

**COMMONWEALTH OF KENTUCKY  
BEFORE THE  
KENTUCKY PUBLIC SERVICE COMMISSION**

**In the Matter of:**

<b>THE APPLICATION OF DUKE</b>	)
<b>ENERGY KENTUCKY, INC. TO</b>	)
<b>AMEND ITS DEMAND SIDE</b>	) <b>CASE NO. 2014-00280</b>
<b>MANAGEMENT PROGRAMS</b>	)

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**APPLICATION OF DUKE ENERGY KENTUCKY, INC. TO AMEND ITS  
DEMAND SIDE MANAGEMENT PROGRAMS**

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Comes now Duke Energy Kentucky, Inc. (Duke Energy Kentucky or the Company), pursuant to KRS 278.285, and other applicable law, and does hereby request the Commission to approve an amendment of the Demand Side Management (DSM) programs as Ordered by this Commission.<sup>1</sup> In support of its Application, Duke Energy Kentucky respectfully states as follows:

**Introduction**

1. Pursuant to 807 KAR 5:001, Section 14(2), Duke Energy Kentucky is a Kentucky corporation that was originally incorporated on March 20, 1901, is in good standing and, as a public utility as that term is defined in KRS 278.010(3), is subject to the Commission's jurisdiction. Duke Energy Kentucky is engaged in the business of furnishing natural gas and electric services to various municipalities and unincorporated areas in Boone, Bracken, Campbell, Gallatin, Grant, Kenton, and Pendleton Counties in the Commonwealth of Kentucky. A copy of its articles of incorporation are on file with the Commission in Case No. 2013-00097.

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<sup>1</sup> *In the Matter of the Application of Duke Energy Kentucky, Inc. for the Annual Cost Recovery Filing for Demand Side Management, Case No. 2012-00495, (Order)(April 11, 2013).*

2. Duke Energy Kentucky's business address is 139 East Fourth Street, Cincinnati, Ohio 45202. The Company's local office in Kentucky is Duke Energy Envision Center, 4580 Olympic Boulevard, Erlanger, Kentucky 41018. Duke Energy Kentucky's email address is KYfilings@duke-energy.com.

3. On November 15, 2012, Duke Energy Kentucky filed an application for the cost recovery of demand side management. The Company's application was docketed as Case No. 2012-00495. On April 11, 2013, this Commission approved that Application and Ordered Duke Energy Kentucky to file an application requesting program expansion(s) and to include: (1) an Appendix A, setting forth the Cost Effectiveness Test Results of all DSM programs, (2) an Appendix B, setting forth the recovery of program costs, lost revenues, and shared savings that are used in determining the true-up of proposed DSM factors; and (3) a signed and dated proposed Rider DSMR, Demand Side Management rate, for both electric and natural gas customers, by August 15, annually.<sup>2</sup>

#### **Current DSM Programs**

4. Duke Energy Kentucky has a long history of successful DSM implementation and has been a leader in the industry with respect to energy efficiency (EE) and peak demand reduction (DR) programs, having offered such programs since the mid-90's. Its existing portfolio of DSM programs was approved by the Commission in Case No. 2013-00395,<sup>3</sup> by Order dated March 28, 2014. These programs are as follows:

- Program 1: Low Income Services Program
- Program 2: Residential Energy Assessments Program
- Program 3: Energy Education Programs for Schools Program

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<sup>2</sup> See Order, para. 4.

<sup>3</sup> In the Matter of the Application of Duke Energy Kentucky, Inc. for an Energy Efficiency Cost Recovery Mechanism and for Approval of Additional Programs for Inclusion in its Existing Portfolio, Case No. 2013-00395.

- Program 4: Residential Smart Saver Efficient Residences Program
- Program 5: Residential Smart Saver Energy Efficient Products Program
- Program 6: Smart Saver Prescriptive Program
- Program 7: Smart Saver Custom Program
- Program 8: Smart Saver Energy Assessments Program
- Program 9: Power Manager Program
- Program 10: PowerShare
- Program 11: Low Income Neighborhood
- Program 12: My Home Energy Report
- Program 13: Appliance Recycling Program

5. The above-referenced portfolio of programs is approved to continue through December 31, 2016.

#### **Expansion of DSM Programs**

6. This Application proposes to expand the scope of the Residential Smart Saver Program and the My Home Energy Report Program by increasing the available measures within each program to enhance the robustness of the Company's offerings.<sup>4</sup> The Company is seeking approval for a new program for Non-Residential customers, the Small Business Energy Saver Program. The Company is also providing an update on measures within the Smart Saver Prescriptive Program, Smart Saver Custom Program and the Energy Management and Information Services Pilot. Finally, the Company is requesting flexibility to add cost effective measures to the list of approved programs listed above in Paragraph 4. The Residential

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<sup>4</sup> Exhibit K lists the complete set of proposed measures for inclusion.

proposed new measures. With the exception of the Office of the Kentucky Attorney General, which will indicate its opinion at a later date, the voting members of both the Residential Collaborative and the Commercial & Industrial Collaborative agreed with this Application.

7. The Company is proposing the following new measures to be included in its current suite of programs as well as new programs:

**Residential Smart Saver:**

The proposed new Residential Smart Saver<sup>7</sup> measures are LED Candelabras and Recessed Outdoor LEDs. Duke Energy Kentucky expanded its lighting offer to include specialty CFL and LED bulbs such as recessed lights, candelabras, globe, three-way bulbs, capsules and dimmable bulbs. The web-based ecommerce store launched on April 26, 2013 and provides discounted specialty lights and ships directly to the home. Utilizing the existing on-demand CFL platform, customers may participate in the online Saving Store via:

1) Duke Energy Web Site

Customers may go the Savings Store landing page to learn more about the program, review frequently asked questions and CFL recycling information. A savings calculator is available to estimate how much money customers can save and how sustainable they can be by purchasing discounted energy bulbs from the Duke Energy Savings Store.

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of the Kentucky Attorney General), Jock Pitts (People Working Cooperatively), Florence Tandy (Northern Kentucky Community Action Commission), Laura Pleiman (Boone County), Carl Melcher and Peter Nienaber (Northern Kentucky Legal Aid), Karen Reagor and Pam Proctor (Kentucky NEED Project), Lee Colten, John Davies, and Greg Guess (Department of Energy Development and Independence), Jeremy Faust, Andy Holzhauser and Chris Jones (Greater Cincinnati Energy Alliance), Pat Dressman (Campbell County) and Tim Duff and Trisha Haemmerle (Duke Energy).

<sup>6</sup> The Commercial & Industrial Collaborative members in attendance were: Jennifer Black Hans and Heather Napier (Office of the Kentucky Attorney General), Jock Pitts (People Working Cooperatively), Karen Reagor and Pam Proctor (Kentucky NEED Project), Lee Colten, John Davies, and Greg Guess (Department of Energy Development and Independence), Pat Dressman (Campbell County), Chris Baker (Kenton County Schools) and Tim Duff and Trisha Haemmerle (Duke Energy).

<sup>7</sup> The new measures are individual measures that are part of a single and larger program referred to and marketed as Residential Smart Saver<sup>®</sup>. For ease of administration and communication with customers the new measures will have a separate name even though they are a single program.

available to estimate how much money customers can save and how sustainable they can be by purchasing discounted energy bulbs from the Duke Energy Savings Store. Customers authenticate and check eligibility by entering account and customer information. Eligible customers transition to the Saving Store seamlessly and may browse and purchase discounted lighting.

## 2) Online Services (OLS)

Customers who participate in the Online Services program are encouraged to visit the Savings Store to order discounted CFL and LED bulbs through the Duke Energy web site if they are eligible. Upon logging into their account, eligible customers are intercepted with a 'popup' message inviting them to shop for discounted bulbs or they may visit the store by clicking the Saving Store promo on their OLS dashboard.

Customers who choose to shop at the Savings Store will see a wide variety of discounted CFL and LED bulbs for different fixtures around their home. Bulbs are available in single and multi-pack sizes and various wattages. Purchase limits vary by category but customers may purchase additional bulbs without incentives if they choose. Several new items will be added to the Saving Store; LED Candelabras and LED Outdoor PAR38 Reflectors. Providing both CFL & LED technology for all applications provides customers with a wide variety of choices to help them save energy and money.

A shopping assistant is available to help customers select the right bulb types for various applications, as well as resources to understand the difference between lumens versus watts and how to compare them. The savings calculator can show how much customers may save by switching to energy efficient lighting.

The Savings Store is managed by Energy Federations Incorporated (EFI). Customers

can view special promotions and feature products as well as track order history. EFI handles inquiries regarding products, payments, shipping and warranties. Customers may pay with a credit card or by check.

**My Home Energy Report:**

My Home Energy Report is proposing an additional marketing channel. The My Home Energy Report compares household electric usage to similar, neighboring homes, and provides recommendations to lower energy consumption. The report also promotes the Company's other energy efficiency programs when applicable. These normative comparisons are intended to induce an energy consumption behavior change. The My Home Energy Report (MyHER) will be delivered in printed or online form to targeted customers with desirable characteristics who are likely to respond to the information. The printed reports are distributed up to 8 times per year; however delivery may be interrupted during the off-peak energy usage months in the fall and spring. Currently to qualify to receive the MyHER report, customers must be living in a single metered, single family home with 13 months usage history.

The MyHER program is an opt out program and the Company provides information on every report as to how a customer can request to stop receiving the reports. Since the program began in September 2012, only 116 customers out of roughly 54,000 KY customers participating in the program have elected to opt out and no longer receive the report.

In August 2013 a revised MyHER report was introduced to customers. Previously the report showed customer comparisons in dollar amounts. The dollar amounts were derived using a customer's actual usage and a rate factor for each state. Unfortunately, this dollar amount did not always match the dollar amount on the customer's bill and was causing customer confusion. The August 2013 report showed customer comparison in kWh figures which are an exact match to

the customer's bill. To date only a few customers have reacted negatively to the change. Many customers requested the change. This change to kWh comparisons also allows the Company to open this program to customers on payment plans. These customers were not included previously because the dollar amount on their report would not match their bill amount. Now that the Company is only displaying kWh figures, these will now match payment plan customers' bills. This change enabled Duke Energy Kentucky to start offering the report to budgeting billing customers. Qualifying budget billing customers started receiving a report in February 2014.

The Company has designed an interactive portal and enabled email technology to further engage with customers with the intention of increasing the energy these engaged customers will save. This portal, MyHER Interactive, will be available online and through mobile channels. MyHER Interactive will be available and marketed to all MyHER customers. MyHER Interactive customers will continue to receive up to 8 paper reports a year with the intention of decreasing the number of paper reports over time if we prove this does not erode savings.

**Non-Residential Small Business Energy Saver Program:**

The new proposed Non-Residential Small Business Energy Saver Program (SBES) is designed to target the hard-to-reach small business sector by introducing approved prescriptive measures. The program will consist of a free energy assessment for qualifying small non-residential customers resulting in a customized proposal with improvement recommendations and eligible incentives provided upfront to offset the cost of measure installation, with the entire process managed by a program administrator. This program will help alleviate the burden of implementing energy efficiency measures for this smaller non-residential customer segment. An overview of the program was presented to the Commercial and Industrial Collaborative on

October 22, 2013. Duke Energy Kentucky hereby requests approval of this program through December 31, 2016, to align with the timeframe of the existing Energy Efficiency portfolio.

The Small Business Energy Saver (SBES) program utilizes the direct install energy efficiency program model, which is designed to be a convenient, turn-key process for small business customers who are interested in making select energy efficiency improvements. Across the nation, small business direct install programs have been implemented by utilities to engage small business owners who are typically underserved by traditional, non-residential prescriptive rebate programs. Small business owners typically lack the time, upfront capital, and technical expertise to facilitate the retrofit or replacement of older equipment within their facilities. The SBES program effectively removes these barriers by offering a turn-key energy efficiency offering which facilitates the direct installation of energy efficiency measures, and minimizes financial obstacles with upfront incentives which offset the cost of projects.

Customers interested in the SBES program can contact Duke Energy Kentucky or the program administrator by phone or online by filling out a request form. The program administrator will schedule and conduct a free, no-obligation energy assessment at the eligible customer's facility. During the assessment, the program administrator builds a scope of work/proposal that includes, program-eligible suggested replacements for existing equipment and details out all costs for the upgrades (equipment and installation) using standardized, consistent pricing, approved by Duke Energy Kentucky for each measure. The proposal includes Duke Energy Kentucky's incentive for the project upfront, so customers do not have to wait for an incentive rebate. Before agreeing to participate, the customer has the ability to make the final determination of project scope before moving forward.



If the customer is interested in moving forward with a proposed project, the program administrator works with local electrical subcontractors for the installation services. The customer is able to schedule the installation for a convenient time directly with the program administrator. After the installation is complete and the customer finds the energy efficiency upgrades satisfactory, the customer then pays the program administrator directly for the remaining share of the project. Duke Energy Kentucky intends for the selected program administrator to offer extended payment options to the customer, to further minimize any financial barriers to participation.

SBES program incentives are calculated per project based upon the deemed estimated energy savings of the energy efficiency improvements and the conditions found within the customer's facility. The program may provide an upfront customer incentive for up to 80 percent of the total cost of installed measures. Incentives are provided based on Duke Energy Kentucky's cost effectiveness modeling to ensure cost effectiveness over the life of the measure.

Program measures will address major end-uses in lighting, refrigeration, and HVAC applications. Small Business Energy Saver program eligibility will be limited to all non-residential customers with an average annual electric demand of 100kW or less that are not classified as new construction. Participants may be owner-occupied or tenant facilities with owner permission.

Many small business owners lease their facilities and because the small business tenants are not typically the final decision makers on installing energy related equipment into the facility, this market has been generally more difficult to reach by way of traditional non-residential prescriptive rebate programs. These customers tend to be less aware of the types of retrofits that can be installed to reduce their energy use. SBES is designed specifically for this

market to address these perceived barriers and to offer significant incentives to generate participation.

With SBES, Duke Energy Kentucky will further our commitment to offering affordable and broad-reaching programs that simplify energy efficiency decisions for all customers. The SBES program effectively targets the small non-residential customer segment with a direct install program offering, that provides a consistent and convenient experience to customers, through which significant energy savings are delivered.

**Smart Saver Prescriptive:**

Based upon the recommendation of our third party evaluator, TecMarket Works, Duke Energy Kentucky has removed two HVAC measures from the non-residential Smart Saver Prescriptive program: 1) air cooled chiller tune up per ton and 2) water cooled chiller tune up per ton. These two measures have been determined as no longer being cost effective. The recommendation is based upon the fact that free ridership for these measures is increasing significantly as determined in other jurisdictions where the programs are offered whereby eroding the cost-effectiveness. The chiller measures were removed effective July 23, 2014. Currently in 2014, Duke Energy Kentucky has not received any applications for the chiller measures. There will be a 90 day grace period honoring the submission of an application after July 23, 2014.

**Smart Saver Custom:**

In order to make the Smart Saver Custom program more accessible to a wider range of projects as well as to enhance program efficiency, the Smart Saver Custom program is considering several functional enhancements. The first of these will start with the testing of relatively easy to use, but acceptably accurate calculation tools. The tools are designed to support

smaller projects, for which in depth and expensive analysis is not practical. Depending on the success of the first tool, expected in late 2014, the company intends to pursue a suite of tools that will launch in 2015. Additionally, the Company is investigating the feasibility of enhancements that will improve program transparency as well as enable participation of customer projects that are on fast track schedules or for which energy savings are difficult to quantify. More work and investigation is needed before these changes can be effectively presented.

**Energy Management and Information Services Pilot:**

On April 21, 2014, Duke Energy Kentucky submitted a notification letter<sup>8</sup> to the Kentucky Public Service Commission for a small two-building pilot in Kentucky to test out the cost effectiveness of a program which uses energy analytics software coupled with an onsite assessment focused on the building controls and HVAC equipment to drive out low cost operational changes to reduce energy consumption. This pilot was simultaneously launched in four other states in which Duke Energy operates. Due to limited customer interest across all of its different jurisdictions, Duke Energy Kentucky is internally evaluating the pilot in order to determine if proceeding with a lower overall customer base than anticipated will allow the program to be cost-effective. The options under consideration include restructuring the pilot, terminating the pilot or putting it on hold.

**Cost Effective Measure Inclusion:**

Duke Energy Kentucky is requesting the flexibility to enhance approved programs by allowing automatic approval of cost effective measures. The enhancements consist of minor program modifications that will not require a significant increase in costs, \$75,000 or less, and will not fundamentally change the program. The Company believes it is necessary to continually

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<sup>8</sup> In accordance with the Automatic Approval Process for Demand Side Management/Energy Efficiency Program Pilots approved by the Kentucky Public Service Commission's June 29, 2012, Order in Case No. 2012-00085.

enhance the portfolio to address new technological challenges and changing market conditions, as well as provide additional opportunities to customers beyond the low hanging energy efficiency. The Company also requests the approval to remove measures as needed. The automatic approval will allow customers to benefit from additional measures in a timelier manner. Duke Energy Kentucky requests an approval similar to the automatic approval process for pilots as Ordered in Case No. 2012-00085 where the Company provides a 10 day notification to the Commission for any additional measures added to an approved program with costs of \$75,000 or less. Duke Energy Kentucky will include the measures that were added to the approved programs along with the updated cost effectiveness scores and the change in rates by customer class on an annual basis within the annual amendment filing.

8. Pursuant to KRS 278.285(1)(b) and the Commission's Order, Exhibit A includes the Cost Effectiveness Test Results of all programs.

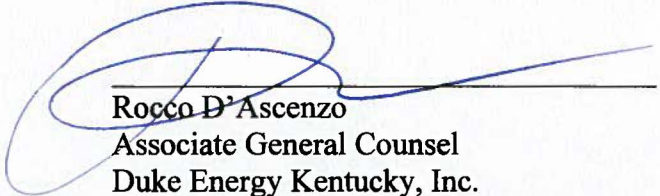
9. Pursuant to KRS 278.285(1)(c) and the Commission's Order, Exhibit B includes the calculations to recover program costs, lost revenues, and shared shavings, that are used in determining the true-up of proposed DSM factor(s).

10. A signed and dated proposed Rider DSMR, Demand Side Management Rider, for both electric and natural gas customers, is attached hereto as Exhibit C.

11. Pursuant to KRS 278.285(1)(c) and the Commission's Order, Exhibits D - J includes program evaluations and list of measures available at this time.

WHEREFORE, Duke Energy Kentucky respectfully requests that the Commission grant the relief requested herein.

Respectfully submitted,



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*Counsel for Duke Energy Kentucky, Inc.*

## 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 August 2014:

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Rocco O. D'Ascenzo

Appendix A  
Program Cost Effectiveness Test Results\*\*

<b>RESIDENTIAL CUSTOMER PROGRAMS</b>	<b>Utility Test</b>	<b>TRC Test</b>	<b>RIM Test</b>	<b>Participant Test</b>
Appliance Recycling Program	4.57	4.97	1.45	
Energy Efficiency Education Program for Schools	0.28	0.32	0.24	
Low Income Neighborhood	0.94	1.04	0.65	
Low Income Services	0.60	0.73	0.46	
My Home Energy Report	1.26	1.26	0.74	
Residential Energy Assessments	1.23	1.34	0.90	
Residential Smart Saver®	5.79	14.45	1.31	26.89
Power Manager	5.22	6.25	5.22	
My Home Energy Report (New Measures)	3.06	3.06	1.36	
Residential Smart Saver® (New Measures)	3.44	2.96	1.14	4.75
<b>NON-RESIDENTIAL CUSTOMER PROGRAMS</b>				
Smart Saver® Custom	5.92	2.20	1.36	2.53
Smart Saver® Prescriptive - Energy Star Food Service Products	1.12	0.87	0.66	3.13
Smart Saver® Prescriptive - HVAC	3.10	1.05	1.29	1.01
Smart Saver® Prescriptive - Lighting	8.03	2.51	1.69	2.22
Smart Saver® Prescriptive - Motors/Pumps/VFD	8.04	4.15	1.64	4.04
Smart Saver® Prescriptive - Process Equipment	4.87	5.09	1.61	5.88
Power Share®	4.89	22.26	4.89	
Small Business Energy Saver (New Program)	3.28	2.44	1.40	2.55
**Cost Effectiveness is calculated on NPV for life of measure				

Cost Effectiveness scores for current programs are from Case No. 2013-00395 and will be updated with the annual status update filing filed November 15, 2014.

Kentucky DSM Rider

Comparison of Revenue Requirement to Rider Recovery

Residential Programs	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Projected Program Costs 7/2012 to 6/2013 (A)	Projected Lost Revenues 7/2012 to 6/2013 (A)	Projected Shared Savings 7/2012 to 6/2013 (A)	Program Expenditures 7/2012 to 6/2013 (B)	Program Expenditures (C) Gas	Electric	Lost Revenues 7/2012 to 6/2013 (B)	Shared Savings 7/2012 to 6/2013 (B)	2012 Reconciliation Gas (D)	Electric (E)	Rider Collection (F) Gas	Electric	(Over)/Under Gas (G)	Electric (H)
Appliance Recycling Program	\$ -	\$ -	\$ -	\$ 82,294	\$ -	\$ 82,294	\$ 7,981	\$ 28,801						
Energy Efficiency Education Program for Schools	\$ 179,732	\$ 4,336	\$ (9,542)	\$ 144,974	\$ 92,056	\$ 52,918	\$ 5,142	\$ (7,209)						
Low Income Neighborhood	\$ 306,878	\$ 13,156	\$ 4,438	\$ 69,486	\$ 69,486	\$ 804	\$ (447)							
Low Income Services	\$ 688,293	\$ 6,549	\$ (31,217)	\$ 628,708	\$ 399,229	\$ 229,479	\$ 32,650	\$ (7,162)						
My Home Energy Report	\$ 502,601	\$ 198,348	\$ 23,735	\$ 656,919	\$ -	\$ 856,919	\$ 395,634	\$ 15,034						
Residential Energy Assessments	\$ 164,976	\$ 4,899	\$ 11,762	\$ 223,124	\$ 141,883	\$ 81,441	\$ 30,050	\$ 9,464						
Residential Smart Saver®	\$ 2,969,165	\$ 815,167	\$ 818,467	\$ 1,798,336	\$ 1,141,943	\$ 856,393	\$ 782,163	\$ 836,130						
Power Manager	\$ 299,457	\$ -	\$ 136,982	\$ 370,122	\$ -	\$ 370,122	\$ -	\$ 124,136						
Personal Energy Report Program (I)	\$ -	\$ -	\$ -	\$ 964	\$ 612	\$ 352	\$ 326,705	\$ (81)						
Home Energy Assistance Pilot Program (J)	\$ 248,064	\$ -	\$ -	\$ 228,654	\$ 91,887	\$ 136,767	\$ -	\$ -						
Revenues collected except for HEA														
<b>Total</b>	\$ 5,039,167	\$ 842,456	\$ 954,824	\$ 4,203,580	\$ 1,867,412	\$ 2,336,168	\$ 1,561,106	\$ 1,000,665	\$ (3,600,560)	\$ (1,456,115)	\$ (3,762,124)	\$ 4,275,700	\$ 1,748,956	\$ (813,874)

- (A) Amounts identified in report filed in Case No. 2012-00085.
- (B) Actual program expenditures, lost revenues (for this period and from prior period DSM measure installations), and shared savings for the period July 1, 2012 through June 30, 2013.
- (C) Allocation of program expenditures to gas and electric. Uses 63.5% gas based upon saturation of gas space heating.
- (D) Recovery allowed in accordance with the Commission's Order in Case No. 2012-00085.
- (E) Recovery allowed in accordance with the Commission's Order in Case No. 2012-00085.
- (F) Revenues collected through the DSM Rider between July 1, 2012 and June 30, 2013.
- (G) Column (5) + Column (9) - Column(11).
- (H) Column (6) + Column (7) + Column (8) + Column (10) - Column(12).
- (I) Costs for this program were received after the prior filing period.
- (J) Revenues and expenses for the Home Energy Assistance Pilot Program.

Commercial Programs	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(8)
	Projected Program Costs 7/2012 to 6/2013 (A)	Projected Lost Revenues 7/2012 to 6/2013 (A)	Projected Shared Savings 7/2012 to 6/2013 (A)	Program Expenditures 7/2012 to 6/2013 (B)	Lost Revenues 7/2012 to 6/2013 (B)	Shared Savings 7/2012 to 6/2013 (B)	2012 Reconciliation (C)	Rider Collection (D)	(Over)/Under Collection (E)
Smart Saver® Custom (F)	\$ 157,331	\$ 25,776	\$ 67,180	\$ 132,131	\$ 39,875	\$ 63,156			
Smart Saver® Prescriptive - Energy Star Food Service Products	\$ 6,833	\$ 1,675	\$ 6,677	\$ 4,299	\$ 1,519	\$ 53			
Smart Saver® Prescriptive - HVAC	\$ 94,790	\$ 20,145	\$ 99,010	\$ 127,982	\$ 22,237	\$ 26,498			
Smart Saver® Prescriptive - Lighting	\$ 494,148	\$ 92,131	\$ 308,106	\$ 418,757	\$ 213,946	\$ 289,540			
Smart Saver® Prescriptive - Motors/Pumps/VFD	\$ 42,614	\$ 18,740	\$ 62,141	\$ 40,277	\$ 20,671	\$ 27,879			
Smart Saver® Prescriptive - Process Equipment	\$ 52	\$ 38	\$ 63	\$ 15,819	\$ 2,414	\$ 6,117			
<b>Total</b>	\$ 795,568	\$ 158,706	\$ 543,178	\$ 739,265	\$ 300,663	\$ 413,245	\$ (2,503,221)	\$ 619,647	\$ (1,669,667)
Power Share®	\$ 934,229	\$ -	\$ 288,004	\$ 831,967	\$ -	\$ 322,931	\$ 1,611,681	\$ 1,965,294	\$ 801,314

- (A) Amounts identified in report filed in Case No. 2012-00085.
- (B) Actual program expenditures, lost revenues (for this period and from prior period DSM measure installations), and shared savings for the period July 1, 2012 through June 30, 2013.
- (C) Recovery allowed in accordance with the Commission's Order in Case No. 2012-00495.
- (D) Revenues collected through the DSM Rider between July 1, 2012 and June 30, 2013.
- (E) Column (4) + Column (5) + Column (6) + Column (7) - Column (8)
- (F) Custom Budget Order (2013-00097) requested additional revenue requirements in March 2013.



Kentucky DSM Rider

2014-2015 Projected Program Costs, Lost Revenues, and Shared Savings

Residential Program Summary (A)

	Costs	Lost Revenues	Shared Savings	Total	Allocation of Costs		Budget (Costs, Lost Revenues, & Shared Savings)		
					Electric	Gas	Electric Costs	Electric	Gas Costs
Appliance Recycling Program	\$ 193,426	\$ 104,715	\$ 83,130	\$ 381,271	100.0%	0.0%	\$ 193,426	\$ 381,271	\$ -
Energy Efficiency Education Program for Schools	\$ 229,075	\$ 18,779	\$ (12,239)	\$ 235,615	36.5%	63.5%	\$ 83,613	\$ 90,152	\$ 145,463
Low Income Neighborhood	\$ 356,583	\$ 44,247	\$ 7,374	\$ 408,204	100.0%	0.0%	\$ 356,583	\$ 408,204	\$ -
Low Income Services	\$ 886,258	\$ 39,097	\$ (31,172)	\$ 894,183	36.5%	63.5%	\$ 323,484	\$ 331,410	\$ 562,774
My Home Energy Report	\$ 574,536	\$ 468,204	\$ 45,284	\$ 1,088,025	100.0%	0.0%	\$ 574,536	\$ 1,088,025	\$ -
Residential Energy Assessments	\$ 189,993	\$ 28,311	\$ 12,192	\$ 230,495	36.5%	63.5%	\$ 69,347	\$ 109,850	\$ 120,645
Residential Smart Saver® (B)	\$ 1,288,736	\$ 1,575,659	\$ 159,818	\$ 3,024,213	36.5%	63.5%	\$ 470,389	\$ 2,205,866	\$ 818,347
Power Manager	\$ 566,066	\$ -	\$ 130,089	\$ 696,155	100.0%	0.0%	\$ 566,066	\$ 696,155	\$ -
Personalized Energy Report Program	\$ -	\$ 2,950	\$ -	\$ 2,950	36.5%	63.5%	\$ -	\$ 2,950	\$ -
My Home Energy Report - New Measures	\$ 17,075	\$ 17,644	\$ 2,777	\$ 37,495	100.0%	0.0%	\$ 17,075	\$ 37,495	\$ -
Residential Smart Saver® - New Measures	\$ 9,970	\$ 2,195	\$ 3,469	\$ 15,633	36.5%	63.5%	\$ 3,639	\$ 9,302	\$ 6,331
<b>Total Costs, Net Lost Revenues, Shared Savings</b>	<b>\$ 4,311,719</b>	<b>\$ 2,301,799</b>	<b>\$ 400,721</b>	<b>\$ 7,014,239</b>			<b>\$ 2,658,158</b>	<b>\$ 5,360,679</b>	<b>\$ 1,653,560</b>
Home Energy Assistance Pilot Program	\$ 250,556							\$ 145,522	\$ 105,035

NonResidential Program Summary (A)

	Costs	Lost Revenues	Shared Savings	Total	Allocations		Budget (Costs, Lost Revenues, & Shared Savings)		
					Electric	Gas	Electric Costs	Electric	Gas
Smart Saver® Custom	\$ 393,983	\$ 129,375	\$ 101,449	\$ 624,807	100.0%	0.0%	\$ 393,983	\$ 624,807	NA
Smart Saver® Prescriptive - Energy Star Food Service Products (B)	\$ 18,463	\$ 7,815	\$ 12,013	\$ 38,291	100.0%	0.0%	\$ 18,463	\$ 38,291	NA
Smart Saver® Prescriptive - HVAC (B) ( C)	\$ 152,742	\$ 47,007	\$ 79,190	\$ 278,939	100.0%	0.0%	\$ 152,742	\$ 278,939	NA
Smart Saver® Prescriptive - Lighting (B)	\$ 634,676	\$ 290,867	\$ 310,371	\$ 1,235,914	100.0%	0.0%	\$ 634,676	\$ 1,235,914	NA
Smart Saver® Prescriptive - Motors/Pumps/VFD	\$ 43,292	\$ 33,510	\$ 36,676	\$ 113,478	100.0%	0.0%	\$ 43,292	\$ 113,478	NA
Smart Saver® Prescriptive - Process Equipment	\$ 1,630	\$ 1,588	\$ 1,131	\$ 4,349	100.0%	0.0%	\$ 1,630	\$ 4,349	NA
Smart Saver® Prescriptive - IT (B)	\$ 9,919	\$ 1,490	\$ 3,005	\$ 14,415	100.0%	0.0%	\$ 9,919	\$ 14,415	NA
Power Share®	\$ 1,022,924	\$ -	\$ 332,441	\$ 1,355,365	100.0%	0.0%	\$ 1,022,924	\$ 1,355,365	NA
Small Business Energy Saver - New Program	\$ 243,051	\$ 14,152	\$ 38,275	\$ 295,477	100.0%	0.0%	\$ 243,051	\$ 295,477	NA
<b>Total Costs, Net Lost Revenues, Shared Savings</b>	<b>\$ 2,520,680</b>	<b>\$ 525,803</b>	<b>\$ 914,551</b>	<b>\$ 3,961,034</b>			<b>\$ 2,520,680</b>	<b>\$ 3,961,034</b>	<b>NA</b>
<b>Total Program</b>	<b>\$ 6,832,399</b>	<b>\$ 2,827,602</b>	<b>\$ 1,315,273</b>	<b>\$ 10,975,274</b>					

(A) Costs, Lost Revenues (for this period and from prior period DSM measure installations), and Shared Savings for Year 3 of portfolio

(B) Includes new measures filed in Case No. 2013-313

(C) Excludes Chiller Tune Up measures

Kentucky DSM Rider

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

July 2014 to June 2015

	Program Costs (A)
<u>Electric Rider DSM</u>	
Residential Rate RS	\$ 5,360,679
Distribution Level Rates Part A DS, DP, DT, GS-FL, EH & SP	\$ 2,605,669
Transmission Level Rates & Distribution Level Rates Part B	\$ 1,355,365
<u>Gas Rider DSM</u>	
Residential Rate RS	\$ 1,653,560

(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	2014
Projected Annual Electric Sales kWh	
Rates RS	1,469,356,807
Rates DS, DP, DT, GS-FL, EH, & SP	2,328,176,945
Rates DS, DP, DT, GS-FL, EH, SP, & TT	2,544,487,945
Projected Annual Gas Sales CCF	
Rate RS	61,889,261

Kentucky DSM Rider

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

July 2014 to June 2015

Rate Schedule Riders	True-Up Amount (A)	Expected Program Costs (B)	Total DSM Revenue Requirements	Estimated Billing Determinants (C)	NEW DSM Cost Recovery Rider (DSMR)	CURRENT DSM Cost Recovery Rider (DSMR)
<u>Electric Rider DSM</u>						
Residential Rate RS	\$ (815,085)	\$ 5,360,679	\$ 4,545,584	1,469,356,807 kWh	\$ 0.003094 \$/kWh	\$ 0.003062 \$/kWh
Distribution Level Rates Part A DS, DP, DT, GS-FL, EH & SP	\$ (1,672,201)	\$ 2,605,668	\$ 933,468	2,328,176,945 kWh	\$ 0.000401 \$/kWh	\$ 0.000280 \$/kWh
Transmission Level Rates & Distribution Level Rates Part B TT	\$ 802,516	\$ 1,355,365	\$ 2,157,881	2,544,487,945 kWh	\$ 0.000848 \$/kWh	\$ 0.000848 \$/kWh
Distribution Level Rates Total DS, DP, DT, GS-FL, EH & SP					\$ 0.001249 \$/kWh	\$ 0.001128 \$/kWh
<u>Gas Rider DSM</u>						
Residential Rate RS	\$ 1,751,580	\$ 1,653,560	\$ 3,405,140	61,889,261 CCF	\$ 0.055020 \$/CCF	\$ 0.054918 \$/CCF
Total Rider Recovery			\$ 11,042,073			
Customer Charge for HEA Program						
<u>Electric No. 4</u>			Annual Revenues	Number of Customers	Monthly Customer Charge	
Residential Rate RS			\$ 145,522	121,268	\$ 0.10	
<u>Gas No. 5</u>						
Residential Rate RS			\$ 105,035	87,529	\$ 0.10	
Total Customer Charge Revenues			\$ 250,556			
Total Recovery			\$ 11,292,630			

(A) (Over)/Under of Appendix B page 1 multiplied by the average three-month commercial paper rate for 2013 to include interest on over or under-recovery in accordance with the Commission's order in Case No. 95-312. Value is:  
 (B) Appendix B, page 2.  
 (C) Appendix B, page 4.

1.001500

Duke Energy Kentucky  
4580 Olympic Blvd.  
Erlanger, Kentucky 41018

KY.P.S.C. Gas No. 2  
Fifteenth Revised Sheet No. 62  
Cancels and Supersedes  
Fourteenth Revised Sheet No. 62  
Page 1 of 1

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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 \$0.055020 per hundred cubic feet.

(I)

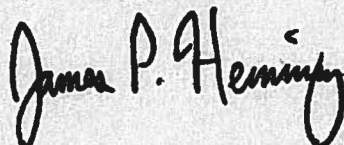
A Home Energy Assistance Program (HEA) charge of \$0.10 will be applied monthly to residential customer bills through December 2017.

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 in Case No. \_\_\_\_ dated \_\_\_\_

---

Issued: August 14, 2014  
Effective: September 14, 2014  
Issued by James P. Henning, President



Duke Energy Kentucky  
4580 Olympic Blvd.  
Erlanger, KY 41018

KY.P.S.C. Electric No. 2  
Fifteenth Revised Sheet No. 78  
Cancels and Supersedes  
Fourteenth Revised Sheet No. 78  
Page 1 of 1

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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 \$0.003094 per kilowatt-hour. (I)

A Home Energy Assistance Program (HEA) charge of \$0.10 will be applied monthly to residential customer bills through December 2017.

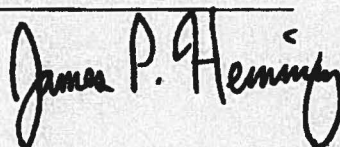
The DSMR to be applied to non-residential distribution service customer bills is \$0.001249 per kilowatt-hour. (I)

The DSMR to be applied for transmission service customer bills is \$0.000848 per kilowatt-hour.

Issued by authority of the Kentucky Public Service  
Commission in Case No. \_\_\_ dated \_\_\_.

---

Issued: August 14, 2014  
Effective: September 14, 2014  
Issued by James P. Henning, President



Final Report

**Impact Evaluation  
of Low Income Weatherization  
and Payment Plus in Kentucky**

**Prepared for  
Duke Energy**

139 East Fourth Street  
Cincinnati, OH 45201

July 31, 2013

**Submitted by**

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## Executive Summary

### Summary Overview

This document presents the results of an energy impact evaluation of Duke Energy's Weatherization Program and Payment Plus Program as they are administered in Kentucky. The evaluation was conducted by TecMarket Works and Integral Analytics, Inc. The evaluation focuses on program participants of various levels of participation, as shown in Table 1 below.

### Summary of the Evaluation

The objective of the impact evaluation is to estimate the energy savings that result from the weatherization and Payment Plus programs.

### Findings

**Table 1. Estimated Savings Model by Tier**

Independent Variable	Coefficient (% Savings/day)	Annual Saving (kWh)	t-value
Tier 1	5.1%	425	5.99
Tier 2	13.6%	1,888	1.59
Sample Size	9,487 observations (371 homes)		
R-Squared	67%		

## Description of the Weatherization Program

The Weatherization Program is designed to help low-income customers improve their homes' energy efficiency through insulation, sealing, and other improvements. The program is funded by Duke Energy in concert with People Working Cooperatively (PWC). PWC provides the weatherization services.

The program provides eligible customers with free home weatherization improvements to help lower energy bills and decrease energy usage. These energy conservation measures can also help customers improve the overall comfort, durability and value of their homes.

Services are provided to customers who meet income qualifications, live in a single-family home or apartment building with fewer than 9 units, and have a Duke Energy gas or electric account providing gas or electricity to the primary heating source for the home.

- Services provided are based on the home's specific energy usage and needs and are determined using a Tier system, as described below.

### Tier One Services

Tier One services are provided if the customer uses less than 1 therm per square foot per year and less than 7 kWh per square foot<sup>1</sup> per year based on the last year of usage of Duke Energy supplied fuels. Energy usage is weather normalized to deal with variations in annual weather. The total Program dollars allowed per home for Tier One services is \$600.00 per home. Funding from the State or other sources is not counted in this allowance number and can be completed in addition to the Duke Energy funded measures listed below. Typically Tier One homes represent approximately 1/3 of the participating homes.

Tier One Services are as follows:

- Heating System Tune-up & Cleaning
- Heating System repair up to \$600 plus cost of refrigerator testing/replacement
- Venting check & repair
- Water Heater Wrap for Duke supplied water heaters
- Pipe Wrap
- Cleaning of refrigerator coils
- Cleaning of dryer vents
- Energy Star Compact Fluorescent Light (CFL) Bulbs
- Low-flow shower heads and aerators
- Weather-stripping doors & windows
- Installation of Smoke Detectors & CO monitors if not present or provided by another program
- Limited structural corrections that affect health, safety and energy up to \$100
- Refrigerator testing/replacement

<sup>1</sup> 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).

- Energy Education

## Tier Two Services

Tier Two services are provided to customers if they use at least 1 therm and/or 7 kWh per square foot<sup>2</sup> per year based on the last year of usage and their heating fuel is supplied by Duke Energy. The total Duke Energy Program dollars allowed per home for Tier Two services is \$4,000 per home plus cost of refrigerator testing/replacement. Total dollars available without pre approval will be \$6,000 when a heating system is replaced. Typically Tier Two homes represent approximately 2/3 of the participating homes.

When only partial year consumption data is available, the placement in the Tier would be made on the projected consumption with what that home would consume during an average weather year in that region (using national weather data). A tool to estimate full-year consumption is provided by Duke Energy for these situations.

Tier Two services are as follows:

- All Tier One Services and Air Sealing Measures Plus:
- Additional cost effective measures (with SIR > 1.5) using the NEAT audit where the energy savings pay for the measure over the life of the measure as determined by a standard heat loss/economic calculation (NEAT audit) utilizing the cost of gas and electric (retail) as provided by Duke Energy. 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 > 1.5 including the safety changes.
- Heating system and air conditioning tune and clean and/or repair. Heating systems can be replaced if the repair cost is greater than \$600.

## Description of the Payment Plus Program

The Payment Plus Program and the Residential Conservation and Energy Education Program (from here forward collectively referred to as "Payment Plus") are designed to help low-income customers with significant arrearage and payment problems obtain the information and skills needed to control their consumption, reduce their utility bills, and be capable of managing their accounts in a way that results in lower arrearage levels. The program provides participants with significant credits (threshold is currently up to \$300) to their arrearage in an effort to help move them out of debt.

The program has three components—two classes and weatherization. The first class is an energy education training session designed to teach participants how to manage their energy use. There is a second class on financial management and household budgeting designed to teach participants how to manage their financial affairs so that they can better live within their income

---

<sup>2</sup> 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).

levels and pay their bills on time. The t component is the weatherization service (described above) in which their home is weatherized to make it more energy efficient. Participants were required to complete the energy training session, but were not required to attend the household budgeting training session or have their home weatherized. However, to obtain the \$500 participation credit the participants need to complete all three components of the program.

Full participants took advantage of all three components of the program and received \$500 in credits, free weatherization of their homes, and training that provides them with the skills they need to conserve energy and better manage their household budgets. Other participants enrolled in the program, attended the first training session (energy) and did not attend the second session but went on to obtain weatherization services, or attended both training sessions but did not go on to obtain weatherization services (possibly because they were already weatherized previously and therefore did not qualify). These “partial” participants received partial credits depending on which components of the program they completed.

The program is funded by Duke Energy and implemented by the Northern Kentucky Community Action Commission (NKCAC) in concert with People Working Cooperatively (PWC). NKCAC manages and administers the program, and coordinates and presents lessons at the training sessions. PWC conducts a portion of the energy education training session and promotes the weatherization services at the energy education session, and then provides the weatherization service if the participant is eligible for it.

## Weatherization TIER Evaluation Methodology

The assessment approach consisted of a weather-normalized analysis of participant billing (meter) data, comparing the pre-program consumption with post-program consumption, adjusted for naturally occurring consumption changes through the use of a comparison group. This approach is typically called the difference of differences approach. To assess program impacts, billing data between the months of March 2010 and May 2012 were obtained for all participants of the program, allowing for pre and post participation billing data to be utilized in the billing analysis.

For this analysis, data are available both across households (i.e., cross-sectional) and over time (i.e., time-series). With this type of data, known as “panel” data, it becomes possible to control, simultaneously, for differences across households as well as differences across periods in time through the use of a “fixed-effects” panel model specification. The fixed-effect refers to the model specification aspect that differences across homes that do not vary over the estimation period (such as square footage, heating system, etc.) can be explained, in large part, by customer-specific intercept terms that capture the net change in consumption due to the program, controlling for other factors that do change with time (e.g., the weather).

Because the consumption data in the panel model includes months before and after the installation of measures through the program, the period of program participation (or the participation window) may be defined specifically for each customer. This feature of the panel model allows for the pre-installation months of consumption for all participants as they enroll in the program to effectively act as a comparison group for the post-participation months. This approach is a standard high-rigor analysis approach for estimating impacts from weatherization programs and eliminates the risk of estimation error associated with improperly matched or inadequately controlled comparison groups selected from the customer population. In addition, this model specification, unlike annual pre/post-participation models such as annual change models, does not require a full year of post-participation data. Effectively, the participant population as a whole, becomes the study’s comparison group, thus eliminating the need for a non-participant group. We know the exact month of participation in the program for each participant, and are able to construct customer-specific models that measure the change in usage consumption immediately before and after the date of program participation, controlling for weather and customer characteristics.

The fixed effects model can be viewed as a type of differencing model in which all characteristics of the home, which (1) are independent of time and (2) determine the level of energy consumption, are captured within the customer-specific constant terms. In other words, differences in customer characteristics that cause variation in the level of energy consumption, such as building size and structure, are captured by constant terms representing each unique household.

Algebraically, the fixed-effect panel data model is described as follows:

$$y_{it} = \alpha_i + \beta x_{it} + \varepsilon_{it},$$

where:

- $y_{it}$  = energy consumption for home  $i$  during month  $t$
- $\alpha_i$  = constant term for site  $i$
- $\beta$  = vector of coefficients
- $x$  = vector of variables that represent factors causing changes in energy consumption for home  $i$  during month  $t$  (i.e., weather, time, and participation)
- $\varepsilon$  = error term for home  $i$  during month  $t$ .

With this specification, the only information necessary for estimation are those factors that vary month to month for each customer, and that will affect energy use, which effectively are weather conditions. Other non-measurable factors can be captured through the use of monthly indicator variables (e.g., to capture the effect of potentially seasonal energy loads).

The effect of the Weatherization program was captured by including a variable which is equal to one for all months after the household participated in the program. In this case this variable is further decomposed into 3 binary variables in corresponding months. The coefficients associated with the three variables are the savings associated with the program. In order to account for differences in billing days, the usage was normalized by days in the billing cycle and temperature was calculated based on each bill start and end date.

## Tier 1 and Tier 2 Weatherization Impact Analysis

This section investigates the impacts of Tier 1 weatherization and Tier 2 weatherization. The analysis was based on those customers who either participated in the weatherization program or customers who added weatherization via the Payment Plus program.

The billing analysis used consumption data from Weatherization and Payment Plus participants in Kentucky (a total of 371 homes; 74 in Tier 1, and 297 in Tier 2) that participated between March of 2010 and May of 2012. A panel model specification was used that analyzed the monthly billed energy use across time and participants. The model included terms to control for the effect of weather on usage as well as a complete set of monthly indicator variables to capture the effects of non-measurable factors that vary over time (such as economic conditions and season loads). Table 2 below summarizes the per-household usage of each of the twelve months prior to participation by Tier. As expected, Tier 2 participating households use significantly more than Tier 1 households in every single month.

**Table 2. Per Household Monthly kWh Usage by Tier, Mean Pre-Participation Values**

Month	Tier 1	Tier 2
Jan.	852.6	1,392.9
Feb.	694.6	1,180.7
Mar.	540.5	1,002.9
Apr.	493.2	860.4
May	538.6	985.1
Jun.	776.2	1,244.3
Jul.	949.6	1,464.2

Aug.	845.4	1,343.5
Sep.	601.9	1,134.6
Oct.	603.8	841.0
Nov.	712.4	1,063.1
Dec.	725.0	1,372.2
Total	8,333.7	13,884.7

The estimated impacts are included in Appendix A: Tier 1 and Tier 2 Weatherization Estimated Statistical Model, and a summary of the results are shown in Table 3 below.

**Table 3. Estimated Savings Model by Tier**

Independent Variable	Coefficient (% Savings/day)	Annual Savings (kWh)	t-value
Tier 1	5.1%	425	5.99
Tier 2	13.6%	1,888	1.59
Sample Size	9,487 observations (371 homes)		
R-Squared	67%		

Note that in this table, the dependent variable is the natural log of the daily energy use. In this specification, the coefficient represents the savings as a percentage of the participant's usage. To derive the kWh savings, the coefficient in the table was multiplied by the average annual usage per participating household with Tier 1 weatherization (8,333.7 kWh/year) to give the 425 kWh/year savings estimate; and Tier 2 weatherization (13,884.7 kWh/year) to give the 1,888 kWh/year saving estimate. The complete estimate model, showing the weather and time factors, is presented in Appendix A: Tier 1 and Tier 2 Weatherization Estimated Statistical Model.

## Free Ridership

Low Income programs are assigned a free ridership level of 0%. This is common practice in the industry, and discussed in the memo titled "Low Income Programs and Freeridership" dated July 11, 2011, embedded below.



Memo - Low Income  
Program Freeridership