AEG
Applied Energy Group

Empire District Electric Company

Energy Efficiency Program Portfolio

Prepared by:
Applied Energy Group
1377 Motor Parkway, Suite 401 · Islandia, NY 11749
Tel (631) 434-1414 · Fax (631) 434-1212
www.appliedenergygroup.com

February 2012

NP

Table of Contents

1. Portfolio Overview

The Missouri Energy Efficiency Investment Act of 2009 ("MEEIA") encourages the state's four investor-owned electric companies to implement energy efficiency programs. In accordance with MEEIA, Applied Energy Group ("AEG") examined Empire District Electric Company's ("Empire") existing Missouri energy efficiency portfolio and incorporated three additional demand-side programs. The new programs include:

- ENERGY STAR® Appliance Program;
- Home Energy Comparison Reports Program; and
- Refrigerator Recycling Program.

The proposed MEEIA portfolio includes twelve energy efficiency programs.[1] Each program targets multiple end uses and offers residential, commercial and industrial customers an opportunity to achieve significant energy savings through participation.

Portfolio Summary by Program Year

	Participation	Net kWh Savings	Net kW Savings	Total Budget
Program Year 1	76,202	11,191,173	7,125	$3,952,960
Program Year 2	93,464	17,523,747	18,253	$4,558,587
Program Year 3	103,562	21,917,675	26,962	$6,021,160

Program-Specific Savings, Participation and Budget, 2010 Program Year

Program	TRC	Net kWh Savings	Net kW Savings	Participation	Total Budget
Residential High Efficiency Lighting	5.06	2,250,719	649	47,540	$145,432
Residential High Efficiency A/C Rebate	2.36	800,119	761	545	$265,955
Energy Star New Homes	1.53	148,599	128	57	$86,687
Home Performance with Energy Star	1.02	28,800	25	24	$18,922
Low Income New Homes	2.64	2,536	7.0	2	$1,322
Low Income Weatherization	16.27	588,924	10.3	287	$251,032
C&I Custom Rebate	8.52	4,529,981	995	30	$228,310
C&I Prescriptive Rebate	5.61	280,653	166	15	$33,908
Building Operator Certificate	n/a	0	0	0	$1,029
Interruptible Service Rider	n/a	0	3,100	3	$67,896
General Administration & Evaluation					$62,123
Total		**8,630,330**	**5,842**	**48,503**	**$1,162,617**

[1] The C&I Custom and Prescriptive programs are bundled under the C&I Energy Efficiency Rebate Program.

Program-Specific Savings, Participation and Budget by Program Year

Program	TRC	Program Year 1				Program Year 2				Program Year 3			
		Net kWh Savings	Net kW Savings	Participation	Budget	Net kWh Savings	Net kW Savings	Participation	Budget	Net kWh Savings	Net kW Savings	Participation	Budget
Residential High Efficiency Lighting	4.97	2,637,034	193	65,000	$308,490	2,941,307	215	72,500	$344,085	3,245,580	237	80,000	$379,680
ENERGY STAR Appliances	1.25	84,657	22	950	$35,969	168,566	40	1,875	$63,336	262,756	56	2,950	$96,432
Refrigerator Recycling	4.53	379,776	61	400	$84,630	759,552	121	800	$166,320	1,139,328	182	1,200	$249,480
High Efficiency Cooling Rebate	1.92	1,281,785	839	1,282	$442,075	1,883,747	1,218	1,849	$660,374	2,613,403	1,686	2,577	$938,683
Home Energy Comparison Reports	1.61	1,800,000	16	7,500	$81,648	4,140,000	33	15,000	$187,790	4,320,000	33	15,000	$195,955
Energy Star New Homes	1.01	918,261	105	300	$1,360,425	765,217	87	250	$403,200	612,174	70	200	$322,560
Home Performance with Energy Star	1.42	511,840	58	175	$188,160	950,560	109	325	$349,440	1,462,400	167	500	$537,600
Low Income Weatherization	1.34	718,200	82	350	$511,560	974,700	111	475	$694,260	1,231,200	141	600	$876,960
Low Income New Homes	0.66	92,340	11	45	$42,525	82,080	9	40	$37,800	82,080	9	40	$37,800
C&I Custom Rebate	1.84	1,251,411	370	50	$472,500	2,502,822	740	100	$945,000	3,754,233	1,110	150	$1,417,500
C&I Prescriptive Rebate	1.63	1,190,310	303	100	$351,666	1,785,465	455	150	$527,499	2,380,620	607	200	$703,332
Building Operator Certificate	6.84	325,560	66	40	$32,361	569,730	115	70	$56,632	813,900	164	100	$80,903
Interruptible Service Rider	36.20	0	5,000	10	$40,950	0	15,000	30	$122,850	0	22,500	45	$184,275
Total		**11,191,173**	**7,125**	**76,202**	**$3,952,960**	**17,523,747**	**18,253**	**93,464**	**$4,558,587**	**21,917,675**	**26,962**	**103,562**	**$6,021,160**

1.1 Planning Process

The energy efficiency portfolio presented in this report is based upon Empire's 2010 Demand-Side Resource Potential Study for 2011-2013[2] and a review of past demand-side program performance. Energy efficiency has been an increasing component of Empire's operations in Missouri, with numerous programs serving the needs of different customer classes throughout the service territory. The two tenets that guide the design of Empire's programs are:

- **The service territory benefits from energy efficiency programs.** As part of the overall strategy for meeting the needs of its customers, cost-effective energy-efficiency programs offer an alternative to the construction of infrastructure and purchase of fuel for generation.
- **Empire customers benefit from energy efficiency programs.** Energy efficiency can result in lower energy bills, immediately reducing program participant's consumption of electricity. Furthermore, the programs are designed to be inclusive, giving all customers the opportunity to benefit from participating in Empire's energy efficiency programs.

The programs have been designed to maximize participation given best practices. In addition to ensuring participation while efficiently utilizing budget resources, incentives have been targeted to promote the adoption of qualifying Energy Efficiency Measures (EEMs) that maximize savings.[3]

Empire's program portfolio uses a combination of education and customer incentives to advance energy efficiency in Missouri. Customer incentives are the primary mechanism for program delivery. Customers receive rebates to purchase energy efficient equipment and services through existing market actors, including equipment dealers and retailers.

To achieve the portfolio's long-term savings goals, it will be necessary for Empire to engage customers, retailers, and state and local agencies. Targeting retailers and leveraging Empire's relationship with its stakeholders will increase program awareness among consumers and promote the market adoption of high efficiency equipment. Creative and sustained marketing is important to a successful and robust energy efficiency program portfolio.

2. Cost Effectiveness

Empire uses the Total Resource Cost Test (TRC) as the primary method of assessing the cost-effectiveness of energy efficiency measures and programs. The TRC test is a widely-accepted methodology that has been used across the United States for over twenty-five years. TRC measures the net costs and benefits of an energy efficiency program as a resource option based on the total costs of

[2] The full details of the potential study can be found in Empire's Electric Utility Resource Planning Compliance Filing, File No. EO-2011-0066 on January 3, 2011.

[3] EEMs are more efficient models of end-use appliances, such as central air conditioners or compact fluorescent lighting, or technological improvements that can make an end-use appliance more efficient in its use of energy (e.g. energy management systems). Nearly all the programs encourage the adoption of at least one EEM. EEMs that qualify for each program represent a substantial improvement over the standard efficiency model available on the market.

the program, including both the participant's and the utility's costs. This test represents the combination of the effects of a program on both participating and non-participating customers.

There are four other tests that analyze cost-effectiveness from different perspectives, the Participant test, the Ratepayer Impact Measure (RIM) test – also known as the Non-Participant test, the Utility Cost test – also knows as the Program Administrator test and the Societal test.

The Participant test quantifies the benefits and costs to the customer due to participation in a program. The benefits include reduction in the participant's bill and incentives received. The costs are out-of-pocket expenses incurred as a result of participation plus any increases to utility bills.

The RIM test measures what happens to a customer's bill or rates due to changes in utility revenues and operating costs caused by a program. Benefits are the savings from avoided supply costs. Costs are the program costs incurred by the utility and/or other entities for creating or administering the program, incentives paid to the participant and decreased revenues for any periods for which demand decreased.

The Utility Cost test measures the net costs of a program as a resource option based on the costs incurred by the program administrator, excluding any net costs incurred by the participant. The benefits are the avoided supply costs of energy and demand (similar to the TRC benefits). The costs are the program costs incurred by the administrator, the incentives paid to customers, and the increased supply costs for the periods in which demand is increased.

The Societal test is a variant of the TRC, intended to determine the effects of a program on society as a whole. The benefits are the avoided supply costs and externalities (including environmental benefits, etc.). The costs are the program costs paid by the utility and the participants.

A comprehensive benefit-cost analysis was conducted on Empire's portfolio of energy efficient measures. The benefit-cost tests were performed using Empire-specific data. The software used to perform the benefit-cost screening has been adapted from Minnesota Office of Energy Security "BenCost" software and is consistent with the California Standard Practice Manual. The input data required for the model includes the following:

- General Inputs – Applied to all energy conservation measures/programs, these data describe the utility avoided costs, economic evaluation conditions [e.g., discount rates], and customer rates.
    - Retail Rate – the average cost of energy saved [$/kWh] by the customer, including demand and energy charges. The customer may be defined as residential or commercial/industrial/ agricultural if different rate structures exist.
    - Commodity Cost – the utility's avoided cost of energy [$/kWh]. This represents the amount of money that would be saved by avoiding the generation, transmission and distribution of one less unit of energy.
    - Demand Cost – avoided capacity charge for electric demand [$/kW]. The utility cost savings achieved by avoiding the delivery of one less unit of demand [kW]. This may represent avoided generation and/or purchased power depending on the specific utility generation assets and planned delivery of power.

- Variable O&M – the estimated utility cost savings achieved in operations and maintenance by the avoidance in demand or energy, expressed as savings per unit of energy saved [$/kWh].
- Environmental Damage Factor (EDF) - the estimated value placed on avoiding environmental externalities such as emissions and other environmentally harmful effects of power generation [$/kWh].
- Escalation Rate – economic inflation rate used for utility rates, costs, etc. This escalation rate is applied to current values of each of the costs above to estimate the value of the same costs in future dollars.
- Participant Discount Rate – the economic inflation rate applied to participant cash flows [percent]. This represents the customer's cost of money for which alternative investments may be made instead of the investment in energy saving measures. This value is used to determine net present value of costs and benefits in the Participant Test.
- Utility Discount Rate – the utility's cost of capital expressed as a percentage. This is representative of alternate utility investments, used to determine net present value of costs and benefits in the Utility Cost Test and Ratepayer Impact Measure Test.
- Societal Discount Rate – similar to the other discount rates, this value represents the overall societal cost of money [percent] and is used in discounting the societal effects of savings. This value is used to determine net present value of costs and benefits in the Societal Test and Total Resource Cost Test.
- General Input Data Year – the year from which the source data is taken. In order to properly discount future costs of money, it is important to know from which year the input data is derived.
- Project Analysis Year – the first year of project analysis, representative of a mature program [year, e.g., 2013]. Economic factors in the model are escalated appropriately to reflect the differences from data collection to program implementation.

- Project/Measure Specific Inputs – Applied to each specific energy conservation measure/program, these data describe the costs, savings, measure life, number of participants and coincident factor by measure/program.
  - Utility Project Costs – the overall annual costs for the utility to implement the program under evaluation [annual $]. This includes the utility cost for incentives, administration, delivery, marketing and evaluation. Utility incentives must be provided separately as these costs are handled differently from other utility costs in certain benefit cost tests.
  - Direct Participant Cost – the incremental cost of each energy savings measure [$/measure] before utility incentives. This represents what the customer would have to pay to achieve the benefits of the specified energy efficient measure. This is a one-time cost.
  - Other Participant Cost –other costs such as increased annual maintenance [annual $]. It is assumed that these are recurring costs over the life of the measure.
  - Other Energy Savings – other energy savings [non-electric] such as other fuel savings [annual $]. It is assumed that these are recurring savings over the life of the measure.

- Project Life – the estimated lifetime that a project/measure will yield energy savings [years]. Measure life should be consistent with equipment life but in some instances the utility may choose to limit the savings to a predetermined life [for analysis purposes].
- Demand Savings – the amount of demand reduction that the particular measure will yield [kW]. This represents the rated reduction on power.
- Coincident Factor – a factor applied to Demand Savings to determine the value of demand reduction that will be achieved during the hour of the utility peak [in percent].
- Energy Savings – the energy savings component of a particular measure [annual kWh].
- Number of Participants – the participation goal for a particular program.

Savings estimates for individual measures or programs have been developed using a variety of sources. ENERGY STAR data was utilized where available, with regional and national data utilized to fill the information gaps. This includes calculating impacts using generally accepted engineering algorithms based on a set of reasonable assumptions. Because of the diversity in equipment and energy consumption patterns across multiple building types and end-uses, there exists a variability in these savings estimates as they relate to program design and target markets, particularly at the planning stage of these programs.

3. Energy Efficiency Program Portfolio

Empire District Electric Company is an investor-owned, regulated utility based in Joplin, Missouri. The company provides electricity, natural gas and water service, with approximately 215,000 customers in Missouri, Kansas, Oklahoma and Arkansas. Empire's energy efficiency portfolio is comprised of nine residential programs and three commercial and industrial, which provide a variety of efficiency opportunities for customers.

ENERGY EFFICIENCY PORTFOLIO SUMMARY

Residential Energy Efficiency Programs	
Residential High Efficiency Lighting	Distribute CFL lighting kits to customers through mail or at local events, containing 4 standard screw-in CFLs.
ENERGY STAR Appliances	Customers receive a $10-$75 rebate for the purchase of a qualified washing machine, refrigerator, dehumidifier, room air conditioner, freezer, indoor fixture, smart power strip or LED bulb.
Refrigerator Recycling	Customers receive a $50 rebate for recycling an old inefficient refrigerator.
High Efficiency Cooling Rebate	Customers receive $300-$600 rebate for installing efficient cooling systems and $25 for installing a programmable thermostat.
Home Energy Comparison Report	Educates customers utilizing a comparison of the customer's energy usage to the average energy usage of 100 neighbors in similar-sized homes with similar characteristics. The report includes efficiency recommendations.
ENERGY STAR New Homes	Home Energy Raters receive a $400 incentive for each home energy audit. Builders receive an $800 incentive for each home that achieves the ENERGY STAR® Qualified Home designation.
Home Performance with ENERGY STAR	Customers receive up to $1,200 for qualifying whole house improvements.
Low Income Weatherization	Supplements the federal Low Income Weatherization Assistance Program, reducing energy costs for eligible low income homeowners and renters through increased home efficiency.
Low Income New Homes	Customers receive up to $1,200 for qualifying efficiency improvements.
Commercial Energy Efficiency Programs	
C&I Energy Efficiency Rebate	Customers receive up to $20,000 for prescriptive or custom equipment installed.
Building Operator Certificate	Customers receive $575 incentive for building equipment and processes training and certification.
Interruptible Service Rider	Customers receive incentives for reducing load during peak periods, upon request by Empire.

The following sections contain detailed program descriptions of the proposed energy efficiency programs. Each description contains the following components:

- Program description including program goals, high level outline of the program and its target market.
- Eligible measures in the program and the recommended incentive (s).
- Program participation targets.
- Program marketing strategy.
- Energy and demand saving targets on an annualized basis.
- Estimated program budgets for incentives, delivery, marketing, administration, and evaluation.
- Estimate of program cost-effectiveness, including TRC, Societal, Participant, Ratepayer Impact Measure (RIM) and Utility Cost.

4. Residential Programs

Empire's residential DSM programs serve residential customers, encouraging investment in energy efficient measures such as lighting, cooling equipment and whole house efficiency.

4.1 Residential High Efficiency Lighting Program

ENERGY STAR® qualified compact fluorescent lamps (CFLs) use up to 75% less energy than typical incandescent light bulbs as well as offer superior performance, lasting up to 10 times longer than incandescent bulbs, reducing the need to change hard-to-reach light bulbs. The current generation of CFLs offer bright and warm light and are available in a wide variety of shapes and sizes. CFL technology continues to mature, with recess lighting lamps costing little more than incandescent bulbs.

The program distributes CFL lighting kits to residential customers through mail or at local events, at no cost to the customer. Each kit contains four standard screw-in CFLs, plus educational literature on proper selection and disposal of CFLs. Customers participating in other Empire energy efficiency program will be initially targeted for mailings. Empire will track mailings to ensure that customers are not mailed multiple CFL lighting kits. Local events will be identified via relationships with local community organizations and government agencies.

This primary program objective is to secure energy savings by encourage the usage of ENERGY STAR® qualified CFLs. Program goals include:

- Help residential customers reduce their electricity bills.
- Educate residential customers about the program and the benefits of installing CFLs.
- Effectively install efficient lighting through the Empire Program.
- Encourage energy saving behavior and awareness through the Empire lighting program.

2010 Program Summary

In 2010, Empire distributed approximately 11,900 lighting kits, containing 47,540 CFLs, at a cost of $3.10 per CFL bulb.

Residential High Efficiency Lighting Program Summary, 2010

	2010 Program
CFLs Distributed	47,540
Expenditures	$145,432
Energy Savings (kWh)	2,250,719
Demand Savings (kW)	649
TRC Benefit-Cost Ratio	5.06

Proposed Program

The ENERGY STAR® energy and demand savings[4] assume an 18 watt CFL replaces a 75 watt incandescent bulb, adjusted by a 65 percent net-to-gross factor and an 8 percent coincidence factor.[5] An ENERGY STAR® CFL has an approximate lifetime of 7.3 years, based on an average daily usage of three hours and a rate lifetime of 8,000 hours.

[4] ENERGY STAR. Qualified Product Savings Calculator. www.energystar.gov/index.cfm?c=products.pr_find_es_products
[5] U.S. Department of Energy. (September 2010). ENERGY STAR CFL Market Profile: Data Trends and Market Insights; Xcel Energy. 2009/2010 Biennial DSM (Revised February 20, 2009) - Technical Assumptions.

The budget was developed on the assumption that it costs $4 per CFL bulb to deliver the program, estimated based on the 2010 program costs. Administration and marketing are 8 percent and 5 percent, respectively, of total delivery costs while evaluation is 5 percent of the total budget.

Expected Net Energy Savings

Savings per Unit	Year 1	Year 2	Year 3
41	2,637,034	2,941,307	3,245,580

Expected Net Demand Savings

Savings per Unit	Year 1	Year 2	Year 3
0.003	193	215	237

Expected Participation

Year 1	Year 2	Year 3
65,000	72,500	80,000

Detailed Program Budget

	Year 1	Year 2	Year 3
Project Delivery	$260,000	$290,000	$320,000
Admin	$20,800	$23,200	$25,600
Marketing	$13,000	$14,500	$16,000
Incentives	$0	$0	$0
Evaluation	$14,690	$16,385	$18,080
Total Budget	**$308,490**	**$344,085**	**$379,680**

Program Cost-Effectiveness

Total Resource Cost Test	Societal Test	Participant Test	Ratepayer Impact Measure Test	Utility Cost Test
4.97	5.18	n/a	0.64	4.97

4.2 ENERGY STAR® Appliance Program

ENERGY STAR® qualified appliances are more efficient than standard models and reduce consumer's energy consumption. Residential and small business (<40 kW per year) customers will be offered rebates for the purchase of qualified products. Rebates will be mailed to the customer once the rebate application and receipt is submitted to Empire for approval.

Eligible Measures and Incentive Levels

Eligible Measure	Rebate
ENERGY STAR Clothes Washer	$75
ENERGY STAR Refrigerator	$50
ENERGY STAR Dehumidifier	$25
ENERGY STAR Room Air Conditioner	$25
ENERGY STAR Freezer	$15
Smart Power Strip	$15
ENERGY STAR Fixture	$10
LED Bulb	$10

Empire will build customer awareness of the ENERGY STAR® brand through advertising and promotions. The program will be marketed through bill inserts, newspaper advertisements, advertising in community newsletters, direct mail to Empire customers and partnerships with local appliance retailers.

The purpose of this program is to encourage residential customers to purchase high efficiency appliances. Program goals include:

- Help residential and small business customers reduce their electricity bills.
- Develop partnerships with retailers to encourage the sale of ENERGY STAR® appliances.
- Effectively market and promote high efficiency products and appliances.

2010 Program Summary

Empire did not offer an ENERGY STAR® Appliance Program in 2010.

Proposed Program

The energy and demand savings[6] were adjusted by an 80 percent net-to-gross factor.[7] Product-specific coincidence factors (CF), lifetime and direct participant costs were estimated as follows:[8]

- Clothes Washer: 4% coincidence factor, 14 year lifetime and direct participant cost of $240.
- Refrigerator: 100% coincidence factor, 18 year lifetime and direct participant cost of $93.
- Dehumidifier: 100% coincidence factor, 12 year lifetime and direct participant cost of $50.
- Room Air Conditioner: 75% coincidence factor, 19 year lifetime and direct participant cost of $50.
- Freezer: 100% coincidence factor, 11 year lifetime and direct participant cost of $33.
- Smart Power Strip: 80% coincidence factor, 4 year lifetime and direct participant cost of $26.
- Indoor Fixture: 8% coincidence factor, 7 year lifetime and direct participant cost of $32.
- LED Bulb: 8% coincidence factor, 27 year lifetime and direct participant cost of $20.

Program delivery and administration are 12 percent and 8 percent, respectively, of total incentives. Marketing costs are 15 percent in Year 1, reducing to 8 percent in Years 2 and 3, reflecting the costs of developing program-specific advertising and promotional materials. Evaluation is 5 percent of the total budget.

[6] ENERGY STAR. Qualified Product Savings Calculator; Public Utilities Commission of Ohio (2010). State of Ohio Energy Efficiency Technical Reference Manual. Prepared by Vermont Energy Investment Corporation; U.S. Department of Energy. Solid-State Lighting: LED Basics.

[7] Xcel Energy. 2009/2010 Biennial DSM (Revised February 20, 2009) - Technical Assumptions; Idaho Power (2011). Demand-Side Management 2010 Annual Report. Supplement 1: Cost-Effectiveness.

[8] Xcel Energy. 2009/2010 Biennial DSM (Revised February 20, 2009) - Technical Assumptions; Michigan Public Service Commission (2012). Michigan Energy Measures Database. Prepared by Morgan Marketing Partners; Frontier Associates, LLC (2010). Arkansas Comprehensive Programs Deemed Savings. Prepared by Nexant; ENERGY STAR. Qualified Product Savings Calculator; Public Utilities Commission of Ohio (2010). State of Ohio Energy Efficiency Technical Reference Manual. Prepared by Vermont Energy Investment Corporation; U.S. Department of Energy. Solid-State Lighting: LED Basics.

Expected Net Energy Savings

Eligible Measure	Savings per Unit	Year 1	Year 2	Year 3
ENERGY STAR Clothes Washer	115	5,751	11,503	17,254
ENERGY STAR Refrigerator	85	16,913	33,826	50,739
ENERGY STAR Dehumidifier	170	12,771	25,542	34,056
ENERGY STAR Room Air Conditioner	92	13,776	20,663	27,551
ENERGY STAR Freezer	42	4,168	6,252	8,336
Smart Power Strip	82	12,336	32,896	61,680
ENERGY STAR Fixture	82	12,352	24,703	41,172
LED Bulb	88	6,590	13,181	21,968
Total		**84,657**	**168,566**	**262,756**

Expected Net Demand Savings

Eligible Measure	Savings per Unit	Year 1	Year 2	Year 3
ENERGY STAR Clothes Washer	0.012	0.6	1.2	1.8
ENERGY STAR Refrigerator	0.010	1.9	3.9	5.8
ENERGY STAR Dehumidifier	0.105	7.9	15.8	21.0
ENERGY STAR Room Air Conditioner	0.058	8.8	13.2	17.5
ENERGY STAR Freezer	0.005	0.5	0.7	1.0
Smart Power Strip	0.008	1.2	3.1	5.8
ENERGY STAR Fixture	0.006	0.9	1.8	3.0
LED Bulb	0.000	0.0	0.1	0.1
Total		**22**	**40**	**56**

Expected Participation

Eligible Measure	Year 1	Year 2	Year 3
ENERGY STAR Clothes Washer	50	100	150
ENERGY STAR Refrigerator	200	400	600
ENERGY STAR Dehumidifier	75	150	200
ENERGY STAR Room Air Conditioner	150	225	300
ENERGY STAR Freezer	100	150	200
Smart Power Strip	150	400	750
ENERGY STAR Fixture	150	300	500
LED Bulb	75	150	250
Total	**950**	**1,875**	**2,950**

Detailed Program Budget

	Year 1	Year 2	Year 3
Project Delivery	$3,045	$5,655	$8,610
Admin	$2,030	$3,770	$5,740
Marketing	$3,806	$3,770	$5,740
Incentives	$25,375	$47,125	$71,750
Evaluation	$1,713	$3,016	$4,592
Total Budget	**$35,969**	**$63,336**	**$96,432**

Program Cost-Effectiveness

Total Resource Cost Test	Societal Test	Participant Test	Ratepayer Impact Measure Test	Utility Cost Test
1.25	1.29	0.67	0.69	2.47

4.3 Refrigerator Recycling Program

The Refrigerator Recycling Program encourages residential and small business (<40 kW per year) customers to remove inefficient refrigerators from the electric system and dispose of them in an environmentally safe and responsible manner. The program provides a $50 rebate to residential or small business customers that turn-in their old, inefficient refrigerator(s). The refrigerators must be between 10 and 30 cubic feet in size, at least five years of age and be operable. Customers are limited to 2 rebates per program year.

Empire will select a third-party program implementer that specializes in appliance recycling and has access to a recycling facility. The program implementer will handle scheduling, transportation and disposal. Empire will work with the program implementer to develop innovative and creative marketing strategies and materials. The program will be marketed through bill inserts, newspaper advertisements and advertising in community newsletters.

Program goals include:

- Educate customers about the energy and environmental benefits of recycling their inefficient refrigerators.
- Reduce household and small commercial energy consumption.
- Influence consumer behavior by encouraging residential and small commercial customers to avoid replacing their second refrigerator after it is recycled.

2010 Program Summary

Empire did not offer a Refrigerator Recycling Program in 2010.

2012 Proposed Program

Estimated energy and demand savings were adjusted by a 69 percent net-to-gross factor and a 100 percent coincidence factor. The remaining useful life of the refrigerator was estimated to be 8 years.[9]

The Refrigerator Recycling Program is a new program within Empire's energy efficiency portfolio that is expected to get significant participation. According the U.S. Energy Information Administration's 2009 Residential Energy Consumption Survey,

- 26 percent of Missouri residents have a secondary refrigerator;
- 35 percent of Missouri residents have a refrigerator that is between 5 and 9 years old;
- An additional 26 percent of residents have a primary refrigerator that is at least 10 years old.

Delivery costs were estimated at $140 per appliance.[10] Marketing costs are 15 percent in Year 1, reducing to 8 percent in Years 2 and 3, reflecting the costs of developing program-specific advertising

[9] Public Utilities Commission of Ohio (2010). State of Ohio Energy Efficiency Technical Reference Manual. Prepared by Vermont Energy Investment Corporation; NMR Group, Inc. (2011). Massachusetts Appliance Turn-In Program Impact Evaluation.
[10] ENERGY STAR. Launching a Refrigerator and Freezer Recycling Program. www.energystar.gov/ia/products/recycle/documents/StartAFridgeFreezerRecyclingProgram_FINAL.pdf

and promotional materials. Administration is 12 percent of incentive costs while evaluation is 5 percent of the total budget.

Expected Net Energy Savings

Savings per Unit	Year 1	Year 2	Year 3
949	379,776	759,552	1,139,328

Expected Net Demand Savings

Savings per Unit	Year 1	Year 2	Year 3
0.152	61	121	182

Expected Participation

Year 1	Year 2	Year 3
400	800	1,200

Detailed Program Budget

	Year 1	Year 2	Year 3
Project Delivery	$56,000	$112,000	$168,000
Admin	$1,600	$3,200	$4,800
Marketing	$3,000	$3,200	$4,800
Incentives	$20,000	$40,000	$60,000
Evaluation	$4,030	$7,920	$11,880
Total Budget	**$84,630**	**$166,320**	**$249,480**

Program Cost-Effectiveness

Total Resource Cost Test	Societal Test	Participant Test	Ratepayer Impact Measure Test	Utility Cost Test
4.53	4.70	n/a	0.70	3.44

4.4 High Efficiency Cooling Rebate Program

The High Efficiency Cooling Rebate Program encourages residential and small business (<40 kW per year) customers to purchase and install energy efficient cooling systems and programmable thermostats by providing financial incentives to offset a portion of the higher initial cost of the efficient equipment.

Eligible Measures and Incentive Levels

Eligible Measure	Rebate
CAC SEER 15 ≤ 15.9	$300
CAC SEER 16 ≤ 16.9	$400
CAC SEER ≥17	$500
HP SEER 15 ≤ 15.9	$300
HP SEER 16 ≤ 16.9	$400
HP SEER ≥17	$500
Geothermal EER ≥17	$600
Programmable Thermostat	$25

Residential and small business customers, including owners of rental properties and home builders, are eligible to participate in the program. Participating HVAC contractors must provide evidence of Air Conditioning Contractors of America (ACCA) Manual J training. Empire offers free one-day training

sessions on ACCA Manual J and Manual D at least twice a year in multiple cities across Empire's Missouri service territory.

Empire will continue to develop relationships with local HVAC contractors to promote the program, through direct mailings to contractors, distributors, dealers and wholesalers, as well as presentations at Chamber of Commerce meetings. Participating HVAC contractors will distribute program brochures to potential customers. The program marketing to customers includes bill inserts, bill messaging and newspaper advertisements.

Empire will conduct inspections utilizing in-house staff or a third-party contractor. Inspections will be conducted on the first four projects completed by a contractor, then 10 percent of the projects completed by a contractor thereafter.

The program's long-range goal is to encourage contractors and distributors to use energy efficiency as a marketing tool, stocking and selling more efficient units and moving the entire residential cooling market toward greater energy efficiency. Additional program goals include:

- Educate customers about the program and the benefits of installing high efficiency cooling equipment and programmable thermostats.
- Develop partnerships with contractors to bring efficient cooling systems to the market.
- Demonstrate persistent energy savings and provide other benefits to end-users such as improved health, safety and comfort.

2010 Program Summary

The 2010 program was called the Residential High Efficiency Central Air Conditioner Rebate Program. Empire provided incentives to residential customers for equipment that met the following eligibility:

- $400 per unit for central air conditioner or air source heat pump system SEER 15 to 15.9
- $450 per unit for central air conditioner or air source heat pump system SEER 16 to 16.9
- $500 per unit for central air conditioner or air source heat pump system SEER ≥ 17
- $500 per unit for geothermal heat pump system SEER ≥ 15

Residential High Efficiency Central Air Conditioner Program Summary

	2010 Program
Participants	545
Expenditures	$265,955
Energy Savings (kWh)	800,119
Demand Savings (kW)	761
TRC Benefit-Cost Ratio	2.36

2012 Proposed Program

Empire renamed the program to High Efficiency Cooling Rebate Program. The energy and demand savings were adjusted by an 80 percent net-to-gross factor and a 75 percent coincidence factor.[11]

[11] Empire District Electric (2009). An Evaluation of the Residential Central Air Conditioning Program. Prepared by TecMarket Works; ENERGY STAR. Qualified Product Savings Calculator; Idaho Power (2011). Demand-Side Management 2010 Annual Report. Supplement 1: Cost-Effectiveness

Lifetime and direct participant costs were estimated as follows:[12]

- Central Air Conditioner: 14 year lifetime and direct participant cost ranging from $556 to $1,111.
- Air Source Heat Pump: 12 year lifetime and direct participant cost ranging from $588 to $1,175.
- Geothermal Heat Pump: 15 year lifetime and direct participant cost of $1,464.
- Programmable Thermostats: 15 year lifetime and direct participant cost of $35.

Delivery is 12 percent of total incentives while administration and marketing are 8 percent of incentives and evaluation is 5 percent of the total budget.

Expected Net Energy Savings

Eligible Measure	Savings per Unit	Year 1	Year 2	Year 3
CAC SEER 15 ≤ 15.9	814	122,040	162,720	223,740
CAC SEER 16 ≤ 16.9	775	155,040	213,180	310,080
CAC SEER ≥17	998	44,928	79,872	124,800
HP SEER 15 ≤ 15.9	1,106	359,580	442,560	553,200
HP SEER 16 ≤ 16.9	1,308	130,800	228,900	327,000
HP SEER ≥17	1,404	70,200	140,400	203,580
Geothermal EER ≥17	1,514	22,716	68,148	128,724
Programmable Thermostat	948	376,481	547,967	742,279
Total		**1,281,785**	**1,883,747**	**2,613,403**

Expected Net Demand Savings

Eligible Measure	Savings per Unit	Year 1	Year 2	Year 3
CAC SEER 15 ≤ 15.9	0.576	86	115	158
CAC SEER 16 ≤ 16.9	0.571	114	157	228
CAC SEER ≥17	0.668	30	53	83
HP SEER 15 ≤ 15.9	0.850	276	340	425
HP SEER 16 ≤ 16.9	0.810	81	142	203
HP SEER ≥17	0.790	40	79	115
Geothermal EER ≥17	0.891	13	40	76
Programmable Thermostat	0.499	198	292	398
Total		**839**	**1,218**	**1,686**

Expected Participation

Eligible Measure	Year 1	Year 2	Year 3
CAC SEER 15 ≤ 15.9	150	200	275
CAC SEER 16 ≤ 16.9	200	275	400
CAC SEER ≥17	45	80	125
HP SEER 15 ≤ 15.9	325	400	500
HP SEER 16 ≤ 16.9	100	175	250
HP SEER ≥17	50	100	145
Geothermal EER ≥17	15	45	85
Programmable Thermostat	397	574	797
Total	**1,282**	**1,849**	**2,577**

[12]Michigan Public Service Commission (2012). Michigan Energy Measures Database. Prepared by Morgan Marketing Partners; ENERGY STAR. Qualified Product Savings Calculator; Public Utilities Commission of Ohio (2010). State of Ohio Energy Efficiency Technical Reference Manual. Prepared by Vermont Energy Investment Corporation.

Detailed Program Budget

	Year 1	Year 2	Year 3
Project Delivery	$39,471	$58,962	$83,811
Admin	$26,314	$39,308	$55,874
Marketing	$26,314	$39,308	$55,874
Incentives	$328,925	$491,350	$698,425
Evaluation	$21,051	$31,446	$44,699
Total Budget	**$442,075**	**$660,374**	**$938,683**

Program Cost-Effectiveness

Total Resource Cost Test	Societal Test	Participant Test	Ratepayer Impact Measure Test	Utility Cost Test
1.92	1.99	0.72	0.75	3.40

4.5 Home Energy Comparison Reports

Home Energy Comparison Reports are designed to educate and motivate customers to reduce their energy consumption by comparing their electricity usage to an average of 100 neighbors in similar-sized homes with similar characteristics. The reports will include targeted efficiency recommendations based on an analysis of the household's energy usage, demographics and housing characteristics.

Empire will choose a vendor that generates Home Energy Comparison Reports using a software platform that combines energy usage data with customer demographic, housing and Geographic Information System (GIS) data. The vendor will demonstrate an ability to generate measurable and verifiable savings from behavior-based programs at scale. The selected vendor will deploy an online tool suite on Empire's Smart Energy Solutions webpage that gives customers greater insight into their energy consumption and simple steps they can take to become more energy efficient. The Home Energy Reporting System is a proven energy efficiency program that successfully leverages large-scale consumer engagement to drive measurable, predictable and sustainable energy savings.

Program goals include:

- Increase awareness of energy efficiency and energy use in the home.
- Educate residential customers about the benefits of energy efficiency and the opportunities to reduce energy consumption.
- Encourage households to change energy usage behavior.
- Generate measurable and verifiable energy savings.
- Increase awareness of, and participation in, Empire's energy efficiency programs.
- Support the use of the internet as a source of education and resources on energy efficiency.

2010 Program Summary

Empire did not offer a Home Energy Comparison Report Program in 2010.

2012 Proposed Program

The energy and demand savings were adjusted by an 8 percent coincidence factor.[13] The program will target 7,500 participants in Year 1 and 15,000 participants in Years 2 and 3. However, participation will vary depending on an analysis of Empire's residential customer base and high use customers. The budget was developed based on an estimated cost of $0.04 per kWh saved for delivery and marketing.

Expected Net Energy Savings

Savings per Unit	Year 1	Year 2	Year 3
240	1,800,000	4,140,000	4,320,000

Expected Net Demand Savings

Savings per Unit	Year 1	Year 2	Year 3
0.002	16	33	33

Expected Participation

Year 1	Year 2	Year 3
7,500	15,000	15,000

Detailed Program Budget

	Year 1	Year 2	Year 3
Project Delivery	$72,000	$165,600	$172,800
Admin	$5,760	$13,248	$13,824
Marketing	$0	$0	$0
Incentives	$0	$0	$0
Evaluation	$3,888	$8,942	$9,331
Total Budget	**$81,648**	**$187,790**	**$195,955**

Program Cost-Effectiveness

Total Resource Cost Test	Societal Test	Participant Test	Ratepayer Impact Measure Test	Utility Cost Test
1.61	1.69	n/a	0.44	1.61

4.6 ENERGY STAR New Homes Program

The ENERGY STAR® New Homes Program encourages the construction of homes that meet ENERGY STAR® New Home guidelines. An ENERGY STAR® new home is 15 to 20 percent more energy efficient than an average new home. Benefits of owning an ENERGY STAR® home include savings resulting from:

- Properly installed and inspected insulation in floors, walls and attics
- High performance windows
- Tight construction and correctly installed duct system
- Efficient heating and cooling equipment
- Efficient lighting and appliances

Empire provides incentives for energy audits and achieving ENERGY STAR® Qualified Home designation. Home Energy Raters that perform the home energy audits must be RESNET certified. Incentives

[13] Discussion with Opower. Xcel Energy. 2009/2010 Biennial DSM (Revised February 20, 2009) - Technical Assumptions.

provided to builders, retailers or dealers for achieving the ENERGY STAR® Qualified Home designation offset a portion of the additional costs of the enhanced construction techniques.

Empire partnered with the Crowder College Missouri Alternative and Renewable Energy Technology (MARET) Center to provide the required training and assist in certifying RESNET certified auditors. Empire will explore partnering with additional local colleges and universities.

Empire builds awareness of the ENERGY STAR® brand through advertising and promotions. The program is marketed through bill inserts to Empire customers as well as representation at community events, home builder association meetings and Chamber of Commerce meetings.

Program goals include:

- Help residential customers reduce their energy bills.
- Develop partnerships with home builders and manufactured home retailers/dealers to encourage the sale of ENERGY STAR® homes to customers.
- Demonstrate persistent energy savings and provide other benefits to end-users such as improved health, safety and comfort.
- Encourage energy saving behavior and awareness of the benefits of high efficiency equipment.

2010 Program Summary

In 2010, ENERGY STAR® Qualified Homes received incentives of $1,200, $400 for the Home Energy Rater and $800 for the builder.

ENERGY STAR New Homes Program Summary

	2010 Program
Participants	57
Expenditures	$86,687
Energy Savings (kWh)	148,599
Demand Savings (kW)	128
TRC Benefit-Cost Ratio	1.53

2012 Proposed Program

As Joplin and the surroundings areas recover from the tornado that hit in May 2011, Empire will work with local communities to provide support and encourage the construction of ENERGY STAR® Qualified Homes. The direct participant cost of an ENERGY STAR® Qualified Home is approximately $3,272 and the lifetime was estimated at 25 years.[14] Year 1 incentives will cover the entire $3,272 direct participant cost to support Empire's efforts. Incentives are anticipated to decrease to $1,200 for Years 2 and 3, based on an assessment of the market.

The net energy and demand savings were adjusted by a 100 percent coincidence factor. Delivery is 12 percent of total incentives while evaluation is 5 percent of the total budget. Administration and

[14] ENERGY STAR. ENERGY STAR Qualified Homes, Version 3. Savings & Cost Estimate Summary; Public Utilities Commission of Ohio (2010). State of Ohio Energy Efficiency Technical Reference Manual. Prepared by Vermont Energy Investment Corporation.

marketing are 10 percent of incentives in Year 1 and reduce to 8 percent in Years 2 and 3, reflecting Empire's efforts to support the local community.

Expected Net Energy Savings

Savings per Unit	Year 1	Year 2	Year 3
3,061	918,261	765,217	612,174

Expected Net Demand Savings

Savings per Unit	Year 1	Year 2	Year 3
0.349	105	87	70

Expected Participation

Year 1	Year 2	Year 3
300	250	200

Detailed Program Budget

	Year 1	Year 2	Year 3
Project Delivery	$117,786	$36,000	$28,800
Admin	$98,155	$24,000	$19,200
Marketing	$98,155	$24,000	$19,200
Incentives	$981,548	$300,000	$240,000
Evaluation	$64,782	$19,200	$15,360
Total Budget	**$1,360,425**	**$403,200**	**$322,560**

Program Cost-Effectiveness

Total Resource Cost Test	Societal Test	Participant Test	Ratepayer Impact Measure Test	Utility Cost Test
1.01	1.06	0.43	0.51	1.43

4.7 Home Performance with ENERGY STAR

The Home Performance with ENERGY STAR® Program encourages whole-house improvements to existing homes by enhancing home energy audits and promoting comprehensive retrofit services. The program also aims to address other customer needs, such as comfort, durability, health and safety.

A home energy audit, performed by a Building Performance Institute (BPI) accredited contractor, identifies potential improvements and the associated cost estimates. To qualify for an incentive, participants need to implement at least one qualifying improvement in addition to the home energy audit: The incentives are based on the qualifying improvement(s), which include:

- Insulation (attic, walls and floors)
- Air and duct sealing
- Windows and doors

Empire partnered with the Crowder College Missouri Alternative and Renewable Energy Technology (MARET) Center to provide BPI training and certification for participating contractors. Empire builds customer awareness of the ENERGY STAR® brand through advertising and promotions. The program is

marketed through bill inserts to Empire customers. Additionally, Empire hosts information booths at community events and gives presentations at local contractor and Chamber of Commerce meetings.

Program goals include:

- Develop partnerships with contractors to encourage and facilitate whole-house energy improvements and BPI certification.
- Demonstrate persistent energy savings and provide other benefits to end-users such as improved health, safety and comfort.
- Encourage energy saving behavior and awareness of the benefits of high efficiency equipment.

2010 Program Summary

In 2010, 24 existing homes received a $400 incentive for participating in the Home Performance with ENERGY STAR® Program.

Home Performance with ENERGY STAR Summary

	2010 Program
Participants	24
Expenditures	$18,922
Energy Savings (kWh)	28,800
Demand Savings (kW)	25
TRC Benefit-Cost Ratio	1.02

2012 Proposed Program

The Home Performance with ENERGY STAR® Program will offer incentives up to $1,200 based on the qualifying improvements made to the residence. For the purposes of this analysis, the average incentive was estimated at $800. According to ENERGY STAR®, the program results in at least 20 percent savings. The direct participant cost is approximately $2,000, based on the 2010 program, and the lifetime was estimated at 18 years.[15]

Delivery is 12 percent of total incentives while administration and marketing are 8 percent of incentives and evaluation is 5 percent of the total budget.

Expected Net Energy Savings

Savings per Unit	Year 1	Year 2	Year 3
2,925	511,840	950,560	1,462,400

Expected Net Demand Savings

Savings per Unit	Year 1	Year 2	Year 3
0.334	58	109	167

Expected Participation

Year 1	Year 2	Year 3
175	325	500

[15] Energy Star. Home Performance with Energy Star - A Cost-Effective Strategy for Improving Efficiency in Existing Homes. www.energystar.gov/ia/home_improvement/HPwES_Utility_Intro_FactSheet.pdf?57ca-b606; Frontier Associates, LLC (2010). Arkansas Comprehensive Programs Deemed Savings. Prepared by Nexant.

Detailed Program Budget

	Year 1	Year 2	Year 3
Project Delivery	$16,800	$31,200	$48,000
Admin	$11,200	$20,800	$32,000
Marketing	$11,200	$20,800	$32,000
Incentives	$140,000	$260,000	$400,000
Evaluation	$8,960	$16,640	$25,600
Total Budget	**$188,160**	**$349,440**	**$537,600**

Program Cost-Effectiveness

Total Resource Cost Test	Societal Test	Participant Test	Ratepayer Impact Measure Test	Utility Cost Test
1.42	1.49	0.74	0.61	3.01

4.8 Low Income Weatherization Program

The Low Income Weatherization Program supplements the federal Low Income Weatherization Assistance Program. The program reduces energy costs for eligible low income homeowners and renters through increased home efficiency, at no cost to the participant. Home efficiency is improved through the installation of energy saving measures, such as insulation, caulking, weather stripping and heating system repair or replacement.

Empire customers work with one of the following Missouri Weatherization Agencies to participate in the program:

- Economic Security Corporation of Southwest Area
- Ozarks Area Community Action Corporation
- West Central Missouri Community Action Agency

The Missouri Weatherization Agencies offer a cost-effective implementation capability, which allows most of the funds allocated to this program to go directly to the purchase and installation of energy-efficiency equipment. The Agencies have the primary responsibility for promoting the program and providing the efficiency improvements. Empire supplements marketing efforts, working with other statewide program staff and utilities to promote the program through community events and organizations, including schools, churches, and nonprofit organizations within the service territory.

2010 Program Summary

In 2010, 287 low income customers received weatherization services.

Residential Low Income Weatherization Summary

	2010 Program
Participants	287
Expenditures	$251,032
Energy Savings (kWh)	588,924
Demand Savings (kW)	10
TRC Benefit-Cost Ratio	16.27

2012 Proposed Program

The energy and demand savings were adjusted by a 100 percent coincidence factor. The lifetime of weatherization services were estimated at 15 years.[16] In 2010, the Missouri Weatherization Agencies anticipated spending an average of $1,200 per home, actually spent an average of $1,631 per home.[17] Delivery was estimated at $1,200 per home, administration and marketing are 8 percent of delivery and evaluation is 5 percent of the total budget.

Expected Net Energy Savings

Savings per Unit	Year 1	Year 2	Year 3
2,052	718,200	974,700	1,231,200

Expected Net Demand Savings

Savings per Unit	Year 1	Year 2	Year 3
0.234	82	111	141

Expected Participation

Year 1	Year 2	Year 3
350	475	600

Detailed Program Budget

	Year 1	Year 2	Year 3
Project Delivery	$420,000	$570,000	$720,000
Admin	$33,600	$45,600	$57,600
Marketing	$33,600	$45,600	$57,600
Incentives	$0	$0	$0
Evaluation	$24,360	$33,060	$41,760
Total Budget	**$511,560**	**$694,260**	**$876,960**

Program Cost-Effectiveness

Total Resource Cost Test	Societal Test	Participant Test	Ratepayer Impact Measure Test	Utility Cost Test
1.34	1.40	n/a	0.47	1.34

4.9 Low Income New Homes Program

Empire works with local non-profit organizations to encourage energy efficiency, affordable new housing for low income customers. Financial incentives, not to exceed $1,100 per home, are available for the following measures:

- Building Insulation, full incremental cost above the baseline.
  - Exterior wall insulation with an R value ≥ 19 (baseline R-13).
  - Attic insulation with an R value ≥ 38 (baseline R-30).
  - Floor insulation with an R value ≥ 19 (baseline R-13).
- Central Air Conditioning, full incremental cost up to $400 for a SEER ≥ 14 (baseline SEER 13).

[16] Empire District Electric (2009). An Evaluation of the Low-Income Weatherization Program. Prepared by TecMarket Works; Frontier Associates, LLC (2010). Arkansas Comprehensive Programs Deemed Savings. Prepared by Nexant; Xcel Energy. 2009/2010 Biennial DSM (Revised February 20, 2009) - Technical Assumptions.
[17] Empire District Electric (2009). An Evaluation of the Low-Income Weatherization Program. Prepared by TecMarket Works.

- Heat Pump, full incremental cost up to $400 (baseline SEER 13). The incentive may not exceed the incentive for a similarly rated central air conditioning unit.
- Refrigerator, up to $200 for an ENERGY STAR refrigerator.
- Lighting, up to $100 for the installation of ENERGY STAR rated lighting fixtures.

Organizations notify Empire of their intent to participate in the program. Upon acceptance, Empire holds the maximum available financing per home for up to six months, with payment occurring upon receipt and review of paid invoices. Empire currently plans to fund five to ten homes in Missouri per year for a period of five years.

Marketing includes advertising through bill inserts and direct mail to eligible residential customers. Empire supplements the marketing efforts, via bill inserts, newspaper advertisements and radio advertisements.

2010 Program Summary

In 2010, 2 new low income homes received incentives.

Residential Low Income New Homes Summary

	2010 Program
Participants	2
Expenditures	$1,322
Energy Savings (kWh)	2,536
Demand Savings (kW)	7
TRC Benefit-Cost Ratio	2.64

2012 Proposed Program

The energy and demand savings were adjusted by a 100 percent coincidence factor. The direct participant cost is approximately $2,750, based on the 2010 program, and the lifetime was estimated at 15 years.[18] For the purposes of this analysis, the average incentive was estimated at $750.

The program is delivered by local non-profit organizations. Administration and marketing are 12 percent and 8 percent of incentives, respectively, while evaluation is 5 percent of the total budget.

Expected Net Energy Savings

Savings per Unit	Year 1	Year 2	Year 3
2,052	92,340	82,080	82,080

Expected Net Demand Savings

Savings per Unit	Year 1	Year 2	Year 3
0.234	11	9	9

Expected Participation

Year 1	Year 2	Year 3
45	40	40

[18] Empire District Electric (2009). An Evaluation of the Low-Income Weatherization Program. Prepared by TecMarket Works; Frontier Associates, LLC (2010). Arkansas Comprehensive Programs Deemed Savings. Prepared by Nexant; Xcel Energy. 2009/2010 Biennial DSM (Revised February 20, 2009) - Technical Assumptions.