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**VIA OVERNIGHT DELIVERY**

November 14, 2012

Mr. Jeff Derouen  
Executive Director  
Kentucky Public Service Commission  
211 Sower Boulevard, P.O. Box 615  
Frankfort, Kentucky 40602-0615

RECEIVED

NOV 15 2012

PUBLIC SERVICE  
COMMISSION

**Re:           Case No. 2012-\_\_\_\_\_**  
***The Application of Duke Energy Kentucky, Inc. For The Annual Cost***  
***Recovery Filing for Demand Side Management***

Dear Mr. Derouen:

Enclosed please find an original and twelve copies of *The Application of Duke Energy Kentucky, Inc. For The Annual Cost Recovery Filing for Demand Side Management* for filing in the above referenced matter.

Please date-stamp the two copies of the letter and the filing and return to me in the enclosed envelope.

Sincerely,

Kristen Cocanougher

cc:   Larry Cook  
      Richard Raff  
      Florence W. Tandy  
      Carl Melcher



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NOV 15 2012

**BEFORE THE  
KENTUCKY PUBLIC SERVICE COMMISSION**

PUBLIC SERVICE  
COMMISSION

In The Matter Of:

THE ANNUAL COST RECOVERY FILING  
FOR DEMAND SIDE MANAGEMENT BY  
DUKE ENERGY KENTUCKY, INC.

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CASE NO. 2012-\_\_\_\_\_

**FILING OF THE ANNUAL STATUS REPORT, ADJUSTMENT OF THE DSM COST  
RECOVERY MECHANISM, AND AMENDED TARIFF SHEETS FOR GAS RIDER  
DSMR (SEVENTH REVISED SHEET NO. 62) AND ELECTRIC RIDER DSMR  
(SEVENTH REVISED SHEET NO. 78)**

Now comes Duke Energy Kentucky, Inc. (Duke Energy Kentucky or the Company) with the consensus of the Residential Collaborative and the Commercial and Industrial Collaborative, and pursuant to prior Orders of the Kentucky Public Service Commission (Commission) relevant to Duke Energy Kentucky's Demand Side Management (DSM) strategy<sup>1</sup> hereby files its Annual Status Report, Adjustment of the DSM Cost Recovery Mechanism, and Amended Tariff Sheets for Gas Rider DSMR and Electric Rider DSMR (Application). The Applicant is Duke Energy Kentucky, having a principal place of business at 139 East Fourth Street, Cincinnati, Ohio 45202.<sup>2</sup>

On October 15, 2012, the Residential Collaborative<sup>3</sup> and the Commercial and Industrial

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<sup>1</sup> See November 4, 2004 Order in Case No. 2003-00367, February 14, 2005 Order in Case No. 2004-00389, April 4, 2006 Order in Case No. 2005-00402, May 15, 2007 Order in Case No. 2006-00426, May 14, 2008 Order in Case No. 2007-00369, May 12, 2009 Order in Case No. 2008-00473, March 22, 2010 Order in Case No. 2009-00444, June 7, 2011 Order in Case No. 2010-00445, April 13, 2012 Order in Case No. 2011-00448, and June 29, 2012 Order in Case No. 2012-00085.

<sup>2</sup> Applicant's Kentucky business office address is Duke Energy Envision Center, 4580 Olympic Boulevard, Erlanger, Kentucky, 41018.

<sup>3</sup> The Residential Collaborative members in attendance were: Jennifer Black Hans (Office of the Kentucky Attorney General), Jock Pitts (People Working Cooperatively), Florence Tandy and Kowana Goode-Story (Northern Kentucky Community Action Commission), Laura Pleiman (Boone County), Carl Melcher (Northern Kentucky Legal Aid), Karen Reagor (Kentucky NEED Project), Lee Colten (Department of Energy Development and Independence), Jeremy Faust (Greater Cincinnati Energy Alliance), Pat Dressman (Campbell County) and Tim Duff and Trisha Haemmerle (Duke Energy).

Collaborative<sup>4</sup> met to review the Application.

With the exception of the Office of the Kentucky Attorney General, which will indicate its opinion at a later date, the members of both the Residential Collaborative and the Commercial & Industrial Collaborative agreed with this Application. Unless otherwise stated, the Residential Collaborative and the Commercial & Industrial Collaborative are jointly referred to herein as “Collaborative.”

In addition to filing the annual status report in this Application, Duke Energy Kentucky and the Collaborative respectfully request a modification of Duke Energy Kentucky’s DSM Riders to reflect the reconciliation of planned and actual expenditures, lost revenues, and shared savings. For this filing, Duke Energy Kentucky will be using results of recent impact evaluation studies to provide estimates of lost revenues and shared savings.

Pursuant to the Commission’s Order dated March 22, 2010, in Case No. 2009-00444, the Company’s portfolio of programs in effect during the fiscal year covered by this Application were approved through December 31, 2012. On March 6, 2012, Duke Energy Kentucky filed a new energy efficiency portfolio, Case No. 2012-00085 to replace the existing portfolio and requested a start date of July 1, 2012. The Commission approved this portfolio on June 29, 2012. The new approved programs began implementation on July 1, 2012 and replaced the programs that were previously approved through December 31, 2012. As a result, this Application serves as both the annual true-up of the fiscal year ending June 30, 2012 of programs, as well as, the transition to the new suite of programs approved in Case No 2012-00085.

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<sup>4</sup> The Commercial & Industrial Collaborative members in attendance were: Jennifer Black Hans (Office of the Kentucky Attorney General), Jock Pitts (People Working Cooperatively), Karen Reagor (Kentucky NEED Project), Lee Colten (Department of Energy Development and Independence), Pat Dressman (Campbell County), Chris Baker (Kenton County Schools) and Tim Duff and Trisha Haemmerle (Duke Energy).

## **I. INTRODUCTION**

### **A. Background**

The Company's offering of DSM programs dates back more than two decades.<sup>5</sup> Throughout the years, the Company has offered many enhancements to its portfolio with the purpose of increasing participation and providing customers new and innovative opportunities to control their consumption and impact their utility bill.<sup>6</sup> The portfolio of programs in place during the fiscal year ending June 30, 2012 and that is the subject of this Application was approved by the Commission's March 22, 2010 Order in Case No. 2009-00444. That Order approved continuation of all programs through December 31, 2012. Subsequently, the Commission's June 7, 2011 Order in Case No. 2010-00445: 1) affirmed the continuation of existing DSM programs as previously approved through December 31, 2012; 2) approved the Company's request to increase the budget for Program Administration, Development & Evaluation by \$60,000 to conduct the necessary evaluations in accordance with International Performance Measurement and Verification Protocol; 3) revised DSM surcharge factors; and 4) approved the request to implement the Residential Smart Saver<sup>®</sup> program with an expiration of December 31, 2012 that aligns it with the expiration of the other DSM programs. Most recently, the Commission's June 29, 2012 Order in Case No. 2012-00085 approved: 1) continuation of existing DSM programs with some enhancements; 2) three

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<sup>5</sup> In the Matter of the Joint Application Pursuant to 1994 House Bill No. 501 For the Approval of Principles of Agreement, Demand Side Management, The Union Light Heat and Power Company, and for Authority for the Union Light Heat and Power Company to Implement Various Tariffs and Receive Incentives Associated the Demand Side Management Programs, Case No. 95-312, Order December 1, 1995.

<sup>6</sup> See e.g. December 17, 2002, the Commission issued its Order in Case No. 2002-00358 approving Duke Energy Kentucky's plan to continue the following DSM programs: Residential Conservation and Energy Education, Residential Home Energy House Call, and Residential Comprehensive Energy Education for a three-year period ending December 31, 2005; to continue to fund the expansion and improvement of existing programs and the development of new programs; and to implement a revised low-income home energy assistance program as a pilot through May 31, 2004. These programs were extended through 2009 by the April 4, 2006 Order in Case No. 2005-00402. The Commission, in its November 30, 2003 Order in Case No. 2003-00367, also approved the implementation of Power Manager, a residential direct load control program, through 2007. The Commission's April 4, 2006 Order in Case No. 2005-00402 authorized the Personalized Energy Report (PER) program as a pilot program. The Commission's May 14, 2008, Order in Case No. 2007-00369 approved the Company's Power Manager program through 2012 and approved the PER program for recovery of lost revenues and shared savings.

new programs (Low Income Neighborhood, Appliance Recycling, and My Home Energy Report), and 3) a limited automatic process for pilot programs of \$75,000 or less that have Collaborative approval and do not exceed more than five percent of the total DSM program expenditures.

Like the Company's prior annual DSM filings, this Application specifically addresses the requirements in prior Commission Orders<sup>7</sup> and is being made consistent with the Commission's September 18, 2007 Order in Case 2007-00369 granting Duke Energy Kentucky's request to file annual DSM applications no later than November 15. In the status and reconciliation portion of this report, expenses are reported for the period July 1, 2011 through June 30, 2012.

In this Application, Duke Energy Kentucky also requests an Order approving the proposed adjustments to the DSM riders.

## **B. Definitions**

For the purposes of this Application, the following terms will have the following meanings:

- 1) **"DSM Revenue Requirements"** shall mean the revenue requirements associated with all Program Costs, Administrative Costs, Lost Revenues (less fuel savings), and the Shareholder Incentive.
- 2) **"Program Costs"** shall mean the costs incurred for planning, developing, implementing, monitoring and evaluating the DSM programs that have been approved by the Collaborative.
- 3) **"Administrative Costs"** shall mean the costs incurred by or on behalf of the collaborative process and that are approved by the Collaborative, including, but not limited to, costs for consultants, employees and administrative expenses.

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<sup>7</sup> November 20, 2003 Order in Case No. 2003-00367, February 14, 2005 Order in Case 2004-00389, April 4, 2006 Order in Case No. 2005-00402, May 15, 2007 Order in Case No. 2006-00426, May 14, 2008 Order in Case No. 2007-00369, March 22, 2010 Order in Case No. 2009-00444, June 7, 2011 Order in Case No. 2010-00445, and April 13, 2012 Order in Case No. 2011-00448.

- 4) **“Lost Revenues”** shall have the meaning in Section IV of the Principles of Agreement, Demand Side Management, Exhibit 1 to the Application in Case No. 95-312, dated July 15, 1995, (hereinafter referred to as Principles of Agreement, Demand Side Management);
- 5) **“Shareholder Incentive”** shall have the meaning in Section IV of the Principles of Agreement, Demand Side Management.
- 6) **“DSM Cost Recovery Mechanism”** shall have the meaning in Section IV of the Principles of Agreement, Demand Side Management.
- 7) **“Voucher”** shall mean the credit receipt the customer receives from a social service agency. The voucher can be used by the customer as a partial payment toward the utility bill.

## **II. STATUS OF PRIOR PORTFOLIO OF DSM PROGRAMS**

Through June 30, 2012, Duke Energy Kentucky offered the following programs, the costs of which are recoverable through the DSM Cost Recovery Rider mechanism approved by the Commission in prior proceedings.

- Program 1: Residential Conservation and Energy Education
- Program 2: Residential Home Energy House Call
- Program 3: Residential Comprehensive Energy Education Program (NEED)
- Program 4: Program Administration, Development & Evaluation Funds
- Program 5: Payment Plus
- Program 6: Power Manager
- Program 7: Energy Star Products
- Program 8: Energy Efficiency Website

Program 9: Personalized Energy Report (PER)<sup>®</sup>

Program 10: C&I High Efficiency Incentive (for Businesses and Schools)

Program 11: PowerShare<sup>®</sup>

Program 12: Residential Smart Saver<sup>®</sup>

With the Order in Case No. 2012-00085, the programs within this annual status filing remained in effect until June 30, 2012.

This section of the Application provides a brief description of each current program, a review of the current status of each program, and information on any changes that may have been made to the programs. The following table provides a brief summary of the load impacts achieved and level of participation obtained during this filing period.

Summary of Load Impacts July 2011 Through June 2012***			
Residential Programs	Incremental	Load Impacts Net of Free Riders at Meter	
	Participation	kWh	kW
Home Energy House Call	533	210,070	36.8
Energy Efficient Website	5,179	1,393,895	289.8
Energy Star Products*	15,687	703,676	146.3
Low Income Program	220	137,060	37.7
Refrigerator Replacement	64	72,298	13.5
Personalized Energy Report	5,369	1,445,032	300.4
Power Manager**	9,231	-	11,830.7
NEED	331	38,492	3.3
Residential Smart Saver	470	725,440	223.4
<b>Total Residential</b>	<b>37,084</b>	<b>4,725,963</b>	<b>12,881.7</b>
Non-Residential Programs	Incremental	Load Impacts Net of Free Riders at Meter	
	Participation	kWh	kW
C&I Lighting	30,481	5,801,293	1,559.0
C&I HVAC	6,945	456,614	184.7
C&I Motors	256	487,623	93.5
C&I Other	-	-	-
Custom Incentive Schools	-	-	-
Power Share	18	-	28,228.0
Smart Saver Custom Energy Eff. Incentive Program (Pilot)	850	212,315	53.2
<b>Total Non-Residential</b>	<b>38,550</b>	<b>6,957,844</b>	<b>30,118.4</b>
<b>Total</b>	<b>75,634</b>	<b>11,683,806</b>	<b>43,000.2</b>
*Energy Star Products is number of bulbs not participants.			
**Cumulative number of controlled devices installed			
***Impacts are without losses and reflected at the customer meter point			

Results of the current cost-effectiveness test results for each of the programs are provided

in Appendix A.

### **Program 1: Residential Conservation and Energy Education**

The Residential Conservation and Energy Education program is designed to help the Company's income-qualified customers reduce their energy consumption and lower their energy cost. This program specifically focuses on LIHEAP (Low Income Home Energy Assistance Program) customers that meet the income qualification level (*i.e.*, income below 150% of the federal poverty level). This program uses the LIHEAP intake process as well as other community outreach initiatives to improve participation. The program provides direct installation of weatherization and energy-efficiency measures and educates Duke Energy Kentucky's income-qualified customers about their energy usage and other opportunities to reduce energy consumption and lower energy costs. The program has provided weatherization services to the following number of customers:

Fiscal Year	Customers Served
1999 - 2000	251
2000 - 2001	283
2001 - 2002	203
2002 - 2003	252
2003 - 2004	252
2004 - 2005	130
2005 - 2006	232
2006 - 2007	252
2007 - 2008	265
2008 - 2009	222
2009 - 2010	199
2010 - 2011	234
2011 - 2012	220

The program is structured so that the homes needing the most work, and having the highest energy use per square foot, receive the most funding. The program accomplishes this by placing each home into one of two "Tiers." The tiering process allows the agencies to be cost

effective while spending the limited budgets where there is the most significant potential for savings. For each home in Tier 2, the field auditor uses the National Energy Audit Tool (NEAT) to determine which specific measures are cost effective for that home. The specific services provided within each Tier are described below.

	Therm / square foot	kWh use/ square foot	Investment Allowed
Tier 1	$0 < 1 \text{ therm / ft}^2$	$0 < 7 \text{ kWh / ft}^2$	Up to \$600
Tier 2	$1 + \text{therms / ft}^2$	$7 + \text{kWh / ft}^2$	All SIR* $\geq 1.5$ up to \$4K

\*SIR = Savings - Investment Ratio

### **Tier One Services**

Tier 1 services are provided to customers by Duke Energy Kentucky, through its subcontractors. Customers are considered Tier 1, if they use less than 1 therm per square foot per year or less than 7 kWh per square foot per year based on the last year of usage (weather adjusted) of Company supplied fuels. Square footage of the dwelling is based on conditioned space only, whether occupied or unoccupied. It does not include unconditioned or semi-conditioned space (non-heated basements). The total program dollars allowed per home for Tier One services is \$600.00 per home.

Tier One services are as follows:

- Furnace Tune-up & Cleaning
- Furnace replacement if investment in repair over \$500
- Venting check & repair
- Water Heater Wrap
- Pipe Wrap
- Cleaning of refrigerator coils
- Cleaning of dryer vents

- Compact Fluorescent Light (CFL) Bulbs
- Low-flow shower heads and aerators
- Weather-stripping doors & windows
- Limited structural corrections that affect health, safety, and energy up to \$150
- Energy Education

## **Tier Two Services**

Duke Energy Kentucky will provide Tier Two services to a customer if they use at least 1 therm or at least 7 kWh per square foot per year based on the last year of usage of Duke Energy Kentucky-supplied fuels.

Tier Two services are as follows:

- Tier One services plus:
- Additional cost-effective measures (with  $SIR \geq 1.5$ ) based upon the results of the NEAT audit. Through the NEAT audit, the utility can determine if energy saving measures pay for themselves over the life of the measure as determined by a standard heat loss/economic calculation (NEAT audit) utilizing the cost of gas and electric as provided by Duke Energy Kentucky. Such items can include but are not limited to attic insulation, wall insulation, crawl space insulation, floor insulation and sill box insulation. Safety measures applying to the installed technologies can be included within the scope of work considered in the NEAT audit as long as the SIR is greater than 1.5 including the safety changes.

Regardless of placement in a specific tier, Duke Energy Kentucky provides energy education to all customers in the program.

To increase the cost-effectiveness of this program and to provide more savings and bill

control for the customer, the Collaborative and Duke Energy Kentucky proposed in the September 27, 2002, filing in Case No. 2002-00358, and subsequently received approval to expand this program, to include refrigerators as a qualified measure in owner-occupied homes. Refrigerators consume a large amount of electricity within the home, and the program impacts have been updated to reflect current energy savings and refrigerator replacements. To determine replacement, the program weatherization provider performs a two-hour meter test of the existing refrigerator unit. If it is a high-energy consuming refrigerator, as determined by this test, the unit is replaced. Replacing with a new Energy Star qualified refrigerator, with an estimated annual usage of 400 kWh, results in an overall savings to the average customer typically in excess of 1,000 kWh per year.

Refrigerators tested and replaced:

Year	Refrigerators Tested	Refrigerators Replaced
2002 - 2003	116	47
2003 - 2004	163	73
2004 - 2005	115	39
2005 - 2006	116	52
2006 - 2007	136	72
2007 - 2008	173	85
2008 - 2009	153	66
2009 - 2010	167	92
2010 - 2011	112	76
2011 - 2012	107	64

The existing refrigerator being replaced is removed from the home and destroyed in an environmentally appropriate manner to assure that the units are not used as a second refrigerator in the home or do not end up in the secondary appliance market.

Case No. 2012-00085 approved a new program; Low Income Services, which will be the previous Residential Conservation and Energy Education and Payment Plus programs and began on July 1, 2012.

Evaluation Findings: Duke Energy Kentucky conducted a process and impact evaluation for the program as shown in Appendix D.

## **Program 2: Residential Home Energy House Call**

The Home Energy House Call (HEHC) program is administered by Duke Energy Kentucky contractor Wisconsin Energy Conservation Corporation, Inc. (WECC). WECC has been administering and implementing programs for over 30 years. WECC's knowledge of home energy audits comes from years of experience administering weatherization programs for income eligible customers. The programs are implemented through subcontractor Thermo-Scan Inspections (TSI), located in Carmel, Indiana. TSI has been in the business of providing a wide array of inspection services for commercial and industrial businesses, municipalities, contractors and homeowners to identify, repair and protect homes, buildings, equipment and structures from moisture, leaks, corrosion and inefficient energy usage since 1980. Together, WECC and TSI provide the administration, marketing, staff, tracking, systems, logistics, training, customer service, scheduling and technical support required to support Duke Energy Kentucky's HEHC program. The HEHC program provides a comprehensive walk through in-home analysis by a Building Performance Institute (BPI) Building Analyst certified home energy specialist to identify energy savings opportunities in homes. The energy specialist analyzes the total home

energy usage, checks the home for air infiltration, examines insulation levels in different areas of the home, and checks appliances and heating/cooling systems. The auditors carry laptop computers on-site and can enter the data collected into the software directly, eliminating error from third party interpretation, and also allowing a customer to view their energy audit information immediately. A comprehensive report specific to the customer's home and energy usage is then provided to the customer at the time of the audit. The report focuses on the building envelope improvements as well as low-cost and no-cost improvements to save energy. At the time of the home audit, the customer receives a kit containing several energy saving measures at no cost. The measures include a low-flow showerhead, kitchen faucet aerator, bathroom aerator, outlet gaskets, and two 13 watt compact fluorescent bulbs, and one 18 watt compact fluorescent bulb. The auditors will offer to install these measures, if approved by the customer, so the customer can begin savings immediately on their electric bill, and to help insure proper installation and use.

For the period of July 1, 2011 through June 30, 2012, a total of 533 audits were completed in Kentucky. During this filing period, email and direct mail brochures were mailed to customers in an effort to acquire the proposed participation for this program process.

Case No. 2012-00085 re-branded this program as the Residential Energy Assessments Program.

### **Program 3: Residential Comprehensive Energy Education**

The Residential Comprehensive Energy Education program is operated under subcontract by the National Energy Education Development (NEED). Launched in 1980, NEED promotes student understanding of the scientific, economic, and environmental impacts of energy. The program is currently available in 50 states, and the U.S. territories. NEED operates on a limited

basis internationally. The program has provided comprehensive information on all energy sources and issues, with an emphasis on efficiency and conservation in both the residential and institutional market. Energy curriculum, based upon State standards, and hands-on kits, provided to teachers for use in their classrooms, emphasize science inquiry and application of energy knowledge. Energy Workshops are designed to provide educators (teaching grades K-12) with the content knowledge and process skills to return to their classrooms and communities, energize and educate their students, provide outreach to families and conduct energy education programs that assist families in implementing behavioral changes that reduce energy consumption. Teachers can utilize the kits and curriculum over many years. In addition, Home Energy Efficiency Kits are delivered to families to install energy efficiency measures and to record energy savings. Students that participated in the curriculum are eligible for the Home Energy Efficiency kits.

The Kentucky NEED Project has been active in the Commonwealth's schools for 16 years. Kentucky NEED delivers curriculum, teacher training, and school support services to local schools. In addition, Kentucky NEED manages the overall implementation for the Duke Energy Kentucky program and works with individual schools, teachers, and students to gain the maximum impact for the program. Kentucky NEED has received numerous accolades for its support of energy efficiency and conservation in local schools, for its support of Energy Star's Change the World Campaign, and for the integration of a student/family approach to conservation education. To support, recognize and encourage student energy leadership, Kentucky NEED hosts the annual Kentucky NEED Youth Awards for Energy Achievement in Washington, D.C., honoring teams of students who have successfully planned and facilitated energy projects in their schools and communities.

To improve and better document the energy savings associated with the program, a new survey instrument was added in 2004 for use in the classroom and Saving Energy at Home and School Kit, which serves as a companion to the Home Energy Efficiency Kits delivered to families in the Duke Energy Kentucky service area. A curriculum was developed, piloted, improved with teacher feedback, and delivered to schools participating in the Duke Energy sponsored program. In addition to the curriculum content delivered, the program includes household surveys that allow teachers to encourage, and families to implement, in-home adoption of energy efficiency measures. Data collected from the home survey is collected and provided to Duke Energy annually. The data shows that the measures included in the Home Energy Efficiency Kits are being installed and utilized. The Home Energy Efficiency Kits include CFL bulbs, low-flow shower heads, faucet aerators, water temperature gauge, outlet insulation pads, and a flow meter bag. During the 2011-12 school year, 331 kits were distributed.

The Order in Case No. 2012-00085 approved a live, theatrical production to be included with this program as a pilot. Beginning July 1, 2012, the program name has changed to the Energy Education Program for Schools.

#### **Program 4: Program Administration, Development & Evaluation**

This program is responsible for designing, implementing and capturing costs related to the administration, evaluation and support of the Collaborative and Duke Energy Kentucky's overall DSM effort. Program development funds are utilized for the redesign of programs and for the development of new programs, or program enhancements. Evaluation funds are used for evaluation, impact evaluation and process evaluation of program activities, such as those included as appendices to this filing and the reports provided in past filings.

Going forward as approved in Case No. 2012-00085, funds will be used to again monitor, evaluate and analyze these programs to improve cost effectiveness and program design and have been calculated into the new rider in the new portfolio filing as Evaluation, Measurement and Verification (EM&V). Costs are no longer categorized as a separate program. Therefore, Duke Energy Kentucky expects, and has planned for, the continuation of funding for this program to cover evaluation study costs for the current year's activities as well as future evaluations. Duke Energy Kentucky strives to optimize and balance the use of these program funds so that program development and redesign continues, that all programs are analyzed every year for cost effectiveness, and that programs are generally afforded the opportunity for a full scale impact evaluation and energy savings assessment once every two to three years. Duke Energy Kentucky believes that it is unnecessary to spend funds on impact evaluations every year for all programs, but also understands that all programs must undergo impact evaluation scrutiny and review at least once every two to three years.

#### **Program 5: Payment Plus**

The Payment Plus program was designed to impact participants' behavior (*e.g.*, encourages utility bill payment and reducing arrearages) and to generate energy conservation impacts. The program was extended by the Commission's Order in Case No. 2004-00389 to include both the early participants and new participants each year.

The program has three parts:

1. Energy & Budget Counseling – to help customers understand how to control their energy usage and how to manage their household bills, a combined education/counseling approach is used.
2. Weatherization – to increase the energy efficiency in customers' homes, participants

are required to have their homes weatherized as part of the normal Residential Conservation and Energy Education (low-income weatherization) program unless weatherized in past program years.

3. Bill Assistance – to provide an incentive for these customers to participate in the education and weatherization, and to help them get control of their bills, payment assistance credits are provided to each customer when they complete the other aspects of the program. The credits are: \$200 for participating in the EE counseling, \$150 for participating in the budgeting counseling, and \$150 for participating in the Residential Conservation and Energy Education program. If all of the requirements are completed, a household could receive up to a total of \$500. This allows for approximately 200 homes to participate per year as some customers do not complete all three steps or have already had the weatherization completed prior to the program.

This program is offered over six winter months per year. Customers are tracked and the energy savings are evaluated to determine if customer energy consumption dropped, and whether changes in bill paying habits have occurred. Previous participants' energy savings have been evaluated and compared to a control group of customers with similar arrearages and incomes. This analysis is the longest-running impact and process evaluation in the country looking at both energy savings and arrearages from a single program. From this analysis, there is long-term evidence that the program is effective at reducing energy usage and arrearages. Copies of the evaluation report were included in the 2006 filing. Given the positive evaluation results, the Collaborative proposed and the Commission approved in May 2007 continuation of the program at a cost of \$150,000 per year through 2009; this was extended through December 31, 2012, in Case No. 2009-00444.

Case No. 2012-00085 approved a new program; Low Income Services, which combines this program with the previous Residential Conservation and Energy Education and Payment Plus programs. This new program began on July 1, 2012.

Duke Energy Kentucky utilizes community action agencies to recruit customers to participate in the Payment Plus program. Using a list of potential customers provided by Duke Energy Kentucky, the agency removes any customer who has participated in the program in years past and sends a letter describing the program to the remaining customers. Included in this letter are various dates, times, and locations of scheduled classes. The courses are designed to accommodate customers with varied schedules and widespread locations. The customer is asked to contact the agency to register for a course. Make-up courses are also offered to those customers who may have missed their initial scheduled time.

For the filing period beginning in the fall of 2011, 169 participants attended energy education counseling, 159 participants attended budget counseling and 58 participant homes have been weatherized. There were 181 unique participants. Scores for this program will be updated upon completion of the next impact evaluation. Weatherization load impacts and program costs for the participants were included in the Residential Conservation and Energy Education program.

#### **Program 6: Power Manager**

The purpose of the Power Manager program is to reduce demand by controlling residential air conditioning usage during periods of peak demand, high wholesale price conditions and/or generation emergency conditions during the summer months. It is available to residential customers with central air conditioning. Duke Energy Kentucky attaches a load control device to the outdoor unit of a customer's air conditioner. This enables Duke Energy

Kentucky to cycle the customer's air conditioner off and on under appropriate conditions.

Customers participating in this program receive a one-time enrollment incentive and a bill credit for each Power Manager event. Customers, who select to have their air conditioner cycled to achieve a 1 kW reduction in load, receive a \$25 credit at installation. Customers selecting to have their air conditioner cycled to achieve a 1.5 kW load reduction, receive a \$35 credit at installation. For both options, an incentive credit is applied to participants' bills for each cycling event. The credit varies based on marginal costs and the length of each event. Participants receive a minimum seasonal total of \$5 or \$8 in event incentives (for the 1.0 kW or 1.5 kW load reduction respectively). A settle-up credit for the balance of actual event credits to the seasonal minimum is applied following the end of the event season, if warranted.

The load control devices have built-in safe guards to prevent the "short cycling" of the air-conditioning system. The air-conditioning system will always run the minimum amount of time required by the manufacturer. The cycling simply causes the air-conditioning system to run less, which is no different than what it does on milder days. Additionally, the indoor fan will continue to run and circulate air during the cycling event.

During the past fiscal year, we continued the replacement of older Power Manager devices begun in February 2011. Through June 30, 2012 nearly 5,400 new devices have been installed since the inception of the replacement project. Less than 500 of the older devices remain. Because these are located in more difficult to access locations and will require customer arrangements, we anticipate completion in 2013. In addition to improved operability and load reduction impacts, this replacement effort is contributing to Kentucky cost savings by reducing the expense allocation associated with the systems and hardware for the older device type.

Given our supply position in Kentucky, the Company limited its promotion of Power Manager during the July 2011 through June 2012 fiscal year. A new online enrollment option was added to the Duke Energy Kentucky Power Manager website in August 2011. A promotional video was produced and added to the Power Manager website in June 2012. The Power Manager program and this video were featured in the “Cool Ideas for Summer Heat” residential email also sent in June 2012. There were 36 new Power Manager installations in the past fiscal year. We continue to use load control devices manufactured by Cooper Power Systems for new installations and replacement of existing load control devices.

There were a total of 9,231 air conditioners on the program on June 29, 2012; a net decline of 296 during the fiscal year. Thanks to improved operability driven by the replacement project, overall load reduction increased by .38 MW (after losses) during this period.

Ongoing measurement and verification (M&V) is conducted through a sample of Power Manager customers with devices that record hourly run-time of the air conditioner unit and with load research interval meters that measure the household kWh usage in 15-minute intervals. Operability studies are also used to measure the performance of Power Manager load control devices in Kentucky. In addition, Duke Energy Kentucky has reviewed the statistical sampling requirements of PJM Interconnection for demand response resources of this type. The Duke Energy Kentucky studies comply with all PJM requirements at this current time. However, moving forward, the measurement and verification (M&V) process design may need to be changed since PJM is discussing new requirements for measuring the impacts of direct load control programs like Power Manager.

Power Manager was actively used during the past fiscal year. There were ten Power Manager economic cycling events from July 1, 2011 through June 30, 2012.

Date	Time
7/12/11	2:30 – 5:00
7/20/11	2:30 – 5:00
7/21/11	2:30 – 6:00
7/29/11	2:30 – 5:00
8/1/11	2:30 – 5:00
9/1/11	2:30 – 6:00
6/20/12	2:30 – 6:00
6/21/12	2:30 – 6:00
6/28/12	3:30 – 7:00
6/29/12	2:30 – 5:00

Case No. 2012-00085 re-branded this program as the Residential Direct Load Control-Power Manager Program.

**Program 7: ENERGY STAR Products**

As approved in Order 2004-00389, the ENERGY STAR Products program provides incentives and market support through manufacturer and retailer partners to build market share and usage of ENERGY STAR products, particularly CFLs. Incentives to buyers, along with educational materials, stimulate demand for the products, and make it easier for partners to participate. The program encourages residential customers to purchase specified ENERGY STAR technologies at local retail stores.

Price continues to be the primary market barrier to CFL adoption. While the average price of CFLs has dropped, the cost of a CFL generally remains much higher than traditional incandescent alternatives (*e.g.*, \$2.00 vs. \$0.75). This cost difference is more exaggerated for specialty CFLs such as “can lights,” 3-way bulbs and outdoor lights.

In 2012, Duke Energy Kentucky partnered with General Electric Company (GE) to offer customers two discount coupons. Mailing discounted coupons to customers’ homes allowed Duke Energy Kentucky to reach customers who had not previously participated in CFL promotions.

The GE campaign kicked-off on January 16, 2012, with coupons valid through March 31, 2012. The campaign encouraged eligible customers to participate by providing discounted coupons that could be redeemed at multiple retailers, further expanding the program's reach. Working closely with our manufacturing partner, GE, Duke Energy Kentucky offered a '\$7 off' coupon good towards the purchase of one six-pack of GE Energy Smart 13-watt bulbs and \$4 off a three-pack of GE Energy Smart 20 watt CFLs. Customers were able to redeem one or both coupons and purchase the wattage that suits their lighting needs.

Besides giving customers an incentive to purchase the bulbs, the offer also provided key points on savings compared to incandescent bulbs and that CFLs last up to nine years, which means savings will increase over time. The marketing piece and website directed customers to install the bulbs in the areas of the home that would see the most potential energy and cost savings. It also encouraged recycling of expired bulbs.

Duke Energy Kentucky will continue to offer incentives for energy efficient lighting as incandescent bulbs are phased out. Incentives for specialty bulbs applications will allow customers to replace high use incandescent lights with energy efficiency technology such as CFL and LED lamps (i.e. recessed, globes, candelabras, 3 ways and dimmables).

The Order in Case No. 2012-00085 allows for CFLs to be requested through other channels, such as, online and by telephone. The program name has changed to Smart Saver<sup>®</sup> Residential.

**Program 8: Energy Efficiency Website, On-line Energy Assessment**

As approved in Order 2004-00389, Duke Energy Kentucky is authorized to offer opportunities for customers to assess their energy usage and obtain recommendations for more efficient use of energy in their homes at the Duke Energy Kentucky website. This Kentucky

program fits suitably into Duke Energy Corporation's new multi-state program design now referred to as the Residential Energy Assessment Program.

Duke Energy Kentucky customers visiting their Online Services account at duke-energy.com are encouraged to take a short energy efficiency survey (EE survey). Participants receive an immediate, online, printable energy efficiency report (EE report) and are also sent a free package of six CFLs. The customized online EE report gives the customer information on the home's energy usage, providing the customer energy tips and information regarding how they use energy and what simple, low cost/no cost measures can be undertaken to lower their energy bill. The report also contains information on month-to-month comparisons of energy usage, a trend chart showing usage of electric by kWh by month, a disaggregation of how the customer uses electricity in the most important appliances, and customized energy tips based on the customer's answers to questions in the survey.

As part of Program 9: Personalized Energy Report, we gave Kentucky customers the option to complete the home energy survey online. This was a more cost-effective method of promoting the online program. As part of the July 2011-June 2012 program, Duke Energy sent out a reminder campaign to Kentucky customers who had not completed a survey. In the reminder campaign, Kentucky customers were only given the option to complete the survey online, resulting in high online participation numbers. Upon completing the survey, a report was then available online for the customer to print along with a six pack of CFLs delivered to the home.

Consistent with the Commission's Order in Case No. 2012-00085, as of July 1, 2012, this program will no longer be marketed to Kentucky customers as the Company will no longer be offering free bulbs as the incentive to complete the survey due to the Smart Saver bulb program.

Kentucky customers will still be able to access a home energy survey online and receive a printable version of their report.

**Program 9: Personalized Energy Report (PER)®**

The PER program provides Duke Energy Kentucky customers with a customized energy efficiency report aimed at helping them better manage their energy costs. This is similar to the online EE Survey and CFL offer described in Program 8, except that this program utilizes a mailed offer for those who do not have computer access or choose not to use the online programs. The EE report and six CFLs are mailed to those customers who mail in a completed survey.

This program targets single family residential customers in the Duke Energy Kentucky market that have not received measures through the Home Energy House Call home audit or Residential Conservation & Energy Education programs within the last three years. Duke Energy Kentucky has been working with ACLARA™ software to coordinate the customer's energy efficiency experiences between the online offer, described under the Online Energy Assessment program above, and this mailed version, or "paper" offer. To receive the paper version of the EE report (*i.e.*, the PER®), a customer completes an EE survey that generates the PER®. The EE survey stimulates the customer to think about how they use energy, and then the mailed report provides them with tools and information to lower their energy costs. The program commences with a letter to the customer, offering the PER® if they would return the enclosed short energy survey about their home. The survey asks very simple questions such as age of home, number of occupants, types of fuel used to cool, heat, and cook. Once the survey is returned, the information is used to generate a customized PER®. The PER® contains the same information as the EE survey described under the Online Energy Assessment program above, but

is mailed to the home instead of viewed online. To lower mailing costs, customers who receive the mailed survey and PER<sup>®</sup> offer are encouraged to visit Duke Energy Kentucky's website and fill in the same survey online instead of returning the paper survey and waiting for the mailed PER<sup>®</sup> report. The online report is immediately available in a printable format. The online option saves costs in the long run, and provides a source for customers to reprint their report, if desired. All participants also receive a free package of six CFLs.

Consistent with the Commission's Order in Case No. 2012-0085, of July 1, 2012, this program will no longer be marketed to Kentucky customers as Duke Energy will no longer be offering free bulbs as the incentive to complete the survey due to the Smart \$aver bulb program. In addition, there is a high penetration of customers who have already participated in the program. Kentucky customers will still be able to access a home energy survey online and receive a printable version of their Personalized Energy report online.

**Program 10: C&I High Efficiency Incentive (Business and Schools)**

The purpose of this program is to encourage the installation of high efficiency equipment in new and existing nonresidential establishments. The program provides incentive payments to offset a portion of the higher cost of energy efficient equipment.

Duke Energy Kentucky continues to contract with WECC to provide the back office support for implementation of this program. This program is jointly implemented with the Duke Energy Indiana, Duke Energy Ohio, and Duke Energy Carolinas territories to reduce administrative costs and leverage promotion. WECC, located in Madison, Wisconsin, has over 30 years experience in delivering programs similar to this. They have an office in the Midwest and are able to support Duke Energy programs in this region. The primary delivery of the program is through the existing market channels, equipment providers and contractors. WECC

had an existing network of relationships with vendors and trade ally organizations in Duke Energy Kentucky's service territory that have helped promote the sale of energy efficient equipment during these difficult economic times.

During the current reporting period of July 2011 through June 2012, the Kentucky Smart Saver<sup>®</sup> program provided incentives totaling \$408,034.99 to approximately 108 customers.

In July 2012, the Commission approved a new tariff expanding the prescriptive program to include additional measures and also incentives for maintenance activities such as chiller tune-ups. Facility caps were also removed from the program. Duke Energy Kentucky continues to review the portfolio for relevance and add or remove measures as necessary. Recent changes to the program include increasing the minimum efficiency requirements for HVAC incentives. This is due to the adoption of ASHRAE 90.1-2007 in Kentucky. In accordance with new federal standards, Duke Energy Kentucky is also phasing out the incentives for T5 and standard T8 4 foot and 8 foot fixtures used to replace T12s.

#### **Schools: Assessments, Prescriptive and Custom Efforts**

The Schools program, approved on May 15, 2007, provides schools funding for facility assessments, custom and prescriptive measures rebates and EE education from the NEED organization.

Participation in the Duke Energy Kentucky Schools Custom Program has diminished since 2010. Only one K-12 schools project application was received in this fiscal year. Implementation of this project remains uncertain. Also, between July 2011 and June 2012, no schools requested energy assessments. This decline in participation was one motivating factor for Duke Energy Kentucky's filing requesting expansion of the Custom Incentives program. In addition, seven school districts received Prescriptive incentives totaling \$48,304.

Upon receiving a Custom Incentive application, Duke Energy Kentucky reviews the application and performs a technical evaluation as necessary to validate energy savings. Measures submitted by the customer are then modeled in DSMore<sup>®</sup> to determine an acceptable incentive that ensures cost effectiveness to the program overall, given the energy savings, and improves a customer's payback to move them to invest in energy efficiency. Evaluation follow-up and review includes application review, site visits and/or onsite metering and verification of baseline energy consumption, customer interviews, and/or use of loggers/sub-meters. As use of Custom Incentives increases, Duke Energy Kentucky will evaluate applications and determine if additional measures can be included in the Prescriptive Incentives program. Including measures that repeatedly arise in Custom Incentive applications into the Prescriptive Incentives makes planning and applying for measure incentives easier for customers.

In Case No. 2011-00471, a pilot was approved to expand the program to include all non-residential customers in the Company's electric service area taking service under all non-residential rates who choose to participate by completing and submitting an application before initiating an energy efficiency project. In Case No. 2012-00085, the program was approved to begin July 1, 2012 superseding the pilot.

Most custom applications received for July 2011 through June 2012 related to Duke Energy Kentucky's pilot expansion program. One of these projects was partially completed before June 30, 2012.

#### **Program 11: PowerShare<sup>®</sup>**

PowerShare<sup>®</sup> is the brand name given to Duke Energy Kentucky's Peak Load Management Program (Rider PLM, Peak Load Management Program KY.P.S.C. Electric No. 2, Sheet No. 77). Rider PLM was approved pursuant as part of the settlement agreement in Case

No. 2006-00172. In the Commission's Order in Case No. 2006-00426, approval was given to include the PowerShare<sup>®</sup> program within the DSM programs. The PLM Program is voluntary and offers customers the opportunity to reduce their electric costs by managing their electric usage during the Company's peak load periods. Customers and the Company will enter into a service agreement under this Rider, specifying the terms and conditions under which the customer agrees to reduce usage. There are two product options offered for PowerShare<sup>®</sup> - CallOption<sup>®</sup> and QuoteOption<sup>®</sup>:

- CallOption<sup>®</sup>
  - A customer served under a CallOption<sup>®</sup> product agrees, upon notification by the Company, to reduce its demand.
  - Each time the Company exercises its option under the agreement, the Company will provide the customer a credit for the energy reduced.
  - There are two types of events.
    - Economic events are primarily implemented to capture savings for customers and not necessarily for reliability concerns. Participants are not required to curtail during economic events. However, if participants do not curtail, they must pay a market based price for the energy not curtailed. This is called "buy through energy."
    - Emergency events are implemented due to reliability concerns. Participants are required to curtail during emergency events.
  - If available, the customer may elect to buy through the reduction at a market-based price. The buy through option is not always available as specified in the PowerShare<sup>®</sup> Agreements. During PJM Interconnection, LLC-declared

emergency events, customers are not provided the option to buy through.

- In addition to the energy credit, customers on the CallOption<sup>®</sup> will receive an option premium credit.
- For the 2011/12 PowerShare<sup>®</sup> program associated with the fiscal year of this filing, there were three different enrollment choices for customers to select among. All three choices require curtailment availability for up to ten emergency events per PJM requirements for capacity participation. Economic events vary among the choices. Customers can select exposures of zero, five, or ten economic events.
- Only customers able to provide a minimum of 100 kW load response qualify for CallOption<sup>®</sup>.
- QuoteOption<sup>®</sup>
  - Under the QuoteOption<sup>®</sup> products, the customer and the Company agree that when the average wholesale market price for energy during the notification period is greater than a pre-determined strike price, the Company may notify the customer of a QuoteOption<sup>®</sup> event and provide a Price Quote to the customer for each event hour.
  - The customer will decide whether to reduce demand during the event period. If they decide to do so, the customer will notify the Company and provide an estimate of the customer's projected load reduction.
  - Each time the Company exercises the option, the Company will provide the participating customer who reduces load an energy credit.
  - There is no option premium for the QuoteOption<sup>®</sup> product since customer

load reductions are voluntary.

- Only customers able to provide a minimum of 100 kW load response qualify for QuoteOption®.

### **PowerShare® 2011-2012 Summary**

Duke Energy Kentucky's customer participation goal for 2011 was to retain all customers that currently participate and to promote customer migration to the CallOption® program. As seen in the table below, QuoteOption® participation decreased this year, partially reflecting a migration to CallOption.

The table below compares account participation levels for 2010 and 2011, as well as MWs enrolled in the program. The MW values are Duke Energy Kentucky's estimate of the curtailment capability across the summer of 2011.

<b>Kentucky PowerShare® Participation Update</b>					
<b>Enrolled Customers</b>					
CallOption®			QuoteOption®		
<u>2010</u>	<u>2011</u>	<u>Change</u>	<u>2010</u>	<u>2011</u>	<u>Change</u>
<b>12</b>	<b>18</b>	<b>6</b>	<b>23</b>	<b>9</b>	<b>(14)</b>
<b>Summer Curtailment Capability (MWs)*</b>					
CallOption®			QuoteOption®		
<u>2010</u>	<u>2011</u>	<u>Change</u>	<u>2010</u>	<u>2011</u>	<u>Change</u>
<b>13.6</b>	<b>29.7</b>	<b>16.1</b>	<b>6.3</b>	<b>1.5</b>	<b>(4.8)</b>
*Capability for QuoteOption® is 80% of enrolled load curtailment estimate					
Numbers reported are adjusted for losses					

(Note that Duke Energy Kentucky has signed 20 contracts for the 2012/2013 PowerShare® CallOption® program with an estimated 32 MWs of PJM Interconnection, LLC registered capacity for Summer 2012. Measured and verified MW values for the summer of

2012 will be available and presented in next year's update filing.)

During the summer of 2011, there were seven CallOption<sup>®</sup> events and no QuoteOption<sup>®</sup> events. All CallOption<sup>®</sup> events were economic events. There were no CallOption<sup>®</sup> emergency events. The table below summarizes event participation.<sup>8</sup>

Duke Energy Kentucky - PowerShare CallOption Economic Events						
Summer 2011 Activity - Reduction Values in MWs						
Date	Event Hours	Participants	Participants Reducing Load Partially or Fully	Average Hourly Load Reduction Available - Before Losses	Average Hourly Load Reduction - Before Losses	Average Hourly Load Reduction - After Losses
June 7, 2011	Noon to 8 PM	18	5	28.0	0.9	1.0
June 8, 2011	Noon to 8 PM	18	9	29.0	0.7	0.7
July 12, 2011	Noon to 8 PM	18	9	28.2	0.1	0.1
July 21, 2011	Noon to 8 PM	18	9	29.9	1.6	1.7
July 22, 2011	Noon to 8 PM	18	9	29.6	1.3	1.4
July 28, 2011	Noon to 8 PM	18	8	30.2	1.3	1.4
August 2, 2011	Noon to 8 PM	18	4	29.2	0.1	0.1

(Note that for the summer of 2012 through August, seven CallOption<sup>®</sup> events have been called. All of these events were economic events. Information on these events will be available and presented in next year's update filing.)

For PowerShare<sup>®</sup> 2011/2012, Duke Energy Kentucky has changed several parameters of the program (e.g., number of emergency events and notification time related to emergency events) as referenced above to comply with PJM Interconnection requirements. It should be

<sup>8</sup> "PowerShare<sup>®</sup> CallOption<sup>®</sup> participants are presented with the option to "buy-through" economic events since system reliability is not a concern during economic events. As can be seen in the table, several customers took full advantage or partial advantage of this option given that actual curtailment amounts are less than the available amounts. For energy consumed under this buy-through option, customers pay a market based price for energy. Buy-through is not available during emergency events."

noted that Duke Energy Kentucky transitioned from Midwest ISO to PJM Interconnection starting on January 1, 2012. While these changes did add some time to the sales process for the 2011/12 it did not negatively impact program participation levels for this year.

**Program 12: Residential Smart Saver®**

The purpose of the Residential Smart Saver® Program is to offer customers a variety of energy conservation measures designed to increase energy efficiency in their homes. This Program utilizes a network of contractors to encourage the installation of high efficiency equipment and the implementation of energy efficient home improvements. Equipment and services to be incentivized include:

- Installation of high efficiency air conditioning (AC) and heat pump (HP) systems
- Performance of AC and HP tune-up maintenance services
- Implementation of attic insulation and air sealing services
- Implementation of duct sealing services

The Residential Smart Saver® Program received approval in the Commission's June 7, 2011 order in Case No. 2010-00445. Duke Energy Kentucky launched the Residential Smart Saver® Program into the market on August 15, 2011 but only offered incentives for the installation of the high efficiency AC and HP systems due to an ongoing vendor selection process. Once the vendor selection process and subsequent transition completed in April 2012, the remaining incentives for the additional products and services were launched into the market and offered to residential Kentucky customers.

Duke Energy Kentucky currently contracts with GoodCents to provide the back office support for implementation of this program. Duke Energy Kentucky completed a vendor transition from WECC to GoodCents in February 2012. The change in vendor better positions

the Program to manage the trade ally network and increased participation volumes as well as to provide additional benefits and easier processes to the trade allies including online registration and application submission, incentive and application reporting, and electronic access to cooperative marketing materials. These Residential Smart \$aver® services are jointly implemented with the Duke Energy Indiana, Duke Energy Ohio, and Duke Energy Carolinas territories to reduce administrative costs and leverage promotion. GoodCents has experience in delivering programs similar to this and are able to leverage an office in the Midwest to support Duke Energy programs in this region.

### **III. CALCULATION OF THE 2012 DSM COST RECOVERY MECHANISM, RIDER DSMR**

The reconciliation of the cost recovery mechanism (Rider DSMR) involves a comparison of projected vs. actual program expenses, lost revenues, and shared savings as well as inclusion of the prior year's reconciliation. The actual cost of residential and non-residential program expenditures, lost revenues, and shared savings for this reporting period was \$5.36 million. The projected level of expenditures was \$8.03 million<sup>9</sup>.

Lost revenues are computed using the applicable marginal block rate net of fuel costs and other variable costs times the estimated kWh savings for a three-year period from installation of the DSM measure. The estimate of kWh savings is based upon the results from any recently completed impact evaluation studies and actual customer participation. Lost revenues accumulate over a three-year period from the installation of each measure, unless a general rate case has occurred.

With respect to shared savings, Duke Energy Kentucky utilized the shared incentive of

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<sup>9</sup> Projected level expenditures include the Smart \$aver Custom Energy Efficiency Incentive Program (Pilot) as approved in Case No. 2011-00471.

10% of the total savings net of the costs of measures, incentives to customers, marketing, impact evaluation, and administration. The savings are estimated by multiplying the program spending times the UCT value and then subtracting the program costs. Shared savings are only valued for installation of new DSM measures.

### **Outline of DSM Activity**

Duke Energy Kentucky is offering the following DSM programs in Duke Energy Kentucky's service territory in 2012 – 2013 as part of its new DSM model:

- Program 1: Low Income Services
- Program 2: Residential Energy Assessments
- Program 3: Energy Education Program for Schools
- Program 4: Residential Smart \$aver Energy Efficient Residences Program
- Program 5: Residential Smart \$aver<sup>®</sup> Energy Efficient Products
- Program 6: Smart \$aver Prescriptive Program
- Program 7: Smart \$aver<sup>®</sup> Custom Program
- Program 8: Smart \$aver<sup>®</sup> Energy Assessments Program
- Program 9: Power Manager Program
- Program 10: PowerShare<sup>®</sup>
- Program 11: Low Income Neighborhood
- Program 12: My Home Energy Report
- Program 13: Appliance Recycling

Refer to Appendix C for comparisons between Duke Energy Kentucky's previous (July 2011 - June 2012) and new portfolio (July 2012 – June 2016).

The Company is also offering the Home Energy Assistance (HEA) Program as approved

by the Commission in its September 30, 2008 Order in Case No. 2008-00100 and approved to continue for another three year period as ordered by the Commission on August 18, 2011 in Case No. 2011-00109. The program reconciliation is in this application in Appendix B. This program began collecting funds in November of 2008. A total of \$249,965.50 was collected from Duke Energy customers (\$144,874.60 electric and \$105,090.90 gas) from July 2011 - June of 2012. For this reporting period, the HEA program provided assistance to approximately 969 customers. The funds collected from the period beginning June 2011, were depleted in March 2012. The total disbursement between electric and gas accounts was approximately \$117,661.98 (electric) and \$85,351.08 (gas) based on the number of electric and gas customers contributing to the fund. These funds are distributed throughout the year by Northern Kentucky Community Action Commission to assist low income customers' energy bill payments. The administrative costs for this period (2011-2012) totaled \$26,479.97.<sup>10</sup>

## **2012 DSM Riders**

In accordance with the Commission's Order in Case No. 95-312, the Joint Applicants submit the proposed adjustments to its Rider DSMR for both electric and gas programs (Appendices E and F respectively). The two Rider DSMRs are intended to recover projected July 1, 2013 – June 30, 2014<sup>11</sup> (2014) program costs, lost revenues and shared savings and to reconcile the actual DSM revenue requirement, as previously defined, to the revenue recovered under the riders for the period July 1, 2011 through June 30, 2012. The spreadsheet model contained in Appendix B has been used by the Company for a number of years in its Rider DSMR update filings. Over the years, there has been a timing variance between the revenues

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<sup>10</sup> Administrative costs are based on funds distributed.

<sup>11</sup> July 1, 2012 – June 30, 2013 expenditures are in effect from Case No. 2012-00085 and will be trued-up as part of the 2013 annual status report. The projected July 1, 2013 – June 30, 2014 program expenditures used in this filing will be trued-up as part of the 2014 annual status report and will be described as 2014 throughout the document.

and costs reported in the filing. This lack of synchronization between the revenues and costs is causing large swings in the (Over)/Under Collection dollars. In an effort to mitigate the over/under collection on an annual basis, page 2 of Appendix B uses projected costs from year 2 (2014) of the new portfolio as filed in Case No. 2012-00085.

Appendix B, page 1 of 6, tabulates the reconciliation of the DSM revenue requirement associated with the prior reconciliation, Duke Energy Kentucky's program costs, lost revenues, and shared savings between July 1, 2011 and June 30, 2012, and the revenues collected through the DSMR Riders over the same period. The true-up adjustment is based upon the difference between the actual DSM revenue requirement and the revenues collected during the period July 1, 2011 through June 30, 2012.

The DSM revenue requirement for the period July 1, 2011 through June 30, 2012 consists of: (1) program expenditures, lost revenues, and shared savings; and (2) amounts approved for recovery in the previous reconciliation filing.

Appendix B, page 5 of 6 contains the calculation of the 2012 Residential DSMR Riders. The calculation includes the reconciliation adjustments calculated in Appendix B, page 1 of 6 and the Residential DSM revenue requirement for 2014. The Residential DSM revenue requirement for 2014 includes the costs associated with the Residential DSM programs: Appliance Recycling Program, Energy Efficiency Education Program for Schools, My Home Energy Report, Low Income Neighborhood, Low Income Services, Residential Energy Assessments, Residential Smart Saver<sup>®</sup>, Power Manager and any applicable net lost revenues and shared savings (Appendix B, pages 2 and 3 of 6). Total revenue requirements are incorporated along with the projected electric and gas volumes (Appendix B, page 4 of 6) in the calculation of the Residential DSM Rider.

Appendix B, page 5 of 6 also contains the calculation of the 2014 Commercial and

Industrial DSM Rider. The calculation includes the reconciliation adjustments calculated in Appendix B, page 1 of 6 and the DSM revenue requirement for 2014. The Commercial & Industrial DSM revenue requirement for 2014 includes the costs associated with the Commercial and Industrial DSM programs: Smart Saver<sup>®</sup> Custom, Smart Saver<sup>®</sup> Prescriptive, PowerShare<sup>®</sup>, and the associated net lost revenues and shared savings (Appendix B, pages 2 and 3 of 6). The 2014 Commercial and Industrial DSMR Rider is calculated in two parts. One part (Part A) is based upon the revenue requirements for the C&I High Efficiency Incentive Program (Business and Schools). This part is only recovered from all non-residential rate classes except rate TT. The other part (Part B) is based upon the revenue requirements for the PowerShare<sup>®</sup> program and is recovered from all non-residential rate classes including rate TT.

Total revenue requirements are incorporated along with the projected electric volumes (Appendix B, page 4 of 6) in the calculation of the Commercial and Industrial DSM Rider.

The Company's proposed DSMR Riders, shown as Appendices E and F, replace the current DSMR Riders, which were implemented in the first available billing cycle of July 2012. The electric DSMR rider, proposed to be effective with the first billing cycle in the month following Commission approval, is applicable to service provided under Duke Energy Kentucky's electric service tariffs as follows:

- Residential Electric Service provided under:
  - Rate RS, Residential Service, Sheet No. 30
- Non-Residential Electric Service provided under:
  - Rate DS, Service at Secondary Distribution Voltage, Sheet No. 40
  - Rate DT, Time-of-Day Rate for Service at Distribution Voltage, Sheet No.

- Rate EH, Optional Rate for Electric Space Heating, Sheet No. 42
- Rate SP, Seasonal Sports, Sheet No. 43
- Rate GS-FL, Optional Unmetered General Service Rate for Small Fixed Loads, Sheet No. 44
- Rate DP, Service at Primary Distribution Voltage, Sheet No. 45
- Rate RTP-M, Real Time Pricing – Market-Based Pricing, Sheet No. 59
- Rate RTP, Experimental Real Time Pricing Program, Sheet No. 99
- Rate TT, Service at Transmission Voltage, Sheet No. 51

The gas DSM rider is applicable to service provided under the following residential gas service tariff:

- Rate RS, Residential Service, Sheet No. 30

#### Calculation of the Residential Charge

The proposed residential charge per kWh for 2014 was calculated by dividing the sum of: (1) the reconciliation amount calculated in Appendix B, page 1 of 6; and (2) the DSM revenue requirement associated with the DSM programs projected for 2014, by the projected sales for calendar year 2013. DSM program costs for 2014 include the total implementation costs plus program rebates, lost revenues, and shared savings. The calculations in support of the residential recovery mechanism are provided in Appendix B, page 5 of 6.

#### Calculation of the Non-Residential Charge

The proposed non-residential charge per kWh for 2014 was calculated in two parts. The first part (Part A), applicable to all non-residential rate classes except Rate TT, is calculated by dividing the sum of: (1) the reconciliation amount calculated in Appendix B, page 1 of 6; and (2) the DSM revenue requirement associated with the Smart Saver Custom and Smart Saver

Prescriptive programs projected for 2014, by the respective projected sales for calendar year 2013. The second part (Part B), applicable to all non-residential rate classes including Rate TT, is calculated by dividing the DSM revenue requirement associated with the PowerShare® program projected for 2014, by total non-residential projected sales for calendar year 2013. DSM program cost for 2014 includes the total implementation costs plus program rebates, lost revenues and shared savings.

The rider applicable to all non-residential rate classes except Rate TT is the sum of Part A and Part B. The rider applicable to all non-residential rate classes including Rate TT is only Part B.

Page 6 of 6 provides the projected residential and non-residential kWh estimates for the remaining years of lost revenue calculations for measures recorded under the portfolio that ended June 30, 2012. These projected kWh values will be used in subsequent rider true-up filings, assuming that there has been no general increase in rates.

#### Allocation of the DSM Revenue Requirement

As required by KRS 278.285(3), the DSM Cost Recovery Mechanism attributes the costs to be recovered to the respective class that benefits from the programs. The costs for the Power Manager program are fully allocated to the residential electric class, since this is the class benefiting from the implementation of the program. As required, qualifying industrial customers are permitted to “opt-out” of participation in, and payment for, the C&I High Efficiency Incentive Program. All of Duke Energy Kentucky’s Rate TT customers met the “opt-out” requirements prior to the implementation of the DSM riders in May 1996, and are not subject to this portion of the DSM Cost Recovery Mechanism (*i.e.* Rider DSMR). However, all non-residential customers, including Rate TT customers, will be charged for the PowerShare® program.

**WHEREFORE**, Duke Energy Kentucky respectfully requests that the Commission review and approve this Application and Duke Energy Kentucky gives notice that the new rates will take effect thirty days from the date of this Application.

Respectfully submitted,

DUKE ENERGY KENTUCKY, INC.

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## CERTIFICATE OF SERVICE


I hereby certify that a copy of the foregoing filing was served on the following via ordinary mail, postage prepaid, this 15<sup>th</sup> day of November, 2012:

Larry Cook, Assistant Attorney General  
The Kentucky Office of the Attorney General  
1024 Capital Center Drive  
Frankfort, Kentucky 40602-2000

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Appendix A  
Cost Effectiveness Test Results

Program Name	2011 - 2012				Participant
	UCT	TRC	RIM		
Residential Conservation and Energy Education	0.86	0.93	0.62		NA
Refrigerator Replacement	0.36	0.44	0.29		NA
Residential Home Energy House Call	0.57	0.60	0.43		NA
Residential Comprehensive Energy Education Program (NEED)	0.10	0.10	0.09		NA
Power Manager	5.79	7.48	5.79		NA
Energy Star Products	1.88	2.01	0.73		20.56
Energy Efficiency Website	2.89	6.64	0.85		NA
Personal Energy Report (PER)	2.89	6.64	0.85		N/A
Residential Smart Saver	1.69	1.20	0.79		2.36
C&I High Efficiency Incentive (for Businesses and Schools)					
Lighting	6.42	2.58	1.57		2.65
HVAC	2.94	1.76	1.47		1.76
Motors	11.63	4.46	1.92		4.74
Other	NA	NA	NA		NA
Custom Incentives for Schools	NA	NA	NA		NA
Smart Saver Custom Energy Eff. Incentive Program (Pilot)	4.64	3.02	1.69		4.09
PowerShare	5.48	66.99	2.33		NA



Kentucky DSM Rider

Comparison of Revenue Requirement to Rider Recovery

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Residential Programs	Projected Program Costs 7/2011 to 6/2012 (A)	Projected Lost Revenues 7/2011 to 6/2012 (A)	Projected Shared Savings 7/2011 to 6/2012 (A)	Program Expenditures 7/11 through 6/12 (B)	Program Expenditures (C) Gas	Electric	Lost Revenues 7/11 through 6/12 (B)	Shared Savings 7/11 through 6/12 (B)	2011 Reconciliation Gas (D)	Electric (E)	Rider Collection (F) Gas	Electric	(Over)/Under Collection Gas (G)
Res. Conservation & Energy Education	\$ 499,800	\$ 16,525	\$ (3,499)	\$ 636,469	\$ 400,338	\$ 236,131	\$ 16,137	\$ (6,911)			NA	NA	NA
Refrigerator Replacement	\$ 100,000	\$ 6,145	\$ 300	\$ 123,427	\$ 178,228	\$ 103,124	\$ 20,438	\$ (7,889)			NA	NA	NA
Residential Home Energy House Call	\$ 150,000	\$ 49,810	\$ 35,700	\$ 283,352	\$ 105,908	\$ 62,468	\$ -	\$ (10,858)			NA	NA	NA
Res. Comprehensive Energy Education	\$ 81,500	\$ -	\$ -	\$ 168,376	\$ -	\$ 206,678	\$ -	\$ -			NA	NA	NA
Payment Plus	\$ 150,000	\$ -	\$ 174,000	\$ 268,609	\$ 143,519	\$ 262,609	\$ -	\$ 125,796			NA	NA	NA
Power Manager	\$ 875,000	\$ -	\$ -	\$ 262,609	\$ 143,519	\$ 262,609	\$ -	\$ 125,796			NA	NA	NA
Program Development Funds	\$ 140,000	\$ 690,225	\$ 63,450	\$ 128,683	\$ 7,628	\$ 103,862	\$ 133,881	\$ 9,139			NA	NA	NA
Energy Star Products	\$ 243,000	\$ 28,781	\$ 2,855	\$ 7,628	\$ 4,797	\$ 2,831	\$ 40,474	\$ 25,303			NA	NA	NA
Energy Efficiency Website	\$ 131,110	\$ 121,547	\$ 73,134	\$ 265,043	\$ 166,712	\$ 98,331	\$ 211,452	\$ 28,231			NA	NA	NA
Personalized Energy Report Program	\$ 153,000	\$ 50,150	\$ 53,622	\$ 237,949	\$ 149,670	\$ 88,279	\$ 12,482	\$ 16,419			NA	NA	NA
Residential Smart Thermostat	\$ 448,520	\$ -	\$ -	\$ 203,013	\$ 85,351	\$ 117,662	\$ -	\$ -			NA	NA	NA
Home Energy Assistance Pilot Program (I)	\$ 247,283	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -			NA	NA	NA
Revenues collected except for HEA	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -			\$ 105,091	\$ 144,875	\$ -
Total	\$ 3,119,213	\$ 961,183	\$ 399,862	\$ 2,726,519	\$ 1,234,323	\$ 1,492,056	\$ 449,082	\$ 176,219	\$ (4,408,808)	\$ (1,277,849)	\$ 621,205	\$ 2,149,748	\$ (3,900,580)

(A) Amounts identified in report filed on November 15, 2011.  
 (B) Actual program expenditures, lost revenues, and shared savings for the period July 1, 2011 through June 30, 2012 and lost revenues for this period and from prior period DSM measure installations.  
 (C) Allocation of program expenditures to gas and electric. Uses 62.9% gas based upon saturation of gas space heating.  
 (D) Recovery allowed in accordance with the Commission's Order in Case No. 2011-00448  
 (E) Recovery allowed in accordance with the Commission's Order in Case No. 2011-00448  
 (F) Revenues collected through the DSM Rider between July 1, 2011 and June 30, 2012.  
 (G) Column (5) + Column (9) - Column (11)  
 (H) Column (6) + Column (7) + Column (8) + Column (10) - Column (12)  
 (I) Revenues and expenses for the Home Energy Assistance Pilot Program.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Commercial Programs	Projected Program Costs 7/2011 to 6/2012 (A)	Projected Lost Revenues 7/2011 to 6/2012 (A)	Projected Shared Savings 7/2011 to 6/2012 (A)	Program Expenditures 7/11 through 6/12 (B)	Lost Revenues 7/11 through 6/12 (B)	Shared Savings 7/11 through 6/12 (B)	2011 Reconciliation Gas (D)	Electric (E)	Rider Collection (F) Gas	Electric	(Over)/Under Collection Gas (G)	Electric (H)	(Over)/Under Collection Gas (G)
High Efficiency Program													
Lighting	\$ 209,520	\$ 308,352	\$ 10,588	\$ 373,264	\$ 187,024	\$ 202,379							
HVAC	\$ 208,247	\$ 14,429	\$ 14,588	\$ 89,463	\$ 15,721	\$ 17,354							
Boilers	\$ 106,678	\$ 21,031	\$ 25,718	\$ 18,812	\$ 10,186	\$ 19,986							
Other	\$ 450,814	\$ 288,836	\$ 448,530	\$ -	\$ 49,305	\$ -							
Program Development Funds	\$ 60,000	\$ -	\$ -	\$ 38,066	\$ -	\$ -							
Smart Save Custom Energy Eff. Incentive Program (Pilot)	\$ 658,789	\$ 151,720	\$ 249,580	\$ 37,812	\$ 148	\$ 13,762							
Total for High Efficiency Program	\$ 1,652,517	\$ 809,186	\$ 749,514	\$ 557,416	\$ 243,299	\$ 253,490	\$ (660,831)	\$ 2,895,596	\$ (2,503,221)				
PowerShare®	\$ 265,000	\$ -	\$ 107,641	\$ 661,286	\$ -	\$ 266,256	\$ 716,852	\$ 62,703	\$ 1,611,691				

(A) Amounts identified in report filed on November 15, 2011.  
 (B) Actual program expenditures, lost revenues, and shared savings for the period July 1, 2011 through June 30, 2012 and lost revenues for this period and from prior period DSM measure installations.  
 (C) Recovery allowed in accordance with the Commission's Order in Case No. 2011-00448  
 (D) Revenues collected through the DSM Rider between July 1, 2011 and June 30, 2012.  
 (E) Column (4) + Column (5) + Column (6) + Column (7) - Column (8)

Kentucky DSM Rider

2013-2014 Projected Program Costs, Lost Revenues, and Shared Savings (A)

Residential Program Summary (A), (B)

	Residential - Current Programs/Measures			Budget (Costs, Lost Revenues, & Shared Savings)		
	Costs	Lost Revenues	Shared Savings	Electric	Gas	Gas Costs
Appliance Recycling Program	\$ 254,905	\$ 25,383	\$ 51,900	\$ 332,188	\$ -	\$ -
Energy Efficiency Education Program for Schools	\$ 160,841	\$ 13,197	\$ (7,028)	\$ 167,011	\$ 102,134	\$ -
My Home Energy Report	\$ 375,038	\$ 402,499	\$ 40,663	\$ 818,200	\$ -	\$ -
Low Income Neighborhood	\$ 297,422	\$ 40,038	\$ 7,460	\$ 344,920	\$ 425,379	\$ -
Low Income Services	\$ 669,888	\$ 19,932	\$ (29,790)	\$ 660,030	\$ 106,537	\$ 743,073
Residential Energy Assessments	\$ 167,774	\$ 14,909	\$ 12,819	\$ 195,503	\$ 88,966	\$ -
Residential Smart Saver®	\$ 1,170,194	\$ 1,376,347	\$ 319,133	\$ 2,865,675	\$ 2,122,601	\$ -
Power Manager	\$ 308,742	\$ -	\$ 138,807	\$ 447,549	\$ -	\$ -
Total Costs, Net Lost Revenues, Shared Savings	\$ 3,404,806	\$ 1,892,305	\$ 533,964	\$ 5,831,074	\$ 4,453,951	\$ 1,377,123
Home Energy Assistance Pilot Program	\$ 249,560				\$ 144,950	\$ 104,610

NonResidential Program Summary (A), (B)

	NonResidential Program Summary (A), (B)			Budget (Costs, Lost Revenues, & Shared Savings)		
	Costs	Lost Revenues	Shared Savings	Electric	Gas	Gas Costs
Smart Saver® Custom	\$ 363,445	\$ 91,416	\$ 229,707	\$ 684,568	\$ NA	\$ NA
Smart Saver® Prescriptive - Energy Star Food Service Proc	\$ 14,706	\$ 8,866	\$ 14,459	\$ 38,031	\$ NA	\$ NA
Smart Saver® Prescriptive - HVAC	\$ 177,989	\$ 66,300	\$ 137,729	\$ 382,018	\$ NA	\$ NA
Smart Saver® Prescriptive - Lighting	\$ 587,516	\$ 311,187	\$ 390,588	\$ 1,289,291	\$ NA	\$ NA
Smart Saver® Prescriptive - Motors/Pumps/VFD	\$ 68,636	\$ 59,009	\$ 70,546	\$ 198,192	\$ NA	\$ NA
Smart Saver® Prescriptive - Process Equipment	\$ 56	\$ 119	\$ 75	\$ 251	\$ NA	\$ NA
Power Share®	\$ 815,415	\$ -	\$ 261,322	\$ 1,076,737	\$ NA	\$ NA
Total Costs, Net Lost Revenues, Shared Savings	\$ 2,027,762	\$ 536,898	\$ 1,104,428	\$ 3,669,088	\$ -	\$ -
Total Program	\$ 5,432,568	\$ 2,429,203	\$ 1,638,392	\$ 9,500,163		

(A) Please see Appendix C

(B) Costs, Lost Revenues, and Shared Savings for Year 2 of portfolio approved in Case No. 2012-00085

Kentucky DSM Rider

Duke Energy Kentucky  
Demand Side Management Cost Recovery Rider (DSMR)  
Summary of Calculations for Programs  
July 2013 to June 2014

Program Costs (A)	<u>Electric Rider DSM</u>	
	Residential Rate RS	Distribution Level Rates Part A DS, DP, DT, GS-FL, EH & SP
	\$ 4,453,951	\$ 2,592,351
		Transmission Level Rates & Distribution Level Rates Part B
	\$ 1,076,737	
	\$ 1,377,123	<u>Gas Rider DSM</u> Residential Rate RS

(A) See Appendix B, page 2 of 6.

Kentucky DSM Rider

Duke Energy Kentucky  
Demand Side Management Cost Recovery Rider (DSMR)  
Summary of Billing Determinants

Year	Projected Annual Electric Sales KWH	Rates RS	Rates DS, DP, DT, GS-FL, EH, & SP	Rates DS, DP, DT, GS-FL, EH, SP, & TT	Projected Annual Gas Sales CCF	Rate RS
2013		1,506,591,479	2,463,381,525	2,516,707,056		64,261,240

Kentucky DSM Rider

Duke Energy Kentucky  
Demand Side Management Cost Recovery Rider (DSMR)  
Summary of Calculations

July 2013 to June 2014

Rate Schedule	True-Up Amount (A)	Expected Program Costs (B)	Total DSM Revenue Requirements	Estimated Billing Determinants (C)	DSM Cost Recovery Rider (DSMR)
<u>Electric Rider DSM</u>					
Residential Rate RS	\$ (1,459,173)	\$ 4,453,951	\$ 2,994,778	1,506,591,479 kWh	\$ 0.001988 \$/kWh
Distribution Level Rates Part A DS, DP, DT, GS-FL, EH & SP	\$ (2,508,478)	\$ 2,592,351	\$ 83,873	2,463,381,525 kWh	\$ 0.000034 \$/kWh
Transmission Level Rates & Distribution Level Rates Part B TT	\$ 1,615,075	\$ 1,076,737	\$ 2,691,812	2,516,707,056 kWh	\$ 0.001070 \$/kWh
Distribution Level Rates Total DS, DP, DT, GS-FL, EH & SP					\$ 0.001104 \$/kWh
<u>Gas Rider DSM</u>					
Residential Rate RS	\$ (3,908,771)	\$ 1,377,123	\$ (2,531,648)	64,261,240 CCF	\$ (0.039396) \$/CCF
Total Rider Recovery			\$ 3,238,816		
Customer Charge for HEA Program <u>Electric No.4</u>			Annual Revenues	Number of Customers	Monthly Customer Charge
Residential Rate RS			\$ 144,950	120,792	\$ 0.10
<u>Gas No.5</u>					
Residential Rate RS			\$ 104,610	87,175	\$ 0.10
Total Customer Charge Revenues			\$ 249,560		
Total Recovery			\$ 3,488,376		

(A) (Over)/Under of Appendix B page 1 multiplied by the average three-month commercial paper rate for 2012 to include interest on over or under-recovery in accordance with the Commission's order in Case No. 95-312. Value 1.002100  
(B) Appendix B, page 2.  
(C) Appendix B, page 4.

Kentucky DSM Rider

Appendix B

Estimate of Remaining Load Reduction Under Current Portfolio

The lost revenue rate over the next three years under portfolio beginning July 1, 2012 (Order in Case No. 2012-00085) will be applied to load reductions below to recover remaining years of lost revenues for measures recorded under portfolio ending June 30, 2012.

	kWh for Lost Revenues Under Portfolio Thru 6/30/12		
	2012/13	2013/14	2014/15
<b>Residential</b>			
Res. Conservation & Energy Education	337,292	210,178	84,063
Refrigerator Replacement	201,522	111,743	40,430
Residential Home Energy House Call	499,565	297,799	108,462
Power Manager	-	-	-
Energy Star Products	1,642,113	1,267,362	202,189
Energy Efficiency Website	1,546,280	1,406,096	598,341
Personalized Energy Report Program	5,215,983	5,075,798	648,671
Residential Smart Saver®	725,440	725,440	425,909
<b>NonResidential</b>			
	kWh for Lost Revenues Under Portfolio Thru 6/30/12		
	2012/13	2013/14	2014/15
High Efficiency Program			
Lighting	11,648,659	8,279,252	484,387
HVAC	1,103,853	775,596	42,426
Motors	987,055	628,169	41,096
Other	904,897	26,116	-
Smart Saver Custom Energy Eff. Incentive Program (Pilot)	212,315	212,315	194,758
PowerShare®	-	-	-



**Low Income Services** going forward this program includes Residential Conservation and Energy Education and Payment Plus;

**Residential Energy Assessments** going forward this program includes included Home Energy House Call. This program would have included Energy Efficient Website and Personalized Energy Report (PER)<sup>®</sup>, however PER<sup>®</sup> and the website are no longer being offered in the revised portfolio;

**Energy Education Program for Schools Program** going forward this program includes Residential Comprehensive Energy Education Program (NEED) and the new performance portion of the program;

**Residential Smart Saver<sup>®1</sup> Energy Efficient Residences Program** was previously Residential Smart Saver;

**Residential Smart Saver<sup>®</sup> Energy Efficient Products Program** was previously Energy Star Products;

**Smart Saver<sup>®</sup> Prescriptive Program, Smart Saver Custom Program, and Smart Saver<sup>®</sup> Energy Assessments Program** was previously C&I High Efficiency Incentive (for Businesses and Schools);

**Residential Direct Load Control – Power Manager Program** marketing name **Power Manager Program** remains the same;

**Peak Load Management (Rider PLM) marketing name PowerShare<sup>®</sup>** remains the same

**Low Income Neighborhood** – new program as of July 1, 2012

**My Home Energy Report** - new program as of July 1, 2012

**Appliance Recycling** - new program as of July 1, 2012

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<sup>1</sup> The Smart Saver Residential Energy Efficient Products Program and the Energy Efficient Residences Program are individual measures that are part of a single and larger program referred to and marketed as Residential Smart Saver. For ease of administration and communication with customers the two measures have been divided into separate tariffs even though they are a single program.



# **Process and Impact Evaluation of the Low Income Refrigerator Replacement Program in Kentucky, 2010-2011**

Final Report

**Prepared for  
Duke Energy**

139 East Fourth Street  
Cincinnati, OH 45201

Final: November 9, 2011; revised January 31, 2012

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January 31, 2012: This report has been revised. In Appendix B: DSMore Table, the EUL of a refrigerator was previously listed correctly as 17 years. However, because the purpose of the DSMore table is to provide data intended to be fed into a DSMore analysis, the EUL is being replaced with the remaining useful life (RUL) of the existing unit, which is assumed to be eight years, and the corresponding column heading now reads "EUL for

*Lifecycle Calculations," rather than just "EUL," to reflect this change. This eight year period is the portion of the measure life for which lifecycle savings should be evaluated in the context of a low income early replacement program. It is estimated that the replacement of the retired unit would have occurred naturally at the end of the eight year RUL and, since it is a low income program it is assumed that in the absence of the program, customers would purchase a new refrigerator of bare minimum code compliance immediately following the expiration of the existing unit's EUL. Lifecycle savings are truncated at eight years because the remaining nine years of the measure life is compared to the unit energy consumption of a new baseline refrigerator rather than to the existing unit and consequently yields zero savings.*

## Executive Summary

### About This Report

This report presents the results of a process evaluation of Duke Energy's Low Income Refrigerator Replacement Program in Kentucky. This program provides qualifying low income customers with a new high-efficiency refrigerator if their current refrigerator is inefficient when tested during a home audit provided when the customer receives weatherization services. The program does not promote, market or advertise no-cost energy efficient refrigerator replacements, and only offers the new units if the old unit testing indicates that a new unit would be cost effective. The old refrigerator is removed from the participants' homes at no cost, taken out of commission, and recycled. The program is expected to lower participant's utility bills by providing them with a more energy efficient refrigerator.

### Summary of Findings

An overview of the key findings identified through this evaluation is presented in this section.

### Significant Impact Evaluation Findings

- Average annual consumption of old and new refrigerators was 1,555 kWh and 398 kWh respectively, providing an average savings of 1,157 kWh per replaced unit per year.
- Average cubic footage of old vs. new models was essentially identical at 19.71 vs. 19.54 cubic feet. Units replaced were the same size as those removed.

### Significant Process Evaluation Findings

TecMarket Works interviewed seven individuals associated with the design, management, and operations of the program. The findings from these interviews are presented in Section 2: Management Interview Results and summarized below.

1. The program received few customer complaints and appears to be working smoothly and effectively from a participant perspective. The managers interviewed all indicate that communications and coordination between all three teams (Duke Energy, PWC, and NKCAC) is working very well.
2. The program could serve more customers and save more energy if it were offered to renters. The program does not expend the available annual budget, yet managers report that the program's operational rules do not allow them to capture savings in rented units. Managers report that they have the potential to add rental units if the program's operational rules were adjusted to allow serving rental property. This is the most significant barrier reported by managers.

## Significant Participant Survey Findings

TecMarket Works attempted to survey a census of participants and was able to conduct telephone surveys with 36 of the 99 low-income Refrigerator Replacement Program participants in the state of Kentucky. The significant findings from these surveys are reported below:

- Fifty-one percent of surveyed participants report noticing a decrease in their utility bill after participating in the program. Three percent of participants report noticing an increase in their utility bill after participating in the program.
- Overall satisfaction in the refrigerator replacement program is high with a mean rating of 9.3 on a 10-point scale. This is in the higher ranges of satisfaction experienced by energy efficiency program participants. All but one of the surveyed participants (97.2%) reported recommending the refrigerator replacement program to others, and all but one participant (97.2%) indicated they would continue recommending the program.
- Freeridership in the program is very low at 0.25% (one quarter of one percent). This is a result of low awareness in the program's ability to replace units. Units were replaced only after an inspection of the old unit and a participant-specific offer by the program to have it replaced. Participants were made aware of the refrigerator replacement offer only after they had applied for another low income program (such as the weatherization program) and were subsequently informed that they were eligible for the refrigerator replacement program as well.

## Introduction

This report presents the results of a process evaluation of the Low Income Refrigerator Replacement Program in Kentucky.

To conduct the process evaluation we interviewed program managers, implementers and their staff that are employed by Duke Energy, the Northern Kentucky Community Action Commission (NKCAC), and People Working Cooperatively (PWC).

## Program Description

The Refrigerator Replacement Program is designed to help low-income customers reduce their utility bills through providing a more efficient refrigerator. The program is a "piggy-back" service attached to other programs (audit and weatherization) offered to qualifying Kentucky customers. In both the audit and the weatherization program the auditor visits the customer's home to conduct an audit, during which the auditor tests the refrigerator using a power meter while performing the other auditing duties. The meters collect energy consumption data for a minimum of two hours, allowing enough time for the unit to stabilize and cycle. The power meter installed on the unit calculates the annual kWh consumption based on the watts used over the period of the test. If the refrigerator was calculated by the meter to consume over 1,315 kWh per year it is eligible to be replaced at no charge to the customer through the Refrigerator Replacement Program. If a unit shows abnormally high peak wattage during the test (325 watts or higher), this indicates that it was tested in defrost mode. In this case, the kWh per year must equal 1,565 kWh or more to be replaced. In special cases, a refrigerator with a bad seal may be replaced at the discretion of the auditor even if the meter wattage is below the program requirement. If a unit qualifies for replacement, this is noted by the auditor and the customer receives a new refrigerator through the Refrigerator Replacement Program.

Old units are removed at the time of the delivery of the new unit and are environmentally recycled. This assures that the old refrigerator does not continue to be used by the customer or is resold in the secondary market, thus taking the old unit off the grid permanently. Three sizes and two brands of replacement units were available: 15, 18, or 21 cubic foot Frigidaire or Whirlpool Energy Star top-freezer models. An ice maker option is available to customers for a fee of \$50.

## Program Operations

The Refrigerator Replacement Program services are implemented in Kentucky through a series of efforts that are coordinated across three teams: Duke Energy, People Working Cooperatively (PWC), and the Northern Kentucky Community Action Commission (NKCAC).

## Evaluation Methodology

The study methodology consisted of three parts. These are:

1. Engineering estimates of energy savings were determined by subtracting the energy consumption rating of the specific Energy Star replacement unit from the short-term (2 hours) metered consumption forecasted over a year's worth of usage. The Energy Star unit's consumption ratings were determined through standardized manufacturer testing in accordance with Energy Star guidelines and can be seen in Appendix A: Energy Guides.

2. A process evaluation of the Refrigerator Replacement Program in which TecMarket Works interviewed key program managers and staff. The interviews were designed to review program operations and experiences and to identify and discuss any implementation issues associated with the program's design or operations.
3. A survey of participants was conducted to measure satisfaction levels and to identify any program implementation issues.

### **Process Evaluation: Management Interviews**

The process evaluation included onsite interviews with key Duke Energy, NKCAC, and PWC program delivery staff. These interviews focused on the design, planning, and implementation of the program. Confidential one-on-one interviews were conducted with the following individuals:

1. Nina Creech, PWC Weatherization Program Manager
2. Al Lovin, PWC Weatherization Program Supervisor
3. Support Staffer, PWC
4. Support Staffer, PWC
5. Tasha Davis, Duke Energy Program Manager
6. Jennifer Belisle, Deputy Director, Northern Kentucky Community Action Commission
7. Support Staffer, Northern Kentucky Community Action Commission

The interviews were conducted in August and September of 2011. The interviews followed an interview protocol developed by TecMarket Works. This protocol is provided in Appendix C: Process Evaluation Interview Protocol For Program Management and CAP Agency Staff and allows the reader to see the range and scope of the questions addressed during the process interviews.

### **Process Evaluation: Participant Surveys**

The interview targeted a census of the participants instead of a representative sample of participants. TecMarket Works' staff conducted interviews with thirty-six participants who enrolled in the Refrigerator Replacement Program. The program served 99 participants from March 1, 2010 through June 23, 2011. Please note that the dates used for the participant surveys are different from the dates used for the impact analysis<sup>1</sup>, and therefore result in a different number of participants being discussed in this report.

---

<sup>1</sup> Impact analysis was performed on participants from January 2010 through January 2011.

## Section 1: Impact Analysis Results

There were 80 refrigerators replaced through the Low Income Refrigerator Replacement program in Kentucky from January 2010 to January 2011. All units were tested in the customers' homes using a power meter installed directly to the refrigerator. The meters collected energy consumption data for a minimum of two hours, allowing enough time for the unit to stabilize and cycle. Two hours has been shown to be sufficient time to identify a poorly operating unit that needs to be replaced.<sup>2</sup> Three sizes and two brands of replacement units were available: 15, 18, or 21 cubic foot Frigidaire or Whirlpool Energy Star top-freezer models. In Kentucky, 62.5% of replacements were Frigidaire and 37.5% were Whirlpool. Of the 80 units replaced, 1% were 15 cubic feet, 46% were 18 cubic feet, and 53% were 21 cubic feet. A breakdown of the individual numbers can be seen in Table 1.

In general, the size of the customer's existing refrigerator and that of the unit chosen to replace it are as close as possible while still being restricted to the three available sizes. The average size of a replacement unit is 19.54 cubic feet while the average size of the replaced units was 19.71 cubic feet (less than 1% difference in size). This data means that there was no up-sizing or down-sizing associated with the program's replacements. A detailed comparison of refrigerator sizes and their replacements can be seen in Table 2. Old units were removed at the time of the delivery of the new unit and were environmentally recycled. This assures that the old refrigerator does not continue to be used by the customer or get resold in the secondary market thus taking it permanently off the grid. This also means that there is no need to deduct savings from the program to account for units continuing to be used as secondary units or as units sold via the secondary appliance market. According to TecMarket Works, this removal-and-recycle practice is a *best practice* in the energy efficient refrigerator replacement program field because it maximizes achieved net savings.

**Table 1. Replacement Unit Size and Brand Prevalence**

	Frigidaire	Whirlpool	TOTAL
15 cubic feet	1	-	1
18 cubic feet	20	17	37
21 cubic feet	29	13	42
TOTAL	50	30	80

**Table 2. Average Replaced Unit Size by Size and Brand of Replacement**

	Frigidaire	Whirlpool	AVERAGE
15 cubic feet	20.00	N/A	20.00
18 cubic feet	17.80	18.12	17.95
21 cubic feet	21.10	21.62	21.26
AVERAGE	19.76	19.63	19.71

<sup>2</sup> *SELECTION OF HIGH USAGE REFRIGERATORS AND FREEZERS* by Jim Mapp April 16, 1998. & *Low-Income Refrigerator Replacement – Selection Criteria for High Usage Refrigerator Replacement* by Jim Mapp Ph. D. Wisconsin Division of Energy, Kathy Schroder, Program Manager Cinergy Corp, and Rick Morgan, President Morgan Marketing Partners, 2001 IEPEC

The power meter installed on the unit calculates the annual kWh consumption based on the watts used over the period of the test. If the refrigerator was calculated by the meter to consume over 1,315 kWh per year it is eligible to be replaced at no charge to the customer. If a unit shows abnormally high peak wattage during the test, 325 watts or higher, this indicates that it was in defrost mode. In this case, the kWh per year must equal 1,565 kWh or more to be replaced. In special cases, a refrigerator with a bad seal may be replaced at the discretion of the auditor even if the meter wattage is below the program requirement. Only one unit is assumed to have been replaced by way of this exception after its meter read only 884 kWh.

**Table 3. Annual kWh Consumed by Replaced Refrigerators**

	Quantity	kWh/Y
15 cubic feet	2	1,516
16 cubic feet	4	1,529
17 cubic feet	8	1,611
18 cubic feet	21	1,475
19 cubic feet	5	1,537
20 cubic feet	5	1,519
21 cubic feet	19	1,589
22 cubic feet	7	1,502
23 cubic feet	-	N/A
24 cubic feet	6	1,570
25 cubic feet	1	2,453
26 cubic feet	2	1,758
<b>TOTAL/AVG.</b>	<b>80</b>	<b>1,555</b>

From Table 3, the average annual kWh consumed by replaced units was 1,555 kWh compared to the average annual kWh used by the replacement units of 398 kWh. This provides an average annual savings of 1,157 kWh per unit per year and results in a total savings of 92,524 kWh across the entire program in Kentucky each year. Annual savings per unit ranged from a minimum of 496 kWh to a maximum of 2,045 kWh. The manufacturer provided energy guides associated with the replacement units can be seen in Appendix A: Energy Guides. A breakdown of the energy savings by unit size and brand can be seen in Table 4. Per-unit savings can be found in Table 5.

**Table 4. Total Program kWh Savings by Unit Size and Brand**

	Frigidaire	Whirlpool	TOTAL
15 cubic feet	1,001	-	1,001
18 cubic feet	24,160	16,983	41,143
21 cubic feet	36,259	14,121	50,380
<b>TOTAL</b>	<b>61,420</b>	<b>31,104</b>	<b>92,524</b>

**Table 5. Per-Unit kWh Savings by Unit Size and Brand**

	Frigidaire	Whirlpool	AVERAGE
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15 cubic feet	1,001	N/A	1,001
18 cubic feet	1,208	999	1,112
21 cubic feet	1,250	1,086	1,200
AVERAGE	1,228	1,037	1,157

## Section 2: Management Interview Results

This section of the report presents the results of the process evaluation.

### Refrigerator Replacement Enrollment Process

The Refrigerator Replacement Program is a "piggy-back" program of audit and weatherization programs available to Kentucky customers that are at or below 150% of the Federal Poverty Level in annual income. The auditor visits the weatherization customers to audit the home for weatherization services, and tests the refrigerator using a power meter while performing other auditing duties. Customers are income-qualified for the Refrigerator Replacement Program through the weatherization programs.

### Refrigerator Replacement Program Training and Management

The Refrigerator Replacement Program is operating smoothly. NKCAC administers the program for Duke Energy. PWC performs the weatherization services, and therefore performs the audits. PWC auditors are trained (by PWC) to test the refrigerators, and many are also trained by Morgan Marketing Partners in "Weatherization 101", offering Duke Energy's perspective on low-income programs.

Some program implementers reported a loss of consistency in communications with the transition to a new Low Income Program/Product Manager at Duke Energy, but that this did not affect program operations or delivery. All managers report that they are pleased that the position has been filled and are happy with the new manager at Duke Energy.

### Refrigerators and Refrigerator Vendors

PWC switched refrigerator vendors in 2011. The old distributor, Custom Distributions, would take 4-6 weeks to deliver a new refrigerator and remove the old unit. By changing to Recker and Boerger for refrigerator delivery and removal, the cycle is now completed within 1 to 2 weeks. Recker and Boerger have been praised by the managers for their good customer service.

NKCAC uses Home Depot as their vendor, and also is reported to have good customer service and timely delivery and removal.

Three sizes and two brands of replacement units are available through the program: 15, 18, or 21 cubic foot Frigidaire or Whirlpool Energy Star top-freezer models. The customer can receive a model with an ice maker if they pay the additional cost of \$50 per unit.

### Reasons for Non Participation in the Program

We asked all interviewees why they thought customers would not want to participate in the Refrigerator Replacement Program. We received a number of responses to this question. These include:

1. A customer may have two refrigerators in their home and does not want to have only one. The program does not allow customers to keep their old units. If a qualifying customer wants to participate in the Refrigerator Replacement Program and has two refrigerators

- operating in their home, they have to allow the vendor to remove both old units, essentially going from two units to one. Annually, one or two customers refuse to allow removal of their second unit and therefore refuse to participate in the program.
2. The customer may want an ice maker but is not willing to pay the fee associated with that feature.
  3. The customer rents their home, and is therefore eligible for weatherization services through other programs, but not for the Refrigerator Replacement Program.
  4. The customer's refrigerator was previously metered. If a customer already had their refrigerator metered and it didn't qualify for a replacement, the unit will not be metered again because Duke Energy only pays for one test per customer.
  5. Customer preference: The customer may prefer a side-by-side model and the replacement units are top-freezer models, or want a higher-cost stainless steel model that is not offered through the program.

## **Communication and Coordination is Excellent**

Communication and coordination between NKCAC, PWC, and Duke Energy are reported to be excellent by all involved. When the transition to a new Low Income Program Manager at Duke Energy occurred in March of 2011, there were some minor issues in getting needed data from Duke Energy, but nothing that resulted in any serious problems or frustrations. By the summer of 2011, all communications were prompt, accurate, and positive. The new Duke Energy program manager received high praise from staff at both PWC and NKCAC.

PWC and NKCAC both report that they work together very well, and one PWC staffer attributed this directly to Florence Tandy and her hiring decisions at NKCAC.

## **Program Changes Interviewees Would Like to See**

We asked managers to report the changes that they would like to see made to the Refrigerator Replacement Program. Only a few recommendations were expressed by the managers, indicating that managers are satisfied with the program. However, a few of the interviewed managers provided recommendations for improvements. The recommendations provided by the interviewees are below.

1. Allow renters to participate with landlord approval. Currently, the program is offered only to homeowners. Allowing renters to participate (as they can in Ohio) will help the program to expend the annual budget for the program, which is not currently being met.
2. Add program information to the Duke Energy web site<sup>3</sup>. The program is not currently listed on the Duke Energy web site. Currently there are only two low income programs listed: the Low Income Home Energy Assistance Program and Kentucky Home Weatherization.
3. The refrigerator warranty provided with the new refrigerator is only for one year. Some of the managers suggested that Duke Energy could provide an extended warranty to participants.
4. Allow previously weatherized customers to have their units tested for possible replacement. In Ohio, a previously weatherized participant can still apply for the

<sup>3</sup> <http://www.duke-energy.com/kentucky/savings/low-income-programs.asp>

Refrigerator Replacement Program. This is not the case in Kentucky, and is likely limiting participation.

5. Allow units to be tested more than once. If a refrigerator is performing well enough to pass the test (not allowing the customer to participate), that unit cannot ever be tested again by the program. Refrigerator efficiencies change over time as units deteriorate or as compressor efficiency erodes however, Duke Energy only pays for one test. If the auditors were allowed to test marginal units (were close to failing in previous tests) again after 2 or 3 years, it may fail and allow the customer to participate.

### Section 3: Participant Survey Results

TecMarket Works targeted a census of the participants for inclusion in the survey. That is, there was no sample selected, but rather all participants were targeted for inclusion in the survey. TecMarket Works conducted telephone surveys with 36 of the 99 low-income refrigerator replacement participants in the state of Kentucky for a response rate of 36.3%. This section presents the results from the surveys.

The survey instrument can be found in Appendix D: Participant Survey Instrument. While the survey targeted all 99 participants, 36 were successfully contacted and full completions were obtained from 33 participants. The results from the completed surveys (N=36 for some questions and N=33, 34, or 35 for others) are presented below.

#### Participation Drivers

All 36 surveyed low-income Refrigerator Replacement program participants in Kentucky recalled participating in the program.

A majority of participants (52.8%) stated that People Working Cooperatively (PWC) was involved in providing them with a replacement refrigerator. The second-most often mentioned organization was the Northern Kentucky Community Action Commission (NKCAC) with a mention from 47.2% of participants. The other organizations that were mentioned, and the percentage of participants who mentioned them, are presented in Table 6.

**Table 6. Organizations involved in the Refrigerator Replacement Program as recalled by surveyed participants**

Organization mentioned by participants	Percentage (N=36)
People Working Cooperatively	52.8%
Community Action Coalition	47.2%
Duke Energy	19.4%
HH Gregg Appliance	5.6%
Home Depot	5.6%
"Not sure"	5.6%
Recker and Boerger Appliance	2.8%
Florence Heating and AC	2.8%

We asked all respondents an unprompted question to recall the main reason, and then any other reasons, for participating in the low-income Refrigerator Replacement Program. The results are presented in Table 7 below, and also summarized in Figure 1.

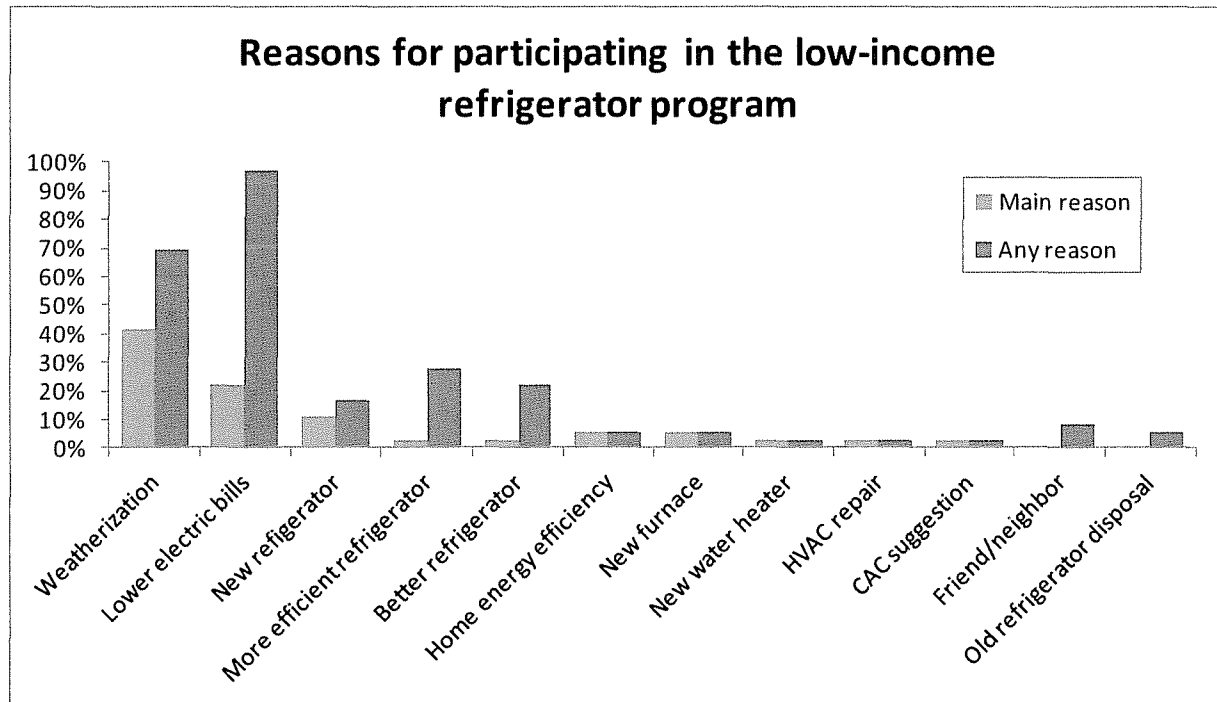
It should be noted that many participants indicated that they did not apply directly for the Refrigerator Replacement Program. Instead, they were informed of their eligibility for the Refrigerator Replacement Program only after applying for another low-income service (such as home weatherization, new furnace, or new water heater) through PWC or NKCAC. Therefore, many of the stated reasons for participation in the low income Refrigerator Replacement Program actually refer to other low-income energy efficiency programs.

TecMarket Works summarized responses using the following phrases:

1. Weatherization: used if the participant learned of the Refrigerator Replacement Program through participation in a weatherization program from NKCAC or PWC.
2. Lower electric bills: used if the participant mentioned lower electric bills.
3. New refrigerator: used if the participant mentioned the desire for a new refrigerator.
4. More efficient refrigerator: used if the participant mentioned the desire for a more efficient refrigerator.
5. Better refrigerator: used if the participant mentioned the desire for a better performing refrigerator.
6. Home energy efficiency: used if the participant mentioned home energy efficiency.
7. New furnace: used if the participant learned of the Refrigerator Replacement Program through participation in a furnace replacement program.
8. New water heater: used if the participant learned of the Refrigerator Replacement Program through participation in a water heater replacement program.
9. HVAC repair: used if the participant learned of the Refrigerator Replacement Program through attempt to receive help with HVAC repair.
10. NKCAC suggestion: used if the participant mentioned the NKCAC.
11. Friend/neighbor: used if the participant mentioned the suggestion of a friend or neighbor.
12. Old refrigerator disposal: used if the participant mentioned the desire to dispose of an old refrigerator.

**Table 7. Participants' reasons given for program participation**

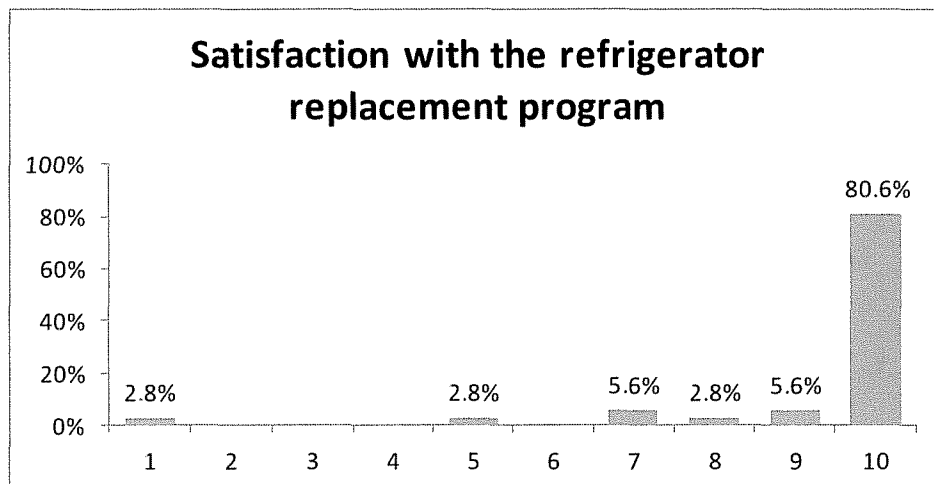
Reasons leading to participation	Main reason	Any reason
Weatherization	41.7%	69.4%
Lower electric bills	22.2%	97.2%
New refrigerator	11.1%	16.7%
More efficient refrigerator	2.8%	27.8%
Better refrigerator	2.8%	22.2%
Home energy efficiency	5.6%	5.6%
New furnace	5.6%	5.6%
New water heater	2.8%	2.8%
HVAC repair	2.8%	2.8%
CAC suggestion	2.8%	2.8%
Friend/neighbor	0.0%	8.3%
Old refrigerator disposal	0.0%	5.6%



**Figure 1. Reasons for participating in the low-income Refrigerator Replacement Program**

### Program Satisfaction

Surveyed respondents indicate a high level of satisfaction with the enrollment process for the low-income refrigerator replacement portion associated with the services they were seeking. Kentucky participants report a mean satisfaction score of 9.3 with the enrollment process on a scale of 1 to 10 with 1 meaning they were very unsatisfied and 10 meaning they were very satisfied. The distribution of scores is shown below in Figure 2.



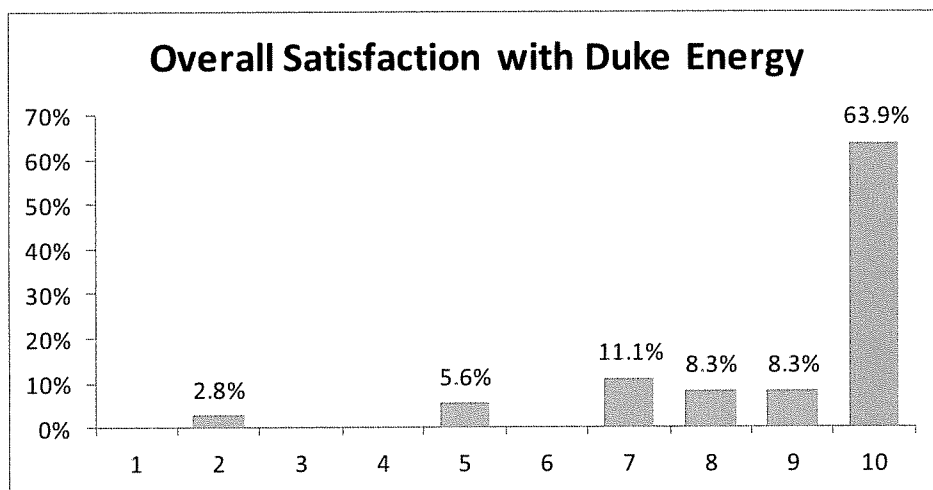
**Figure 2. Satisfaction with the low-income Refrigerator Replacement Program**

The following are the reasons for participants reporting lower (score of 8 or less) satisfaction scores with the program.

- “Have better follow up and keep participants informed. I had to call several times.”
- “Don't make false promises about the refrigerator.”
- “Streamline the bureaucracy among agencies.”
- “Refrigerator is cheap and is falling apart.”
- “Food keeps spoiling in the 2 replacements.”

All but one of the surveyed participants (97.2%) reported recommending the Refrigerator Replacement Program to others, and all but one participant (97.2%) indicated they would continue recommending the program.

Overall satisfaction scores for Duke Energy are also high with an average score of 8.9. The score distribution is presented below in Figure 3.



**Figure 3. Duke Energy Satisfaction**

The following are the verbatim responses from surveyed participants who reported lower (score of 8 or less) satisfaction scores with Duke Energy.

- “Rates are too high. I had problems with even billing (due to a gas leak dispute).”
- “Lower the rates. Offer better payment options for people in economic hardship.”
- “Even billing is not detailed enough - not sure when I'm behind or ahead on payments.”
- “Billing issues - Duke put me on budget billing and gave me wrong information.”
- “Too many rate increases for people on fixed incomes, even with the Even Billing program.”
- “My furnace doesn't work and my refrigerator doesn't either.”
- “I didn't get any help with my HVAC unit which was the reason I applied.”
- “Rates are still too high.”

We also asked survey respondents for their satisfaction rating regarding several components of the Refrigeration Replacement Program. The results are summarized in Table 8.

**Table 8. Satisfaction levels for program components**

	<b>Mean</b>	<b>High</b>	<b>Low</b>
Ease of scheduling	9.7	10	7
Fit of refrigerator	9.7	10	7
Quality of Installation	9.5	10	4
Quality of refrigerator	9.1	10	6
Interactions with staff	8.9	10	1
Information provided by staff	8.7	10	4
Options provided with refrigerator	8.5	10	7

For each rating of eight or less, we asked surveyed participants what could be improved about that aspect of the program. The responses corresponding to each component follow. It should be noted that the Refrigerator Replacement Program is provided partly through the weatherization program because the old refrigerators are metered and tested during the audit conducted for the weatherization program. Many participants see the Refrigerator Replacement Program as being part of the weatherization program and audit, which includes furnace cleaning and repair and other services. Many of the comments below may apply to the weatherization and/or audit services, but are included because they still provide feedback on the Low Income services as a whole.

**Ease of scheduling:**

- “I had to call back a few times due to a lost order. ”
- “It took 4 months to get a new replacement - original one broke - then the 2nd unit broke.”

**Enrollment process:**

- “Process them faster and arrange interviews at a more convenient time. I had to miss some work.”
- “Shorten the process.”

**Interactions with program staff<sup>4</sup>:**

- “No follow up.” (N=2)
- “Had no communication with them other than to verify installation.”
- “Had to call the manufacturer to repair the two replacements - still broken.”
- “Had to keep on them about the work - they never followed up.”

<sup>4</sup> It should be noted that the Refrigerator Replacement Program is provided partly through the weatherization program because the old refrigerators are metered and tested during the audit conducted for the weatherization program. Many participants see the Refrigerator Replacement Program as being part of the weatherization program and audit, which includes furnace cleaning and repair and other services. Many of the comments below may apply to the weatherization and/or audit services, but are included because they still provide feedback on the Low Income services as a whole.

- “Have had trouble reaching them about problems with the refrigerator and furnace repair.”
- “No information about the warranty or how to handle any problems with the refrigerator.”
- “Too much bureaucratic run-around.”

Quality of Installation:

- “I had to pay for an ice maker, despite it being promised.”
- “Measure better before delivery - installation took two days.”

Quality of refrigerator:

- “Offer more choices. I'd like to exchange it, but don't know who to contact for help.”
- “There's ice forming inside the freezer.”
- “A shelf broke and the door seals are weak.”
- “Refrigerator part is not cooling enough. Freezer works fine.”
- “Two Frigidaire replacements broke down within a month each.”

Fit of refrigerator:

- “Measure better before delivery. They had to cut some cabinets a day later.”

Information provided to customer by weatherization/audit staff<sup>5</sup>:

- “Better communication among PWC staff - the delivered refrigerator was different than promised.”
- “I didn't know that appliances might be included.”
- “No follow up when problems arose.”
- “Poor quality door installation - had to be repaired by second organization.”
- “They didn't give much information - except the deliveryman.”
- “They never returned to fix my furnace after cleaning and testing it - wires hanging out, etc.”
- “They were not always truthful about the work schedule.”

Options provided with refrigerator:

- “No options.” (N=12)
- “Install a refrigerator that won't break down quickly.”

These responses indicate that there may be some operational issues regarding the quality of the units being placed into the homes and/or issues regarding the level of understanding about the units that participants would receive. There may also be some potential communication issues

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<sup>5</sup> It should be noted that the Refrigerator Replacement Program is provided partly through the weatherization program because the old refrigerators are metered and tested during the audit conducted for the weatherization program. Many participants see the Refrigerator Replacement Program as being part of the weatherization program and audit, which includes furnace cleaning and repair and other services. Many of the comments below may apply to the weatherization and/or audit services, but are included because they still provide feedback on the Low Income services as a whole.

between PWC and NKCAC staff and the participants. There seems to be a difference between participant's expectations and services received. These issues were not fully explored during the participant survey, however the next process evaluation should investigate these issues with the Duke Energy program managers and the service providers to determine if program improvements are possible.

We also asked participants to mention the one thing about the Refrigerator Replacement Program that they most liked and the one thing about the Refrigerator Replacement Program that they least liked. The responses are included below.

Liked most<sup>6</sup>:

- "How efficient and nice the staff were."
- "I was able to get a large refrigerator with an ice maker."
- "Courteousness and helpfulness of the informative staff."
- "They were very helpful."
- "The people at People Working Cooperatively were fantastic."
- "General helpfulness."
- "Lowering the electric bill."
- "Getting help lowering my bills and providing a new refrigerator."
- "The help with weatherization and repairs."
- "Got a new refrigerator (unexpectedly) and a new furnace."
- "In-home help and their thoughtfulness."
- "Getting a new refrigerator."
- "The kindness and the fact that they took care of everything. I trusted them."
- "The helpfulness."
- "Easiness of applying and their helpfulness."
- "Good service, friendliness and helpfulness."
- "Ease of getting help in tough times."
- "How helpful they were - they cared about their job and me."
- "Pretty thorough weatherization."
- "How easy it was and how quickly we got a refrigerator."
- "Energy efficiency."
- "New refrigerator and patio doors."
- "They were very helpful."
- "They actually helped me."
- "Getting a new refrigerator."
- "Congenial and professional - the staff did a good job."
- "They gave me hope."
- "The people were very nice."

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<sup>6</sup> It should be noted that the Refrigerator Replacement Program is provided partly through the weatherization program because the old refrigerators are metered and tested during the audit conducted for the weatherization program. Many participants see the Refrigerator Replacement Program as being part of the weatherization program and audit, which includes furnace cleaning and repair and other services. Many of the comments below may apply to the weatherization and/or audit services, but are included because they still provide feedback on the Low Income services as a whole.

- “Help covering my windows with plastic covering.”
- “I appreciated them checking everything out, including smoke detectors, etc.”
- “Getting a new refrigerator for free.”
- “Utility bill has decreased significantly.”
- “New refrigerator.”
- “Efficient, considerate and helpful staff.”
- “People who work with you.”
- “Efficiency of the weatherization repairs that the organization performed.”

Liked least<sup>7</sup>:

- “Can't remember the name of the organization that helped.”
- “Conflicting info about my eligibility.”
- “They didn't help me replace the HVAC unit that caused me to apply.”
- “Having to pay for the added ice maker, after having been promised one originally.”
- “I had to wait 6 months.”
- “I received a pair of bad replacements, both of which broke down. Frigidaire brand is no good.”
- “Lack of follow-up to make sure the stuff works.”
- “No furnace replacement.”
- “Not giving me more notice when they were coming to install the new refrigerator. They called me the day they came.”
- “Poor communications - give status updates, etc.”
- “Poor quality of some of the work done and some false information given.”
- “Quality of the weatherization repair work. Poor door and window caulking, cracked concrete with hammers, furnace pilot light keeps going out, etc. They rushed at the end.”
- “Quality of the weatherization. I had to redo some things and there was no follow up.”
- “Some insulation in the floor wasn't installed well.”
- “The refrigerator has some quirks and seems cheap.”
- “They did not call back about cleaning gutters in the fall.”

## **Effects on Energy Usage, Energy Savings and Monetary Savings**

TecMarket Works asked participants if the replacement refrigerator received through the program was currently set at a colder temperature than the average setting of the refrigerator that was replaced. The majority (28 out of 36, or 77.8%) of surveyed participants indicated that the new refrigerator was not set to a lower temperature (meaning the new unit was set to the same or higher temperature), and six out of 36 (16.7%) participants indicated that the new refrigerator was set to a lower temperature. Two participants stated that they didn't know whether there was any difference in the temperature setting. These findings suggest that the energy savings

<sup>7</sup> It should be noted that the Refrigerator Replacement Program is provided partly through the weatherization program because the old refrigerators are metered and tested during the audit conducted for the weatherization program. Many participants see the Refrigerator Replacement Program as being part of the weatherization program and audit, which includes furnace cleaning and repair and other services. Many of the comments below may apply to the weatherization and/or audit services, but are included because they still provide feedback on the Low Income services as a whole.

presented in this report are not significantly impacted by changes in the temperature settings of the refrigerators.

TecMarket Works also asked customers if they felt their knowledge of how to save energy and reduce their bill changed as a result of participating in the program. Thirteen participants (37.1%) indicated that their knowledge in these areas “Increased a lot,” fifteen participants (42.9%) indicated that their knowledge “Increased somewhat” and six participants (17.1%) indicated that their knowledge “Stayed about the same”. One participant was unsure of the program’s effect in these areas.

Surveyed participants were also asked if their monthly utility bill had increased or decreased since participating in the program and whether this change had increased or decreased their ability to pay other household bills and control energy usage in the household. The results are shown in Table 9.

**Table 9. Effects of program on economic factors and energy use**

	Decreased a lot	Decreased somewhat	Stayed about the same	Increased somewhat	Increased a lot	Don't Know
<b>Utility bill (N=32)</b>	17.1%	34.3%	17.1%	2.9%	-	20.0%
<b>Ability to pay previous utility balances (N=34)</b>	2.9%	-	31.4%	25.7%	2.9%	34.3%
<b>Ability to pay other household bills (N=34)</b>	2.9%	-	54.3%	22.9%	8.6%	8.6%
<b>Ability to control energy use (N=34)</b>	-	-	48.6%	22.9%	25.7%	-

As seen in Table 9, 28% of participants stated that participation in the Refrigerator Replacement Program has increased their ability to pay previous utility balances, and thirty-one percent of participants stated that their ability to pay other household bills has increased after participation in the program.

We also asked participants to estimate the amount their utility bill had increased or decreased per month because of the services received by the program. Estimates were given for decreased amounts:

- \$5
- \$20
- \$20-25
- \$28-30
- \$30
- \$40 (N=2)
- \$40 at least
- \$40-50
- \$50-60

- \$50-75
- \$75-100
- \$100
- \$125
- \$200
- \$300
- \$500
- water \$20, electric \$30

The median dollar amount of the decrease in utility bills mentioned by participants is \$42.50.

## **Refrigerator Maintenance**

TecMarket Works asked surveyed participants if the refrigerator installation staff provided any instructions on how to clean the coils on the back of the refrigerator. Twenty-one participants (58.3%) said that the installation staff provided no instructions on cleaning the coils. Nine participants (25%) indicated that the installation staff did provide instruction, and six participants (16.7%) were unsure of whether instruction was provided or not.

This is consistent with the fact that the satisfaction categories of interactions with and information provided by staff were among the lowest of the satisfaction ratings (but still high overall).

We also asked the nine surveyed participants who indicated receiving coil cleaning instructions if they recalled how often they should clean the coils. The responses varied widely as follows:

- Monthly (N=2)
- At least twice a year
- Every three months
- Up to twice a month
- Every six months
- Every two or three months
- Don't know (N=2)

These responses indicate little consistency and suggests that clear instructions were not provided to the participants, if at all. The program should make sure that for units installed with exposed coils, clear and consistent instructions are provided to the participants.

## **Freeridership**

In order to assess program freeridership, we asked the surveyed participants what they would have done with their original refrigerators if the refrigerator replacement program had not been available. Possible responses included "Kept using the old refrigerator," "purchased a used refrigerator, but at a later date," "purchased a used refrigerator at the same time," "purchased a new refrigerator, but at a later date," and "purchased a new refrigerator at the same time." The results are shown in Table 10 below.

**Table 10. Actions if refrigerator replacement program had not been available**

Action	Percentage (N=36)
Continued using old refrigerator	77.8%
Bought used at same time	-
Bought used later	13.9%
Bought new same time	-
Bought new later	8.3%

As can be seen in Table 10, none of the surveyed participants indicated that he or she would have bought a refrigerator (either new or used) at the same time if the Refrigerator Replacement Program had not been available. This finding is consistent with the fact that many participants had indicated that they were not aware of the Refrigerator Replacement Program until PWC or NKCAC informed them of their eligibility through applying to a different low-income energy efficiency program.

Surveyed participants who indicated that they would have continued using their old refrigerator were assigned 0% freeridership. Likewise, participants who indicated they would have purchased a used refrigerator at a later date were assigned 0% freeridership as a used refrigerator is no more or less likely to be energy efficient than the refrigerator being replaced.

Participants who indicated that they would have purchased a new refrigerator at a later date were assigned a freeridership ratio based on the following table. Since none of the surveyed participants indicated that they would have purchased a new refrigerator at the same time if the program had not been available, no participant was assigned full freeridership (ratio of 1.0).

**Table 11. Freeridership matrix**

Time until purchase	Ratio	Number of participants	Freeridership
Less than 6 months	0.5	0	0
Six months to one year	0.25	1	0.25
1-2 years	0	1	0.0
More than 2 years	0	1	0
<b>Total</b>	-	<b>3</b>	<b>0.25</b>

From Table 11 we see that there is one individual among the 36 surveyed participants with an estimated freerider score of 0.25%. Distributing the .25% over the 36 respondents provides a program freerider score of 0.007% (0.25 divided by 36) and a resulting in a program net to gross ratio of 99.99%.

This report concludes that there is virtually no freeridership associated with this program and this refrigerator replacement approach in which the replacements are conducted only after an on-site test and under the conditions that the program does not advertise or promote unit replacement.

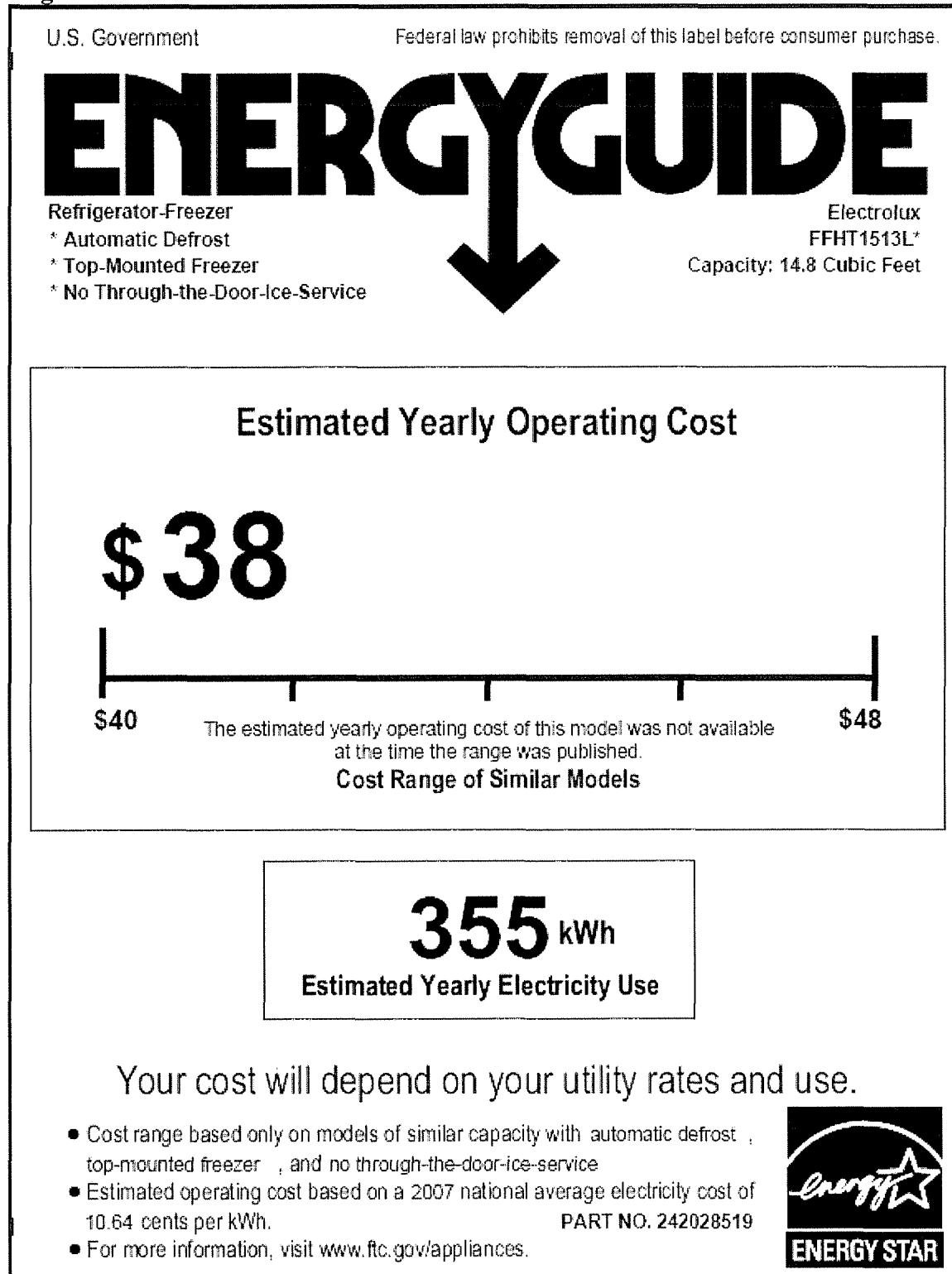
## Improving Participation in the Program

TecMarket Works asked survey respondents to provide ideas on how to encourage more people to participate in the low-income Refrigerator Replacement Program. The most often-mentioned suggestion was an increase in general advertising which was suggested by 18 of 36 (50%) participants. The actual responses are provided below.

- “Advertise it better, using comments from participants.”
- “Ask past participants for referrals.”
- “Better advertising, such as in a community newspaper.”
- “Bill insert.”
- “Direct mail.”
- “Emphasize the utility bill savings.”
- “Follow up faster - it took 4 or 5 months and 2 organizations to get the job done.”
- “Get the word out better. Advertise it more.”
- “Get the word out more. Have professional workers do the weatherization.”
- “Just get more people to apply.”
- “Just keep advertising it.”
- “Just let more people know about it - ask past participants for referrals.”
- “Just spread the word to people on fixed incomes as much as possible, like I do.”
- “Keep sending out pamphlets.”
- “Let the older people know, for example, through the churches.”
- “More mailings.”
- “More promotion. I am giving it good word of mouth.”
- “More publicity among the unemployed.”
- “More TV advertising and elsewhere.”
- “More word of mouth and promote it on local cable TV access channel.”
- “More word of mouth and TV advertising.”
- “Post more flyers in poor areas.”
- “Promote it at schools.”
- “Promote it better among fixed-income and disabled Duke Energy customers.”
- “Radio announcements.”
- “Raise the income limit, so more applicants can participate.”
- “Send out a bill insert or direct mailing.”
- “Testimonials from participants like us, discussing how much we benefitted from it.”
- “Word of mouth, door-to-door by participants.”
- “Word of mouth.”

## Appendix A: Energy Guides

### Frigidaire: 15 Cubic Feet



**Frigidaire: 18 Cubic Feet**

U.S. Government

Federal law prohibits removal of this label before consumer purchase.

# ENERGYGUIDE

Refrigerator-Freezer

\* Automatic Defrost

\* Top-Mounted Freezer

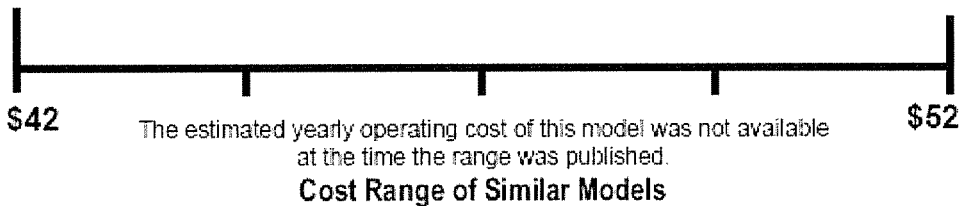
\* No Through-the-Door-Ice-Service

Electrolux

FFHT1826L\*

Capacity: 18.2 Cubic Feet

## Estimated Yearly Operating Cost

**\$41****383 kWh****Estimated Yearly Electricity Use**

Your cost will depend on your utility rates and use.

- Cost range based only on models of similar capacity with automatic defrost , top-mounted freezer , and no through-the-door-ice-service
- Estimated operating cost based on a 2007 national average electricity cost of 10.64 cents per kWh.
- For more information, visit [www.ftc.gov/appliances](http://www.ftc.gov/appliances).

PART NO. 242028537



## Frigidaire: 21 Cubic Feet

U.S. Government

Federal law prohibits removal of this label before consumer purchase.

**ENERGYGUIDE**

Refrigerator-Freezer

\* Automatic Defrost

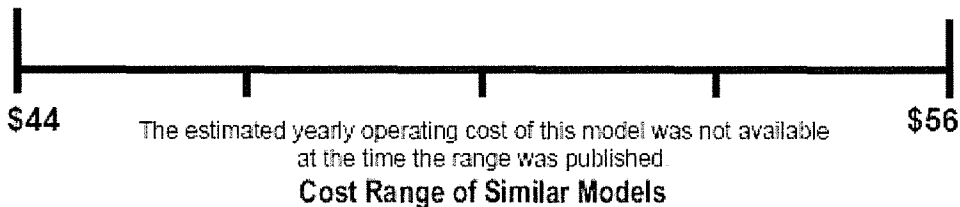
\* Top-Mounted Freezer

\* No Through-the-Door-Ice-Service

Electrolux

FFHT2126L\*

Capacity: 20.5 Cubic Feet

**Estimated Yearly Operating Cost****\$43****408 kWh****Estimated Yearly Electricity Use**

Your cost will depend on your utility rates and use.

- Cost range based only on models of similar capacity with automatic defrost , top-mounted freezer , and no through-the-door-ice-service
- Estimated operating cost based on a 2007 national average electricity cost of 10.65 cents per kWh.
- For more information, visit [www.ftc.gov/appliances](http://www.ftc.gov/appliances).

PART NO. 242028524



## Whirlpool: 15 Cubic Feet

U.S. Government

Federal law prohibits removal of this label before consumer purchase.

**ENERGYGUIDE**

Refrigerator-Freezer

•Automatic Defrost

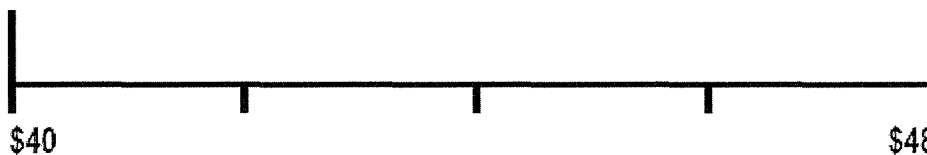
•Top Mounted Freezer

•Without Through-the-Door-Ice Service

Whirlpool Corporation

Model(s): ET5WSE'V'0"

Capacity: 14.6Cubic Feet

**Estimated Yearly Operating Cost****\$38**

Cost Range of Similar Models

The estimated yearly operating cost of this model was not available at the time the range was published.

**354** kWh

Estimated Yearly Electricity Use

Your cost will depend on your utility rates and use.

- Cost range based only on models of similar capacity with automatic defrost, Top mounted freezer, and without through the door ice service.
- Estimated operating cost based on a 2007 national average electricity cost of 10.65 cents per kWh.
- For more information, visit [www.ftc.gov/appliances](http://www.ftc.gov/appliances). (P/N W10185762A)



## Frigidaire: 18 Cubic Feet

U.S. Government

Federal law prohibits removal of this label before consumer purchase.

# ENERGYGUIDE

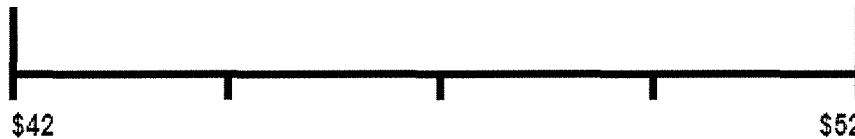
Refrigerator-Freezer

- Automatic Defrost
- Top-Mounted Freezer
- Without Through-The-Door-Ice Service

Whirlpool Corporation  
Model: ET8WTE<sup>+</sup>V<sup>+</sup>0<sup>+</sup>  
Capacity: 18.3 Cubic Feet

## Estimated Yearly Operating Cost

# \$41



Cost Range of Similar Models

The estimated yearly operating cost of this model was not available at the time the range was published.

# 388 kWh

Estimated Yearly Electricity Use

Your cost will depend on your utility rates and use.

- Cost range based only on models of similar capacity with automatic defrost, top-mounted freezer, and without through-the-door ice.
- Estimated operating cost based on a 2007 national average electricity cost of 10.65 cents per kWh
- For more information, visit [www.ftc.gov/appliances](http://www.ftc.gov/appliances). (P/N W10178118 Rev. A)



## Frigidaire: 21 Cubic Feet

U.S. Government

Federal law prohibits removal of this label before consumer purchase.

**ENERGYGUIDE**

Refrigerator-Freezer

- Automatic Defrost
- Top-Mounted Freezer
- Without Through-The-Door-Ice

 Whirlpool Corporation  
 Model(s): ET1CHE'V'0',  
 ET1FTE'V'0'  
 Capacity: 21.0 Cubic Feet
**Estimated Yearly Operating Cost****\$44**

\$44

\$56

Cost Range of Similar Models

**416** kWh

Estimated Yearly Electricity Use



Your cost will depend on your utility rates and use.

- Cost range based only on models of similar capacity with automatic defrost, top-mounted freezer, and without through-the-door ice.
- Estimated operating cost based on a 2007 national average electricity cost of 10.65 cents per kWh.
- For more information, visit [www.ftc.gov/appliances](http://www.ftc.gov/appliances). (P/N W10206565 Rev. A)



## Appendix B: DSMore Table

### Per Measure Impacts Summary for Low Income Refrigerator Replacement

Impacts 		Product code	State	EM&V gross savings (kWh/unit)	EM&V gross kW (customer peak/unit)	EM&V gross kW (coincident peak/unit)	Unit of measure	Combined spillover less freeridership adjustment	EM&V net savings (kWh/unit)	EM&V net kW (customer peak/unit)	EM&V net kW (coincident peak/unit)	EM&V load shape (yes/no)	EUL for Lifecycle Calculations (whole number)
Technology 													
Refrigerator Replacement			KY	1,157	0.178	0.178	Refrigerator	0.00%	1,157	0.178	0.178	no	8
Program wide				1,157	0.178	0.178			1,157	0.178	0.178		8

## Appendix C: Process Evaluation Interview Protocol For Program Management and CAP Agency Staff

Title: \_\_\_\_\_

Responsibilities associated with the Low-Income Refrigerator Replacement Program:

\_\_\_\_\_

\_\_\_\_\_

### Program Accomplishments and Objectives

☐ Please tell me in your own words what the Refrigerator Replacement Program needs to accomplish to be viewed as a success.

- 1.
- 2.
- 3.

☐ How well do you think the Low-Income Refrigerator Replacement Program accomplishes each of these objectives?

### Customer Recruitment and Retention

☐ What are the various ways in which participants are identified, contacted and enrolled in the refrigerator replacement program? Please describe each of the ways customers were identified, contacted and enrolled.

☐ What aspects of this process worked well? What did not work well? Why/why not?

☐ If you were to estimate the number of households in the territory you provide service that could save energy by having their refrigerators replaced how many homes would you estimate are out there?

☐ What system for identification, notification and enrollment do you think should be used in order to obtain participants and accomplish Duke Energy's program goals? Discuss how these might work.

☐ Are there any screening tests used to make sure the right customers are offered a replacement refrigerator through Duke Energy's Low-Income programs? Please explain how the screening process works. Walk through some different examples of how this works. In your opinion, how well did this work? Why? Are any changes needed to the screening process?

☐ What are the main reasons customers have for not wanting to participate? Do potential participants hesitate because they may lose their current refrigerator options, such as ice makers, or the color or size of the unit offered through the program?

- What kinds of things can be done to overcome this resistance?
- What percent of qualified clients actually enroll once you offer the program?

## Drop-outs

- Why do you think some of the program participants that were offered the program choose to not take advantage of it?
- What can be done to keep them interested in a replacement refrigerator?

## Program Process

- What complaints or customer issues have you experience with Duke Energy's Refrigerator Replacement? How were these handled?
- What can be done to help resolve these complaints? What can be done to eliminate these complaints so that they never occur?
- I would like you to tell me about the customer's experiences with the program. What kinds of things did they like, what kinds of things did they dislike, and how do you think they feel about the program overall?

## Program Management and Communication

- Describe the process used for obtaining refrigerator applications from program participants and getting the applications into the refrigerator replacement planning stream.
- How well does this process work? Are there any problems in getting the applications to the people responsible for providing the refrigerator? How can this process be improved?
- Were there any participant tracking, accounting or processing problems or issues associated with tracking, timing and delivering services? What are they and how can these be avoided in the future?
- What other types of management or participant issues have come up and what were their resolutions, or what still needs to be done?
- If you could change one thing about this Program, what would it be? Why? Are there any other things that you would change? Why?

- When you look at the help that this program provides to participants, and weigh the program costs and operational challenges, would you say that the benefits are worth the effort for the clients, for your agency, for Duke Energy? Why?
- What are the benefits to the client, to your agency, and to Duke Energy?
- Now I want to ask you about Duke Energy's ratepayers who are ultimately responsible for funding the Low-Income Program. What are the benefits that the program provides to all of Duke Energy's ratepayers? What benefits are the ratepayers who pay for this service receiving?

## Appendix D: Participant Survey Instrument

### SURVEY INTRODUCTION

*Use four attempts at different times of the day and different days before dropping from contact list. Call times are from 10:00 a.m. to 8:00 p.m. EST or 9-7 CST Monday through Saturday. No calls on Sunday. (Sample size N = As many as possible. KY has 96 participants, OH has 637)*

---

### SURVEY

---

*Note: Only read words in bold type.*

**Hello, my name is \_\_\_\_\_. I am calling on behalf of Duke Energy to conduct a customer survey about the Refrigerator Replacement Program. May I speak with \_\_\_\_\_ please?**

*If person talking, proceed. If person is called to the phone reintroduce.*

*If not home, ask when would be a good time to call and schedule the call-back:*

Call back 1:	Date: _____,	Time: _____	<input type="checkbox"/> AM or <input type="checkbox"/> PM
Call back 2:	Date: _____,	Time: _____	<input type="checkbox"/> AM or <input type="checkbox"/> PM
Call back 3:	Date: _____,	Time: _____	<input type="checkbox"/> AM or <input type="checkbox"/> PM
Call back 4:	Date: _____,	Time: _____	<input type="checkbox"/> AM or <input type="checkbox"/> PM
<input type="checkbox"/> Contact dropped after fourth attempt.			

**We are conducting this survey to obtain your opinions about the Refrigerator Replacement Program. We are not selling anything. The survey will take about 15-20 minutes and your answers will be confidential, and will help us to make improvements to the program to better serve others. May we begin the survey?**

*Note: If this is not a good time, ask if there is a better time to schedule a callback.*

**1. Do you recall participating in the Refrigerator Replacement Program?**

- a. ☐ Yes, begin → Skip to Q3.  
 b. ☐ No,  
 c. ☐ DK/NS

**2. This program offered to remove your old refrigerator and replace it with a new, more energy efficient refrigerator. This was offered to you by a staff member of the Community Action Coalition or possibly Duke Energy.**

**Do you remember participating in this program?**

- a. ☐ Yes, begin → Go to Q3.  
 b. ☐ No, ↓  
 c. ☐ DK/NS ↓

*If No or DK/NS terminate interview and go to next participant.*

**3. How did you first learn about or hear about Duke Energy's Refrigerator Replacement Program?** *(Check all that apply)*

1. ☐ Received a letter in the mail from CAC describing the program
2. ☐ Someone from CAC contacted me
3. ☐ Someone from Duke Energy contacted me
4. ☐ I called CAC or another Crisis program
5. ☐ I called Duke Energy for information or help
6. ☐ Friends or neighbors
7. ☐ Through another agency or organization (Church, PWC, State of KY/OH, etc.)
8. ☐ Presentation or discussion at a community event or social service agency event

*Specify response (what was the event or agency?):*

9. ☐ Other *(fill in)* \_\_\_\_\_

**4. What was the main reason you choose to participate in the Refrigerator Replacement Program?** *(do not read list, place a "1" next to the response that matches best)*

1. \_\_\_\_\_ To get a new refrigerator
2. \_\_\_\_\_ To get a more energy efficient refrigerator
3. \_\_\_\_\_ To get a better refrigerator
4. \_\_\_\_\_ To get rid of my old refrigerator
5. \_\_\_\_\_ To lower my electric bill
6. \_\_\_\_\_ Friends/neighbors/family encouraged me
7. \_\_\_\_\_ Other *(fill in)*
8. \_\_\_\_\_ Don't know/don't remember/not sure (DK/NS)

*If multiple responses: 4.a. Were there any other reasons? (number responses above in the order they are provided - Repeat until 'no' response. )*

**5. We are interested in learning what people understood about how the program operated. Please describe what you understood was required of you as a participant in the program and what you would receive in return for your participation.**

---



---

6. We are interested in learning what we might offer in order to convince people to participate in programs like the Refrigerator Replacement Program. Are there things that the program can do that you think would help encourage people like yourself to participate? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

I would now like to ask about your satisfaction with the Refrigerator Replacement program. I will read a list of items, after I read each item please tell me how satisfied you are with that item. Please indicate on a 0 to 10 scale with a 10 meaning you are very satisfied and a 0 to mean you are very dissatisfied.

How satisfied are you with...

7. The enrollment and application process and the ease of filling out the application forms?

\_\_\_\_\_ Score

If 7 or less, How could this be improved? \_\_\_\_\_  
\_\_\_\_\_

8. The interactions and communications you had with the program staff during the application process?

\_\_\_\_\_ Score

If 7 or less, How could this be improved? \_\_\_\_\_  
\_\_\_\_\_

9. The ease of scheduling the refrigerator replacement? \_\_\_\_\_ Score

If 7 or less, How could this be improved? \_\_\_\_\_  
\_\_\_\_\_

10. The quality of the refrigerator installed in your home? \_\_\_\_\_ Score

If 7 or less, How could this be improved? \_\_\_\_\_  
\_\_\_\_\_

11. The fit of the refrigerator installed in your home? \_\_\_\_\_ Score

If 7 or less, How could this be improved? \_\_\_\_\_  
\_\_\_\_\_

12. The options provided to you with your new refrigerator? \_\_\_\_\_ Score

If 7 or less, How could this be improved? \_\_\_\_\_

13. The information provided by the staff about what was installed in your home?

\_\_\_\_\_ Score \_\_\_\_\_ N/A

If 7 or less, How could this be improved? \_\_\_\_\_

14. The interactions and communications you had with program staff during and following the refrigerator replacement? \_\_\_\_\_ Score

If 7 or less, How could this be improved? \_\_\_\_\_

15. The quality of the installation? \_\_\_\_\_ Score

If 7 or less, How could this be improved? \_\_\_\_\_

16. The refrigerator replacement program overall? \_\_\_\_\_ Score

If 7 or less, How could this be improved? \_\_\_\_\_

17. How satisfied are you with Duke Energy overall? \_\_\_\_\_ Score

If 7 or less, How could this be improved? \_\_\_\_\_

18. Did the staff that replaced your refrigerator perform any other services while they were at your home, such as fixing steps or re-wiring?

a. ☐ Yes    b. ☐ No    c. ☐ DK/NS

*If yes, 18a. What types of changes or repairs were made? (Do not read list. Record all that apply.)*

- a. ☐ Roof repairs
- b. ☐ Re-wiring
- c. ☐ Fixing furnace
- d. ☐ Repairing gas leaks
- e. ☐ Other Specify:

\_\_\_\_\_

\_\_\_\_\_

- f. ☐ Don't know

**I would now like to ask you about the organizations that were involved in providing the refrigerator replacement services.**

**19. What were the names of the organizations that were involved in providing you with a replacement refrigerator?**

\_\_\_\_\_

\_\_\_\_\_

**20. Is your new refrigerator set at a colder temperature than your older one was set at?**

- a. ☐ Yes
- b. ☐ No
- c. ☐ DK/NS

**21. Did the installation staff provide you with any instructions on how to clean the coils on the back of the refrigerator?**

- a. ☐ Yes
- b. ☐ No
- c. ☐ DK/NS

**22. Did the installation staff tell you how often to clean the coils?**

- a. ☐ Yes
- b. ☐ No
- c. ☐ DK/NS

*If yes, How often?:* \_\_\_\_\_

**23. Using a 0 to 10 scale with a 10 meaning that it was very valuable to you and a 0 to mean that it was not at all valuable, how would you rate the value of the refrigerator replacement program?**

\_\_\_\_\_ Score

**24. What one thing did you like most about the Program?**

Response: \_\_\_\_\_

\_\_\_\_\_

**25. What one thing did you like least about the Program?**

Response: \_\_\_\_\_

\_\_\_\_\_

**26. Have you recommended the program to friends or relatives?**

- 1) ☐ Yes
- 2) ☐ No
- c. ☐ DK/NS

*If yes, 26a. How many people have you recommended the program to?*

Number: \_\_\_\_\_ (*Enter 99 if "Don't know".*)

*If no, 26b. Why not?* \_\_\_\_\_

**Will you recommend it to others in the future?**

- a. ☐ Yes
- b. ☐ No
- c. ☐ DK/NS

**27. We are interested in other ways to encourage people to participate in programs like this. Can you suggest things that we can do to increase interest in programs like the Refrigerator Replacement Program?**

1. ☐ Yes    2. ☐ No    99. ☐ DK/NS

*If yes, 27a. What are these things?*

Response: \_\_\_\_\_

**28. The Refrigerator Replacement Program was provided by Duke Energy. As a result of this program would you say your attitude toward Duke Energy is more positive, more negative or about the same? (*If more positive/negative, ask if much more positive/negative or somewhat more positive/negative.*)**

- 1. ☐ Much more positive
- 2. ☐ Somewhat more positive
- 3. ☐ About the same
- 4. ☐ Somewhat more negative
- 5. ☐ Much more negative
- 6. ☐ Don't know

*If attitude is more positive or more negative, then ask: Why?*

Response: \_\_\_\_\_

The next set of questions deal with some effects that the program may have had on you and your household.

As a result of your participation in this program....

29. **Has your knowledge of how to save energy and reduce your utility bill increased, stayed the same, or decreased?** *(If increased or decreased, ask if a lot or somewhat)*

- a. ☐ Increased a lot
- b. ☐ Increased somewhat
- c. ☐ Stayed about the same
- d. ☐ Decreased somewhat
- e. ☐ Decreased a lot
- f. ☐ DK/NS

30. **Has your monthly utility bills increased, stayed the same, or decreased?** *(If increased or decreased, ask if a lot or somewhat)...*

- a. ☐ Increased a lot
- b. ☐ Increased somewhat
- c. ☐ Stayed about the same
- d. ☐ Decreased somewhat
- e. ☐ Decreased a lot
- f. ☐ DK/NS

*If answered a, b, d, or e:*

30a. **Could you provide an estimate of how much you think that your monthly utility bill, on average, has changed per month?**

\$\_\_\_\_\_ per month

30b. **Do you think this savings is a result of the new refrigerator?**

- a. ☐ Yes
- b. ☐ Partly **What other reasons?** \_\_\_\_\_
- c. ☐ No **What do you think the change is from?** \_\_\_\_\_
- d. ☐ DK/NS

31. **As a result of this program, has your ability to pay what you owe the utility from previous months increased, stayed the same, or decreased?** *(If increased or decreased, ask if a lot or somewhat)...*

- a. ☐ Increased a lot
- b. ☐ Increased somewhat
- c. ☐ Stayed about the same
- d. ☐ Decreased somewhat
- e. ☐ Decreased a lot

f. ☐ DK/NS

*If answered a, b, d, or e:*

31a. **How has this program influenced your ability to pay?**

Response: \_\_\_\_\_

32. **As a result of this program, has your ability to pay other household bills increased, stayed the same, or decreased?** *(If increased or decreased, ask if a lot or somewhat)...*

- a. ☐ Increased a lot
- b. ☐ Increased somewhat
- c. ☐ Stayed about the same
- d. ☐ Decreased somewhat
- e. ☐ Decreased a lot
- f. ☐ DK/NS

33. **As a result of this program, has your ability to control energy use in your home increased, stayed the same, or decreased?** *(If increased or decreased, ask if a lot or somewhat)...*

- a. ☐ Increased a lot
- b. ☐ Increased somewhat
- c. ☐ Stayed about the same
- d. ☐ Decreased somewhat
- e. ☐ Decreased a lot
- f. ☐ DK/NS

34. **Which of the following responses best describes your circumstances... If this program would not have replaced my refrigerator I would have....**

- 1. ☐ Kept using the old one
- 2. ☐ Purchased a new one at the exact same time
- 3. ☐ Purchased a new one but at a later date
- 4. ☐ Purchased a used one at the exact same time
- 5. ☐ Purchased a used one but at a later date
- 6. ☐ Other: \_\_\_\_\_

*If B, 34a. Would you have bought a smaller unit, the same size unit, or a larger unit?*

- a. ☐ smaller unit
- b. ☐ same size unit
- c. ☐ larger unit

d. ☐ DK/NS

*If C or E.* How many months or years would you have continued to use the old unit

\_\_\_\_\_ months  
\_\_\_\_\_ years

The last set of questions deal with household characteristics. These questions are optional and you do not need to give any information that you are uncomfortable with, but please keep in mind that any and all information you provide will remain confidential.

35. Do you own or rent your home?

- a. ☐ Own
- b. ☐ Rent or lease
- c. ☐ Other

36. Which of the following categories best represents the age of the person in the home that enrolled in the program ?

- 1. ☐ less than 18 years of age
- 2. ☐ 18 to 25 years
- 3. ☐ 26 to 35
- 4. ☐ 36 to 45
- 5. ☐ 46 to 55
- 6. ☐ 56 to 65
- 7. ☐ 66 to 75
- 8. ☐ over 75

37. How many people 18 or over currently live in your household? (*record number*)

# \_\_\_\_\_

38. Is the person you would call the head of the household employed...

- 1. ☐ full time
- 2. ☐ part time
- 3. ☐ unemployed
- 4. ☐ retired, or
- 5. ☐ disabled
- 6. ☐ other

39. How many other adults in your household are employed...

\_\_\_\_\_ full time

- \_\_\_\_\_ part time
- \_\_\_\_\_ unemployed
- \_\_\_\_\_ retired
- \_\_\_\_\_ disabled

40. **How many people in your household are children under the age of 18?**  
*(fill in the age of each child)*

# \_\_\_\_\_ People

41. **How old is the building in which you live?**

\_\_\_\_\_ years

42. **How long have you lived in your home?**

\_\_\_\_\_ years \_\_\_\_\_ months

43. **What is the highest level of school you completed?**

- 1. ☐ Middle school or less
- 2. ☐ Some high school
- 3. ☐ High school graduate
- 4. ☐ Some college/technical school
- 5. ☐ Technical school graduate
- 6. ☐ College graduate
- 7. ☐ Graduate degree or higher

44. **Which of the following best reflects your current marital status....**

- 1. ☐ **Currently married**
- 2. ☐ **Unmarried but with partner**
- 3. ☐ **Single, never married**
- 4. ☐ **Single, divorced**
- 5. ☐ **Single, widowed**
- 6. ☐ **Other**
- 7. ☐ **Prefer not to answer**

45. **For the last question we would like to know which of the following categories best describes your total annual household income for 2010.**

- 1. ☐ **Less than \$5,000**
- 2. ☐ **\$ 5,001 to 10,000**
- 3. ☐ **\$10,001 to 15,000**
- 4. ☐ **\$15,001 to 20,000**

- 5. ☐ \$20,001 to 25,000
- 6. ☐ \$25,001 to 30,000
- 7. ☐ \$30,001 to 35,000
- 8. ☐ \$35,001 to 40,000
- 9. ☐ More than \$40,000
- 10. ☐ Don't know, not sure
- 11. ☐ Prefer not to answer

*Record the gender of the survey respondent / participant but do not ask the question.*

46. Gender

- 1. ☐ Female
- 2. ☐ Male

**We have reached the end of the survey.  
Thank you for your time!**

## Appendix E: Participant Demographics

This appendix presents the results to the demographic questions included in the participant survey.

### Home Ownership

Nine out of ten (91.7%) of the 36 participants interviewed own their homes.

	Count of Participants	Percent of Participants
Owners	33	91.7%
Renters	3	8.3%

### Age of Participants

Program enrollees were predominantly middle aged. This program continues to serve struggling customers with established adult lives.

	Count of Participants	Percent of Participants
18 to 25 years	0	
26 to 35	0	
36 to 45	3	8.3%
46 to 55	16	44.4%
56 to 65	7	19.4%
66 to 75	6	16.7%
over 75	4	11.1%

### Size of Household

Most participants have one or two adults living in their home and most participants report having children.

Adults in Household	Count of Participants	Percent of Participants
1 adults	14	38.9%
2 adults	17	47.2%
3 adults	3	8.3%
4 adults	1	2.8%
(refused)	1	2.8%

Number of Children	Count of Participants	Percent of Participants
No children	26	74.3%
One child	2	5.7%
Two children	2	5.7%
Three children	3	8.6%
Four children	4	11.4%
Eight children	1	2.9%

## Employment status

The Head of the Household is...	Count of Participants	Percent of Participants
Employed full time	4	11.4%
Employed part time	1	2.9%
Unemployed	3	8.6%
Retired	10	28.6%
Disabled	17	48.6%

All Adults in Households (including head of household)	Count of Participants	Percent of Participants
Employed full time	5	7.5%
Employed part time	6	9.0%
Unemployed	8	11.9%
Retired	18	26.9%
Disabled	30	44.8%

## Age of Home

Thirty-four participants were able to provide the age of their home, indicating the average age of the home is 57 years old. The age of the homes is widely distributed, and ranges from a low of 7 years old to a high of 145 years old.

Age of Home	Count of Participants	Percent of Participants
0 to 20	5	14.7%
21 to 40	9	26.5%
41 to 60	6	17.6%
61 to 80	4	11.8%
81 to 100	6	17.6%
> 100	4	11.8%

## Years in Home

Number of years in home	Count of Participants	Renters	Owners	Other
0 to 5	12	0	10	2
6 to 10	8	0	8	
11-20	4	0	4	
21 to 40	6	0	6	1
>41	4	0	4	

## Education

Participant has completed...	Count of Participants	Percent of Participants
Middle school or less	5	13.9%

Some high school	5	13.9%
High school	14	38.9%
Some college/technical school	9	25%
Technical school	2	5.5%
College	1	2.8%
Graduate school	0	0%

## Marital Status

Marital Status	Count of Participants	Percent of Participants
Married	10	27.8%
Unmarried, living with partner	2	5.5%
Single, divorced	14	38.9%
Single, widowed	6	16.7%
Single, never married	3	8.3%
Prefer not to answer	1	2.8%

## Income

The majority of participants are of from low, to exceptionally low income households, with seventy percent having an annual household income of less than \$15,000 a year. The program is doing very well in serving households with very low incomes.

Annual Income	Count of Participants	Percent of Participants
Less than \$5,000	1	2.8%
\$5,001 to 10,000	8	22.2%
\$10,001 to 15,000	17	47.2%
\$15,001 to 20,000	0	0%
\$20,001 to 25,000	4	11.1%
\$25,001 to 30,000	2	5.5%
\$30,001 to 35,000	0	0%
\$35,001 to 40,000	0	0%
Don't Know	3	8.3%
Prefer not to answer	1	2.8%

## Gender

Program participants, as in other low-income programs, are mostly female. Of the non-participants that we were able to reach, all of them were women.

Gender	Count of Participants	Percent of Participants
Female	27	75%
Male	9	25%



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Erlanger, KY 41018

KY.P.S.C. Electric No. 2  
Eleventh Revised Sheet No. 78  
Cancels and Supersedes  
Tenth Revised Sheet No. 78  
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**RIDER DSMR**

**DEMAND SIDE MANAGEMENT RATE**

The Demand Side Management Rate (DSMR) shall be determined in accordance with the provisions of Rider DSM, Demand Side Management Cost Recovery Rider, Sheet No. 75 of this Tariff.

The DSMR to be applied to residential customer bills is \$0.001988 per kilowatt-hour.

A Home Energy Assistance Program (HEA) charge of \$0.10 will be applied monthly to residential customer bills through September 2014.

The DSMR to be applied to non-residential distribution service customer bills is \$0.001104 per kilowatt-hour.

The DSMR to be applied for transmission service customer bills is \$0.001070 per kilowatt-hour.

Issued by authority of the Kentucky Public Service Commission in Case No. 2012-XXXXXX dated  
XXXX XX, XXXX.

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Issued: November 15, 2012

  
Issued by Julie Janson, President

Effective: December 15, 2012



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KY.P.S.C. Gas No. 2  
Eleventh Revised Sheet No. 62  
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**RIDER DSMR**

**DEMAND SIDE MANAGEMENT RATE**

The Demand Side Management Rate (DSMR) shall be determined in accordance with the provisions of Rider DSM, Demand Side Management Cost Recovery Rider, Sheet No. 61 of this Tariff.

The DSMR to be applied to residential customer bills is (\$0.039396) per hundred cubic feet.


A Home Energy Assistance Program (HEA) charge of \$0.10 will be applied monthly to residential customer bills through September 2014.

The DSMR to be applied to non-residential service customer bills is \$0.00 per hundred cubic feet.

Issued by authority of an Order by the Kentucky Public Service Commission dated in Case No. 2012-XXXXX dated XXXX XX, XXXX

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Issued: November 15, 2012

  
Issued by Julie Janson, President

Effective: December 15, 2012