energy than similar capacity refrigerators that meet DOE standards.

Target Market

The program is designed to reach residential customers who are purchasing new refrigerators.

Programmable Thermostat with Electric Furnace Retrofit

Program Description

This program is designed to provide incentives to residential retail members to install programmable thermostats. Properly installed programmable thermostats save 5-10% of heating and cooling energy. This program is designed for residential customers who heat their homes with electricity but do not have a heat pump. Some studies have shown that programmable thermostats can significantly increase morning peak loads when used with heat pumps.

Target Market

The program is designed to reach residential customers who heat their homes with electricity using a primary heat system that is not a heat pump.

Dual Fuel Air Source Heat Pump Retrofit

Program Description

This program is designed to procure the energy efficiency benefits of high efficiency air source heat pumps for customers who currently heat with fossil fuels, and at the same time not increase the winter peak load requirements on the EKPC system. The package consists of the add-on heat pump components plus a thermostat control set to a pre-determined temperature (typically 25 degrees Fahrenheit). When the outside air temperature dips below the set point, the thermostat shuts the heat pump off and turns the fossil heating system on.

Target Market

The program is designed to reach residential customers who have central air conditioning and heat with propane or natural gas.

Commercial Lighting Program

Program Description

This program offers incentives to commercial and industrial customers to install high efficiency lamps and ballasts in their facilities. LED exit signs and T-5 fluorescent fixtures are examples of eligible technologies.

Target Market

The incentive is available to any existing commercial or industrial facility in the service territory of a participating EKPC cooperative. The facility and its lighting system must have been in service for at least two years.

Commercial & Industrial Demand Response

Program Description

This demand response program is designed to provide incentives to large customers to reduce their electricity demands on the grid, with short notice (less than 24 hours), for short periods of time, in response to short term conditions external to the customer facility. Typically, those conditions will be either an excessively high price or a shortage of available power. Participants are reimbursed for the cost of the smart meter needed, and receive an annual incentive of \$25 per kW offered.

Target Market

The program is designed for customers with peak demands above 50 kW.

Commercial Efficient HVAC Program

Program Description

This program promotes high efficiency packaged HVAC equipment. It provides incentives for unitary commercial air conditioners and heat pumps that exceed the 2006 Federal Guidelines of 13 SEER and 7.7 HSPF.

Target Market

The incentive is available to any existing commercial or industrial facility that uses packaged single or split air conditioning or heat pump units, usually rooftop units.

Commercial Building Performance Program

Program Description

This program addresses the need to boost the energy performance of existing equipment and systems by offering building owners and managers proper tuning, operation and maintenance services for HVAC and other equipment in existing buildings. This program combines features of duct sealing with heat pump/air conditioning tune-up (for smaller buildings) and retro-commissioning (for larger buildings).

The heat pump/air conditioning tune-up package includes:

- All accessible ductwork sealed
- Filters changed/cleaned
- Thermostat checked/adjusted for proper function
- Indoor and outdoor coils cleaned
- Refrigerant charge checked and corrected if needed
- Airflow checked and corrected if needed

Retro-commissioning is the systematic process of ensuring that an existing building's energy systems operate in an optimal manner by examining actual performances against design performance. The majority of savings tend to come from adjusting the energy management systems and controls.

Target Market

The program is designed to serve any existing commercial or industrial facility that uses electricity for space cooling and/or space heating.

Commercial New Construction Program

Program Description

This program promotes integrated design, commissioning, and more advanced technologies in commercial new construction. Electricity savings are realized across a number of end-uses, with the majority occurring from lighting, cooling, and heating. It is anticipated that new K-12 schools would be served by this program.

Target Market

This program is designed to serve the commercial new construction and major renovation market, including the K-12 schools market. The incentives are available to any residential retail member of participating EKPC cooperatives. The primary market consists of retail members who are constructing new stick-built homes.

Commercial Efficient Refrigeration Program

Program Description

This program promotes high efficiency refrigeration equipment. Key technologies include reach-in refrigerators and freezers, walk-in coolers and freezers, refrigerated vending machines, ice-makers, beverage merchandizers, and central refrigeration systems for grocery stores. The program is designed to promote ENERGY STAR equipment, Federal Energy Management Program (FEMP) recommendations, and the Consortium for Energy Efficiency (CEE) specifications as applicable.

Target Market

The incentive is available to any existing commercial or industrial facility that uses refrigeration equipment. The primary markets include grocery stores, convenience stores, and restaurants.

Industrial Premium Motors Program

Program Description

The premium motor incentive is designed to encourage commercial and industrial customers to upgrade in service motor stock to premium efficiency motors. Premium efficiency motors have efficiencies which are higher than Federal Standards, meeting or exceeding the National Electrical Manufacturers Association's NEMA Premium™ efficiency ratings.

Target Market

This program is designed to improve motor efficiency for the non-OEM motor purchase market. The facility must have been in service for two years. In service motors at all commercial, industrial, and institutional facilities are eligible. Spare motors are not eligible. Efficiencies for 1-200 horsepower motors are specified. Motors greater than 200 horsepower are eligible but must be evaluated on a case-by-case basis.

Industrial Variable Speed Drives Program

Program Description

This program is designed to promote variable speed drives and drive systems.

Target Market

This program is designed to improve motor efficiency for the non-OEM motor purchase market. The facility must have been in service for two years. In service motors at all commercial, industrial, and institutional facilities are eligible.

Load Impacts of DSM Programs

Existing:

Electric Thermal Storage Program

(negative value = reduction in load)

Year	Participants	Impact on Total Requirements (MWh)	Impact on Winter Peak (MW)	Impact on Summer Peak (MW)
1995	1,885	12,131	-6.9	0.0
1996	2,950	18,981	-10.8	0.0
1997	4,032	25,933	-14.7	0.0
1998	4,602	29,595	-16.8	0.0
1999	5,038	32,396	-18.4	0.0
2000	5,579	35,879	-20.3	0.0
2001	5,908	38,000	-21.5	0.0
2002	6,142	39,503	-22.4	0.0
2003	6,347	40,827	-23.1	0.0
2004	6,479	41,675	-23.6	0.0
2005	6,723	43,242	-24.5	0.0
2006	6,973	44,906	-25.4	0.0
2007	6,973	44,906	-25.4	0.0
2008	6,973	44,906	-25.4	0.0
2009	6,973	44,906	-25.4	0.0
2010	6,973	44,906	-25.4	0.0
2011	6,973	44,906	-25.4	0.0
2012	6,973	44,906	-25.4	0.0
2013	6,973	44,906	-25.4	0.0
2014	6,973	44,906	-25.4	0.0
2015	6,973	44,906	-25.4	0.0
2016	6,973	44,906	-25.4	0.0
2017	6,973	44,906	-25.4	0.0
2018	6,973	44,906	-25.4	0.0
2019	6,973	44,906	-25.4	0.0
2020	6,973	44,906	-25.4	0.0
2021	6,973	44,906	-25.4	0.0

Electric Water Heater Program*(negative value = reduction in load)*

Year	Participants	Impact on Total Requirements (MWh)	Impact on Winter Peak (MW)	Impact on Summer Peak (MW)
1995	1,003	101	0.0	0.0
1996	1,622	166	0.0	0.0
1997	2,596	264	0.1	0.0
1998	3,479	353	0.1	0.0
1999	4,428	452	0.1	0.0
2000	5,216	534	0.1	0.0
2001	5,972	614	0.1	0.1
2002	6,855	703	0.2	0.1
2003	7,731	796	0.2	0.1
2004	8,417	861	0.2	0.1
2005	9,095	927	0.2	0.1
2006	9,785	854	0.2	0.1
2007	9,785	854	0.2	0.1
2008	9,785	854	0.2	0.1
2009	9,785	854	0.2	0.1
2010	9,785	854	0.2	0.1
2011	9,785	854	0.2	0.1
2012	9,785	854	0.2	0.1
2013	9,785	854	0.2	0.1
2014	9,785	854	0.2	0.1
2015	9,785	854	0.2	0.1
2016	9,785	854	0.2	0.1
2017	9,785	854	0.2	0.1
2018	9,785	854	0.2	0.1
2019	9,785	854	0.2	0.1
2020	9,785	854	0.2	0.1
2021	9,785	854	0.2	0.1

Geothermal Heating & Cooling Program*(negative value = reduction in load)*

Year	Participants	Impact on Total Requirements (MWh)	Impact on Winter Peak (MW)	Impact on Summer Peak (MW)
1995	1,544	-4,480	-7.4	-1.6
1996	1,941	-5,632	-9.3	-2.0
1997	2,416	-7,010	-11.5	-2.4
1998	2,824	-8,194	-13.5	-2.9
1999	3,221	-9,346	-15.4	-3.3
2000	3,582	-10,394	-17.1	-3.6
2001	3,954	-11,473	-18.9	-4.0
2002	4,261	-12,364	-20.4	-4.3
2003	4,451	-12,915	-21.3	-4.5
2004	4,608	-13,371	-22.0	-4.7
2005	4,752	-13,789	-22.7	-4.8
2006	4,902	-14,224	-23.4	-5.0
2007	4,902	-14,224	-23.4	-5.0
2008	4,902	-14,224	-23.4	-5.0
2009	4,902	-14,224	-23.4	-5.0
2010	4,902	-14,224	-23.4	-5.0
2011	4,902	-14,224	-23.4	-5.0
2012	4,902	-14,224	-23.4	-5.0
2013	4,902	-14,224	-23.4	-5.0
2014	4,902	-14,224	-23.4	-5.0
2015	4,902	-14,224	-23.4	-5.0
2016	4,902	-14,224	-23.4	-5.0
2017	4,902	-14,224	-23.4	-5.0
2018	4,902	-14,224	-23.4	-5.0
2019	4,902	-14,224	-23.4	-5.0
2020	4,902	-14,224	-23.4	-5.0
2021	4,902	-14,224	-23.4	-5.0

Air Source Heat Pump Program

(negative value = reduction in load)

Year	Participants	Impact on Total Requirements (MWh)	Impact on Winter Peak (MW)	Impact on Summer Peak (MW)
1995	161	129	0.4	-0.1
1996	204	163	0.5	-0.1
1997	260	208	0.6	-0.1
1998	344	275	0.8	-0.1
1999	688	549	1.6	-0.2
2000	1,077	858	2.6	-0.3
2001	1,547	1,232	3.7	-0.5
2002	2,117	1,684	5.0	-0.7
2003	2,763	2,198	6.6	-0.9
2004	3,579	2,846	8.5	-1.1
2005	4,094	3,256	9.7	-1.3
2006	4,754	3,783	11.3	-1.5
2007	4,754	3,783	11.3	-1.5
2008	4,754	3,783	11.3	-1.5
2009	4,754	3,783	11.3	-1.5
2010	4,754	3,783	11.3	-1.5
2011	4,754	3,783	11.3	-1.5
2012	4,754	3,783	11.3	-1.5
2013	4,754	3,783	11.3	-1.5
2014	4,754	3,783	11.3	-1.5
2015	4,754	3,783	11.3	-1.5
2016	4,754	3,783	11.3	-1.5
2017	4,754	3,783	11.3	-1.5
2018	4,754	3,783	11.3	-1.5
2019	4,754	3,783	11.3	-1.5
2020	4,754	3,783	11.3	-1.5
2021	4,754	3,783	11.3	-1.5

Tune-Up HVAC Maintenance Program*(negative value = reduction in load)*

Year	Participants	Impact on Total Requirements (MWh)	Impact on Winter Peak (MW)	Impact on Summer Peak (MW)
1995	494	-729	-0.6	-0.2
1996	1,428	-2,108	-1.6	-0.6
1997	2,068	-3,052	-2.4	-0.9
1998	2,341	-3,455	-2.7	-1.0
1999	2,455	-3,623	-2.8	-1.1
2000	2,584	-3,814	-2.9	-1.1
2001	2,686	-3,964	-3.1	-1.2
2002	2,860	-4,221	-3.3	-1.3
2003	3,198	-4,720	-3.6	-1.4
2004	3,706	-5,470	-4.2	-1.6
2005	4,037	-5,958	-4.6	-1.8
2006	4,387	-6,467	-5.0	-1.9
2007	4,387	-6,467	-5.0	-1.9
2008	4,387	-6,467	-5.0	-1.9
2009	4,387	-6,467	-5.0	-1.9
2010	4,387	-6,467	-5.0	-1.9
2011	4,387	-6,467	-5.0	-1.9
2012	4,387	-6,467	-5.0	-1.9
2013	4,387	-6,467	-5.0	-1.9
2014	4,387	-6,467	-5.0	-1.9
2015	4,387	-6,467	-5.0	-1.9
2016	4,387	-6,467	-5.0	-1.9
2017	4,387	-6,467	-5.0	-1.9
2018	4,387	-6,467	-5.0	-1.9
2019	4,387	-6,467	-5.0	-1.9
2020	4,387	-6,467	-5.0	-1.9
2021	4,387	-6,467	-5.0	-1.9

Button-Up Weatherization Program*(negative value = reduction in load)*

Year	Participants	Impact on Total Requirements (MWh)	Impact on Winter Peak (MW)	Impact on Summer Peak (MW)
1995	1,559	-4,084	-3.2	-1.2
1996	2,640	-6,916	-5.3	-2.1
1997	3,515	-9,208	-7.1	-2.8
1998	4,210	-11,029	-8.5	-3.3
1999	4,691	-12,289	-9.5	-3.7
2000	5,218	-13,670	-10.6	-4.1
2001	5,696	-14,922	-11.5	-4.5
2002	6,174	-16,174	-12.5	-4.9
2003	6,670	-17,474	-13.5	-5.2
2004	7,167	-18,776	-14.5	-5.6
2005	7,585	-19,871	-15.4	-6.0
2006	8,085	-21,181	-16.4	-6.4
2007	8,085	-21,181	-16.4	-6.4
2008	8,085	-21,181	-16.4	-6.4
2009	8,085	-21,181	-16.4	-6.4
2010	8,085	-21,181	-16.4	-6.4
2011	8,085	-21,181	-16.4	-6.4
2012	8,085	-21,181	-16.4	-6.4
2013	8,085	-21,181	-16.4	-6.4
2014	8,085	-21,181	-16.4	-6.4
2015	8,085	-21,181	-16.4	-6.4
2016	8,085	-21,181	-16.4	-6.4
2017	8,085	-21,181	-16.4	-6.4
2018	8,085	-21,181	-16.4	-6.4
2019	8,085	-21,181	-16.4	-6.4
2020	8,085	-21,181	-16.4	-6.4
2021	8,085	-21,181	-16.4	-6.4

New:**Compact Fluorescent Lighting***(negative value = reduction in load)*

Year	Participants	Impact on Total Requirements (MWh)	Impact on Winter Peak (MW)	Impact on Summer Peak (MW)
2006	37,700	-3,698	-0.6	-0.4
2007	75,400	-7,395	-1.2	-0.8
2008	113,100	-11,093	-1.9	-1.2
2009	150,800	-14,790	-2.3	-1.7
2010	188,500	-18,488	-2.9	-2.1
2011	226,200	-22,186	-3.5	-2.5
2012	263,900	-25,883	-4.1	-2.9
2013	301,600	-25,883	-4.1	-2.9
2014	339,300	-25,883	-4.1	-2.9
2015	377,000	-25,883	-4.1	-2.9
2016	377,000	-22,186	-3.5	-2.5
2017	377,000	-18,488	-2.9	-2.1
2018	377,000	-14,790	-2.3	-1.7
2019	377,000	-11,093	-1.7	-1.2
2020	377,000	-7,395	-1.2	-0.8
2021	377,000	-3,698	-0.6	-0.4

Touchstone Energy Geothermal Home*(negative value = reduction in load)*

Year	Participants	Impact on Total Requirements (MWh)	Impact on Winter Peak (MW)	Impact on Summer Peak (MW)
2006	40	-244	-0.3	-0.1
2007	80	-489	-0.7	-0.1
2008	120	-733	-0.7	-0.2
2009	160	-977	-1.3	-0.2
2010	200	-1,222	-1.7	-0.3
2011	240	-1,466	-2.0	-0.3
2012	280	-1,710	-2.4	-0.4
2013	320	-1,955	-2.7	-0.4
2014	360	-2,199	-3.0	-0.5
2015	400	-2,443	-3.4	-0.5
2016	400	-2,443	-3.4	-0.5
2017	400	-2,443	-3.4	-0.5
2018	400	-2,443	-3.4	-0.5
2019	400	-2,443	-3.4	-0.5
2020	400	-2,443	-3.4	-0.5
2021	400	-2,443	-3.4	-0.5

Touchstone Energy Heat Pump Home*(negative value = reduction in load)*

Year	Participants	Impact on Total Requirements (MWh)	Impact on Winter Peak (MW)	Impact on Summer Peak (MW)
2006	100	-238	-0.2	-0.1
2007	200	-476	-0.3	-0.1
2008	300	-713	-0.5	-0.2
2009	400	-951	-0.6	-0.3
2010	500	-1,189	-0.7	-0.3
2011	600	-1,427	-0.8	-0.4
2012	700	-1,665	-1.0	-0.5
2013	800	-1,903	-1.1	-0.5
2014	900	-2,140	-1.2	-0.6
2015	1,000	-2,378	-1.4	-0.6
2016	1,000	-2,378	-1.4	-0.6
2017	1,000	-2,378	-1.4	-0.6
2018	1,000	-2,378	-1.4	-0.6
2019	1,000	-2,378	-1.4	-0.6
2020	1,000	-2,378	-1.4	-0.6
2021	1,000	-2,378	-1.4	-0.6

Touchstone Energy Manufactured Home*(negative value = reduction in load)*

Year	Participants	Impact on Total Requirements (MWh)	Impact on Winter Peak (MW)	Impact on Summer Peak (MW)
2006	10	-56	0.0	0.0
2007	20	-112	-0.1	0.0
2008	30	-169	-0.1	0.0
2009	40	-225	-0.1	0.0
2010	50	-281	-0.2	-0.1
2011	60	-337	-0.2	-0.1
2012	70	-393	-0.2	-0.1
2013	80	-450	-0.3	-0.1
2014	90	-506	-0.3	-0.1
2015	100	-562	-0.3	-0.1
2016	100	-562	-0.3	-0.1
2017	100	-562	-0.3	-0.1
2018	100	-562	-0.3	-0.1
2019	100	-562	-0.3	-0.1
2020	100	-562	-0.3	-0.1
2021	100	-562	-0.3	-0.1

Direct Load Control for Air Conditioners and Water Heaters*(negative value = reduction in load)*

Year	Participants	Impact on Total Requirements (MWh)	Impact on Winter Peak (MW)	Impact on Summer Peak (MW)
2006	5,000	-76	-5.6	-7.6
2007	10,000	-153	-11.3	-15.3
2008	15,000	-229	-16.9	-22.9
2009	20,000	-305	-22.5	-30.5
2010	25,000	-381	-28.1	-38.2
2011	30,000	-458	-33.8	-45.8
2012	35,000	-534	-39.4	-53.4
2013	40,000	-610	-45.0	-61.0
2014	45,000	-686	-50.7	-68.7
2015	50,000	-763	-56.3	-76.3
2016	50,000	-763	-56.3	-76.3
2017	50,000	-763	-56.3	-76.3
2018	50,000	-763	-56.3	-76.3
2019	50,000	-763	-56.3	-76.3
2020	50,000	-763	-56.3	-76.3
2021	50,000	-763	-56.3	-76.3

ENERGY STAR Clothes Washer*(negative value = reduction in load)*

Year	Participants	Impact on Total Requirements (MWh)	Impact on Winter Peak (MW)	Impact on Summer Peak (MW)
2006	500	-191	0.0	0.0
2007	1,000	-381	-0.1	0.0
2008	1,500	-572	-0.1	-0.1
2009	2,000	-763	-0.2	-0.1
2010	2,500	-954	-0.2	-0.1
2011	3,000	-1,144	-0.2	-0.1
2012	3,500	-1,335	-0.3	-0.1
2013	4,000	-1,526	-0.3	-0.2
2014	4,500	-1,716	-0.4	-0.2
2015	5,000	-1,907	-0.4	-0.2
2016	5,000	-1,907	-0.4	-0.2
2017	5,000	-1,907	-0.4	-0.2
2018	5,000	-1,716	-0.4	-0.2
2019	5,000	-1,526	-0.3	-0.2
2020	5,000	-1,335	-0.3	-0.1
2021	5,000	-1,144	-0.2	-0.1

ENERGY STAR Room Air Conditioner*(negative value = reduction in load)*

Year	Participants	Impact on Total Requirements (MWh)	Impact on Winter Peak (MW)	Impact on Summer Peak (MW)
2006	600	-65	0.0	-0.1
2007	1,200	-131	0.0	-0.2
2008	1,800	-196	0.0	-0.3
2009	2,400	-262	0.0	-0.3
2010	3,000	-327	0.0	-0.4
2011	3,600	-392	0.0	-0.5
2012	4,200	-458	0.0	-0.6
2013	4,800	-523	0.0	-0.7
2014	5,400	-588	0.0	-0.8
2015	6,000	-654	0.0	-0.9
2016	6,000	-654	0.0	-0.9
2017	6,000	-654	0.0	-0.9
2018	6,000	-654	0.0	-0.9
2019	6,000	-654	0.0	-0.9
2020	6,000	-654	0.0	-0.9
2021	6,000	-588	0.0	-0.8

ENERGY STAR Refrigerator*(negative value = reduction in load)*

Year	Participants	Impact on Total Requirements (MWh)	Impact on Winter Peak (MW)	Impact on Summer Peak (MW)
2006	900	-88	0.0	0.0
2007	1,800	-177	0.0	0.0
2008	2,700	-265	0.0	0.0
2009	3,600	-353	0.0	-0.1
2010	4,500	-441	0.0	-0.1
2011	5,400	-530	-0.1	-0.1
2012	6,300	-618	-0.1	-0.1
2013	7,200	-706	-0.1	-0.1
2014	8,100	-794	-0.1	-0.1
2015	9,000	-883	-0.1	-0.1
2016	9,000	-883	-0.1	-0.1
2017	9,000	-883	-0.1	-0.1
2018	9,000	-883	-0.1	-0.1
2019	9,000	-883	-0.1	-0.1
2020	9,000	-883	-0.1	-0.1
2021	9,000	-794	-0.1	-0.1

Programmable Thermostat with Electric Furnace Retrofit*(negative value = reduction in load)*

Year	Participants	Impact on Total Requirements (MWh)	Impact on Winter Peak (MW)	Impact on Summer Peak (MW)
2006	650	-530	0.0	-0.1
2007	1,300	-1,061	0.0	-0.1
2008	1,950	-1,591	0.0	-0.2
2009	2,600	-2,121	0.0	-0.3
2010	3,250	-2,652	0.0	-0.4
2011	3,900	-3,182	0.0	-0.4
2012	4,550	-3,713	0.0	-0.5
2013	5,200	-4,243	0.0	-0.6
2014	5,850	-4,773	0.0	-0.7
2015	6,500	-5,304	0.0	-0.7
2016	6,500	-5,304	0.0	-0.7
2017	6,500	-4,773	0.0	-0.7
2018	6,500	-4,243	0.0	-0.6
2019	6,500	-3,713	0.0	-0.5
2020	6,500	-3,182	0.0	-0.4
2021	6,500	-2,652	0.0	-0.4

Dual Fuel Air Source Heat Pump Retrofit*(negative value = reduction in load)*

Year	Participants	Impact on Total Requirements (MWh)	Impact on Winter Peak (MW)	Impact on Summer Peak (MW)
2006	100	436	0.0	0.0
2007	200	872	0.0	0.0
2008	300	1,309	0.0	0.0
2009	400	1,745	0.0	0.0
2010	500	2,181	0.0	0.0
2011	600	2,617	0.0	0.0
2012	700	3,054	0.0	0.0
2013	800	3,490	0.0	0.0
2014	900	3,926	0.0	0.0
2015	1,000	4,362	0.0	0.0
2016	1,000	4,362	0.0	0.0
2017	1,000	4,362	0.0	0.0
2018	1,000	4,362	0.0	0.0
2019	1,000	4,362	0.0	0.0
2020	1,000	4,362	0.0	0.0
2021	1,000	4,362	0.0	0.0

Commercial Lighting*(negative value = reduction in load)*

Year	Participants	Impact on Total Requirements (MWh)	Impact on Winter Peak (MW)	Impact on Summer Peak (MW)
2006	570	-2,788	-0.3	-0.4
2007	1,140	-5,577	-0.6	-0.8
2008	1,710	-8,365	-0.9	-1.3
2009	2,280	-11,153	-1.2	-1.7
2010	2,850	-13,941	-1.5	-2.1
2011	3,420	-16,730	-1.8	-2.5
2012	3,990	-19,518	-2.1	-2.9
2013	4,560	-22,306	-2.4	-3.4
2014	5,130	-25,095	-2.7	-3.8
2015	5,700	-27,883	-3.0	-4.2
2016	5,700	-25,095	-2.7	-3.8
2017	5,700	-22,306	-2.4	-3.4
2018	5,700	-19,518	-2.1	-2.9
2019	5,700	-16,730	-1.8	-2.5
2020	5,700	-13,941	-1.5	-2.1
2021	5,700	-11,153	-1.2	-1.7

Commercial & Industrial Demand Response*(negative value = reduction in load)*

Year	Participants	Impact on Total Requirements (MWh)	Impact on Winter Peak (MW)	Impact on Summer Peak (MW)
2006	150	-1,716	-5.7	-5.7
2007	350	-4,005	-13.4	-13.4
2008	500	-5,721	-19.1	-19.1
2009	500	-5,721	-19.1	-19.1
2010	500	-5,721	-19.1	-19.1
2011	500	-5,721	-19.1	-19.1
2012	500	-5,721	-19.1	-19.1
2013	500	-5,721	-19.1	-19.1
2014	500	-5,721	-19.1	-19.1
2015	500	-5,721	-19.1	-19.1
2016	500	-5,721	-19.1	-19.1
2017	500	-5,721	-19.1	-19.1
2018	500	-5,721	-19.1	-19.1
2019	500	-5,721	-19.1	-19.1
2020	500	-5,721	-19.1	-19.1
2021	500	-5,721	-19.1	-19.1

Commercial Efficient HVAC*(negative value = reduction in load)*

Year	Participants	Impact on Total Requirements (MWh)	Impact on Winter Peak (MW)	Impact on Summer Peak (MW)
2006	150	-228	0.0	-0.1
2007	300	-455	0.0	-0.1
2008	450	-683	-0.1	-0.2
2009	600	-911	-0.1	-0.3
2010	750	-1,139	-0.1	-0.4
2011	900	-1,366	-0.1	-0.4
2012	1,050	-1,594	-0.2	-0.5
2013	1,200	-1,822	-0.2	-0.6
2014	1,350	-2,049	-0.2	-0.7
2015	1,500	-2,277	-0.2	-0.7
2016	1,500	-2,277	-0.2	-0.7
2017	1,500	-2,277	-0.2	-0.7
2018	1,500	-2,277	-0.2	-0.7
2019	1,500	-2,277	-0.2	-0.7
2020	1,500	-2,277	-0.2	-0.7
2021	1,500	-2,049	-0.2	-0.7

Commercial Building Performance*(negative value = reduction in load)*

Year	Participants	Impact on Total Requirements (MWh)	Impact on Winter Peak (MW)	Impact on Summer Peak (MW)
2006	200	-670	-0.1	-0.1
2007	400	-1,340	-0.3	-0.3
2008	600	-2,011	-0.4	-0.4
2009	800	-2,681	-0.5	-0.6
2010	1,000	-3,351	-0.7	-0.7
2011	1,200	-4,021	-0.8	-0.8
2012	1,400	-4,691	-0.9	-1.0
2013	1,600	-4,691	-0.9	-1.0
2014	1,800	-4,691	-0.9	-1.0
2015	2,000	-4,691	-0.9	-1.0
2016	2,000	-4,021	-0.8	-0.8
2017	2,000	-3,351	-0.7	-0.7
2018	2,000	-2,681	-0.5	-0.6
2019	2,000	-2,011	-0.4	-0.4
2020	2,000	-1,340	-0.3	-0.3
2021	2,000	-670	-0.1	-0.1

Commercial New Construction

(negative value = reduction in load)

Year	Participants	Impact on Total Requirements (MWh)	Impact on Winter Peak (MW)	Impact on Summer Peak (MW)
2006	80	-872	-0.1	-0.2
2007	160	-1,744	-0.2	-0.4
2008	240	-2,615	-0.2	-0.6
2009	320	-3,487	-0.3	-0.8
2010	400	-4,359	-0.4	-1.0
2011	480	-5,231	-0.5	-1.2
2012	560	-6,103	-0.6	-1.4
2013	640	-6,975	-0.7	-1.6
2014	720	-7,846	-0.7	-1.8
2015	800	-8,718	-0.8	-2.0
2016	800	-8,718	-0.8	-2.0
2017	800	-8,718	-0.8	-2.0
2018	800	-8,718	-0.8	-2.0
2019	800	-8,718	-0.8	-2.0
2020	800	-8,718	-0.8	-2.0
2021	800	-8,718	-0.8	-2.0

Commercial Efficient Refrigeration

(negative value = reduction in load)

Year	Participants	Impact on Total Requirements (MWh)	Impact on Winter Peak (MW)	Impact on Summer Peak (MW)
2006	35	-458	0.0	-0.1
2007	70	-915	-0.1	-0.1
2008	105	-1,373	-0.1	-0.2
2009	140	-1,831	-0.2	-0.3
2010	175	-2,289	-0.2	-0.3
2011	210	-2,746	-0.3	-0.4
2012	245	-3,204	-0.3	-0.5
2013	280	-3,662	-0.4	-0.5
2014	315	-4,119	-0.4	-0.6
2015	350	-4,577	-0.5	-0.7
2016	350	-4,119	-0.4	-0.6
2017	350	-3,662	-0.4	-0.5
2018	350	-3,204	-0.3	-0.5
2019	350	-2,746	-0.3	-0.4
2020	350	-2,289	-0.2	-0.3
2021	350	-1,831	-0.2	-0.3

Industrial Premium Motors

(negative value = reduction in load)

Year	Participants	Impact on Total Requirements (MWh)	Impact on Winter Peak (MW)	Impact on Summer Peak (MW)
2006	50	-676	-0.1	-0.1
2007	100	-1,351	-0.1	-0.1
2008	150	-2,027	-0.2	-0.2
2009	200	-2,703	-0.2	-0.3
2010	250	-3,378	-0.3	-0.4
2011	300	-4,054	-0.3	-0.4
2012	350	-4,730	-0.4	-0.5
2013	400	-5,405	-0.4	-0.6
2014	450	-6,081	-0.5	-0.7
2015	500	-6,757	-0.5	-0.7
2016	500	-6,757	-0.5	-0.7
2017	500	-6,757	-0.5	-0.7
2018	500	-6,757	-0.5	-0.7
2019	500	-6,757	-0.5	-0.7
2020	500	-6,757	-0.5	-0.7
2021	500	-6,081	-0.5	-0.7

Industrial Variable Speed Drives

(negative value = reduction in load)

Year	Participants	Impact on Total Requirements (MWh)	Impact on Winter Peak (MW)	Impact on Summer Peak (MW)
2006	35	-3,753	-0.3	-0.4
2007	70	-7,506	-0.6	-0.8
2008	105	-11,260	-0.9	-1.2
2009	140	-15,013	-1.2	-1.6
2010	175	-18,766	-1.5	-2.0
2011	210	-22,519	-1.8	-2.4
2012	245	-26,272	-2.1	-2.9
2013	280	-30,026	-2.4	-3.3
2014	315	-33,779	-2.7	-3.7
2015	350	-37,532	-3.0	-4.1
2016	350	-37,532	-3.0	-4.1
2017	350	-37,532	-3.0	-4.1
2018	350	-37,532	-3.0	-4.1
2019	350	-37,532	-3.0	-4.1
2020	350	-37,532	-3.0	-4.1
2021	350	-33,779	-2.7	-3.7