



139 East Fourth Street, R. 25 At II  
P.O. Box 960  
Cincinnati, Ohio 45201-0960  
Tel: 513-419-1843  
Fax: 513-419-1846  
[John.Finnigan@duke-energy.com](mailto:John.Finnigan@duke-energy.com)

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PUBLIC SERVICE  
COMMISSION

John J. Finnigan, Jr.  
Associate General Counsel

**VIA OVERNIGHT MAIL**

November 14, 2007

Ms. Elizabeth O'Donnell  
Executive Director  
Kentucky Public Service Commission  
211 Sower Boulevard  
Frankfort, KY 40602

RE: In the Matter of the Annual Cost Recover Filing for Demand Side Management,  
KYPSC Case No. 2007-00369

Dear Ms. O'Donnell:

I am enclosing an original and twelve copies of the Annual Status Report of Duke Energy Kentucky, Inc.

Please date stamp and return the two extra copies of each filing in the enclosed envelope.

If you have any questions, please do not hesitate to call me.

Sincerely,

John J. Finnigan, Jr.  
Associate General Counsel

JJF/bsc

cc: Larry Cook (w/encl.)  
Richard Raff (w/encl.)  
Florence W. Tandy (w/encl.)  
Carl Melcher (w/encl.)

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NOV 15 2007

PUBLIC SERVICE  
COMMISSION

**BEFORE THE  
KENTUCKY PUBLIC SERVICE COMMISSION**

In The Matter Of:	)	
	)	
THE ANNUAL COST RECOVERY FILING	)	CASE NO. 2007-00369
FOR DEMAND SIDE MANAGEMENT BY	)	
DUKE ENERGY KENTUCKY, INC.	)	

**FILING OF THE ANNUAL STATUS REPORT, APPLICATION FOR CONTINUATION OF THE POWER MANAGER PROGRAM AND THE PERSONALIZED ENERGY REPORT PROGRAM, AND ADJUSTMENT OF THE 2007 DSM COST RECOVERY MECHANISM WITH FILING OF THE AMENDED TARIFF SHEETS FOR GAS RIDER DSM (SECOND REVISED SHEET NO. 62) AND ELECTRIC RIDER DSM (SECOND REVISED SHEET NO.78)**

Now comes Duke Energy Kentucky, Inc. (Duke Energy Kentucky) with the consensus of the Residential Collaborative and the Commercial and Industrial Collaborative, pursuant to this Commission's 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, and May 15, 2007 Order in Case No. 2006-00426 to file the annual status report and to propose an adjustment to the 2007 Demand Side Management (DSM) Cost Recovery Riders (Application). The Applicant is Duke Energy Kentucky of 1697 Monmouth St., Newport, Kentucky 41071. The Residential Collaborative members are: Larry Cook (Kentucky Attorney General's Office), Nina Creech (People Working Cooperatively), Joy Herald Rutan (League of Women Voters), Florence Tandy (Northern Kentucky Community Action Commission), Beth Hodge (Brighton Center), Carl Melcher (Northern Kentucky Legal Aid), Karen Reagor (Kentucky NEED Project), Pat Dressman (Campbell County Fiscal Court), Monica Braunwart (Boone County Fiscal Court) and John Davies (Kentucky Office of Energy Policy). Please note that the United Way is an ongoing member of the Collaborative whose representative left the agency. United Way has not

filled that position on the Collaborative during the time of this filing. The Commercial & Industrial Collaborative members are Larry Cook (Kentucky Attorney General's Office), Jock Pitts (People Working Cooperatively), Monica Braunwart (Boone County Fiscal Court), Karen Reagor (Kentucky NEED Project), John Cain (Wiseway Supply), Daniele Longo (Northern Kentucky Chamber of Commerce), Pat Dressman and Russell Guy (Campbell County Fiscal Court), Bob Flick (Flick's Foods), Kris Knochelmann (Knochelmann Heating & Air), Robert Lape (Kenton County Schools), Ed Monohan, Sr. (Monohan Development Company), Gary Sinclair (Kenton County Fiscal Court), and John Davies (Kentucky Office of Energy Policy).

With one exception, the members of both the Residential Collaborative and the Commercial & Industrial Collaborative agreed with this application. The representative from the Attorney General's office has indicated that an opinion on the application would be provided at a later date.

In addition to filing the annual status report, 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 also be providing results of recent impact evaluation studies of several existing programs. This information is used to reconcile past estimates of lost revenues and shared savings. In addition, this section makes application for continuation of the Power Manager program and transition of the Personalized Energy Report (PER) program into a full program with lost revenues and shared savings applied.

## **I. INTRODUCTION**

### **A. Background**

On 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. 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 the year 2007. Finally, the Commission's April 4, 2006 Order in Case No. 2005-00402 authorized the PER program as a pilot program.

This filing specifically addresses the requirements in prior Commission Order's: 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, and May 15, 2007 Order in Case No. 2006-00426. In addition, this filing 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, 2007. In the status and reconciliation portion of this report, expenses are reported for the period July 1, 2006 through June 30, 2007.

The Commission's September 18, 2007 Order in Case 2007-00369 established November 15 as the filing date for future DSM applications, and also provided that, if the

Commission is unable to make its determination until after December 31, 2007, the Company can continue implementing the current set of programs and to continue recovering costs for its existing DSM programs under its existing tariffs, until the effective date of new tariffs to be implemented pursuant to the Commission's order in this proceeding. However, the Order did not address whether Duke Energy Kentucky could continue future DSM rates in effect beyond December 31 of each year. Duke Energy Kentucky requests an Order in this proceeding that, as long as Duke Energy Kentucky continues to file annual DSM applications by November 15 of each year, the rates approved in such applications shall remain in effect until the effective date of new DSM rates approved by the Commission, or until otherwise ordered by the Commission.

**B. Definitions**

For the purposes of this Application, the following terms will have the meanings established in the Principles of Agreement, Demand Side Management (Exhibit 1 to the Application in Case No. 95-312, dated July 15, 1995):

- 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) **“Collaborative”** shall mean the Duke Energy Kentucky DSM Collaborative, which was established by the Signatories and other parties separately from this process.
- 3) **“Program Costs”** shall mean the costs incurred for planning, developing, implementing, monitoring and evaluating the DSM programs described in

Section XI of the Principles of Agreement, Demand Side Management (pp. 11-19) and the DSM programs that have been approved by the Collaborative.

- 4) **“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.
- 5) **“Lost Revenues”** shall have the meaning in Section IV of the Principles of Agreement, Demand Side Management.
- 6) **“Shareholder Incentive”** shall have the meaning in Section IV of the Principles of Agreement, Demand Side Management.
- 7) **“DSM Cost Recovery Mechanism”** shall have the meaning in Section IV of the Principles of Agreement, Demand Side Management.
- 8) **“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 CURRENT DSM PROGRAMS**

Duke Energy Kentucky currently offers the following programs, the costs of which were recoverable through the DSM Cost Recovery Rider mechanism approved by the Commission in Case No. 2004-00389.

- 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 (*formerly* Home Energy Assistance Plus)

- Program 6: Power Manager
- Program 7: Energy Star Products
- Program 8: Energy Efficiency Website
- Program 9: Personal Energy Report (PER)
- Program 10: C&I High Efficiency Incentive (for Businesses and Schools)
- Program 11: PowerShare

Under the current DSM Agreement and prior Commission Orders, all of these programs except Power Manager and PER, will end December 2009 unless an application is made to continue them. PER was implemented as a pilot program.

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.

**Table 1. Summary of Load Impacts and Spending July 2006 Through June 2007**

<u>Residential Programs</u>	<u>Incremental Participation</u>	<u>Load Impacts Net of Free Riders</u>	
		<u>kWh</u>	<u>kW</u>
Home Energy House Call	697	440,992	132
Energy Efficient Website	203	45,691	14
Energy Star Products	49,560	5,744,995	2,248
Low Income Program	22	13,706	4
Refrigerator Replacement	44	47,916	14
Personalized Energy Report	9,059	1,164,263	370
Power Manager	3,164	-	3,291
<b>Total Residential</b>	<b>62,749</b>	<b>7,457,563</b>	<b>6,072</b>
<u>Non-Residential Programs</u>	<u>Incremental Participation</u>	<u>Load Impacts Net of Free Riders</u>	
		<u>kWh</u>	<u>kW</u>
C&I Lighting	12,742	1,928,731	561
C&I HVAC	20	12,215	15
C&I Motors	4	3,318	1
Power Share	2	-	1,722
<b>Total Non-Residential</b>	<b>12,768</b>	<b>1,944,264</b>	<b>2,299</b>
<b>Total</b>	<b>75,517</b>	<b>9,401,827</b>	<b>8,371</b>

The load impacts provided in the table exceed those that were projected at the time the Company originally applied to expand its energy efficiency efforts in Case No. 2004-00389. At the time of that case, the residential load savings projected were 4,225,4000 kWh and 3,600 kW. The projected non-residential load savings were 1,068,891 kWh and 190 kW. This shows that actual savings are running well ahead of those projected in 2004. The total cost per kWh of the programs (including demand response) is estimated to be approximately \$.04.2/kWh levelized for the life of the measures.

In addition, this section makes application for continuation of the Power Manager program and transition of the PER program into a full program with lost revenues and shared savings applied.

Results of the latest cost-effectiveness tests 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 customers that meet the income qualification level (i.e., income below 130% of the federal poverty level). This program uses the LIHEAP intake process as well as other community outreach 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 their costs.



The Company estimates that at least 6,000 customers (number of single family owner occupied households with income below \$25,000) within Duke Energy Kentucky's service area may qualify for services under this program. The program has provided weatherization services to 251 homes in 2000; 283 in 2001; 203 in 2002; 252 in 2003; 252 in 2004; 130 in 2005, 232 in 2006 and 106 in the first six months of 2007.

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 does this by placing each home into one of two "Tiers." This allows the implementing agencies to spend the limited budgets where there is the most cost effective and 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.

The tier structure is defined as follows:

	Therm / square foot	kWh use/ square foot	Investment Allowed
Tier 1	0 < 1 therm / ft2	0 < 7 kWh / ft2	Up to \$600
Tier 2	1 + therms / ft2	7 + kWh / ft2	All SIR ≥ 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 and 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 (through Gas WX program)
- Venting check & repair
- Water Heater Wrap
- Pipe Wrap
- Waterbed mattress covers
- 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 \$100
- Energy Education

#### Tier Two Services

Duke Energy Kentucky will provide Tier Two services to a customer, if they use at least 1 therm and/or 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 the cost of 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 very large amount of electricity within the home. Based on an evaluation of the refrigerators replaced in 2006, customers can save an average of 1033 kWh per year. To determine replacement, the program weatherization provider performs a two-hour meter test of the existing refrigerator unit.

If it is a high-energy consumer as determined by this test, the unit is replaced. The program replaces 43% of the units tested. Replacing with a new Energy Star qualified refrigerator, which uses approximately 400 kWh, results in an overall savings to the average customer of 1,280 kWh per year. Refrigerators tested and replaced:

- 2003 = 116 tested and 47 replaced
- 2004 = 163 tested and 73 replaced
- 2005 = 115 tested and 39 replaced
- 2006 = 116 tested and 52 replaced
- 2007 = in first 6 months 60 tested and 32 replaced

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.

Evaluation Findings: With respect to the weatherization and auditing portions of this program, there were no additional evaluations in this reporting year as these impacts and findings were reported in the last filing. However, the refrigerator program impacts have been updated this year, as indicated in Appendix B, with an overall average energy savings of 1,033 kWh saved per year. This updated energy savings finding is used in the current cost effectiveness results reported within this filing.

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

The Home Energy House Call (HEHC) program, implemented by Duke Energy Kentucky subcontractor Enertouch Inc. (d/b/a GoodCents Solutions), provides a comprehensive walk through in-home analysis by a qualified 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. A comprehensive report specific to the customer's home and energy usage is then completed and mailed back to the customer within ten business days. 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, two aerators, outlet gaskets, two compact fluorescent bulbs, and a motion sensor night-light. The auditors install the measures so customers can begin realizing an immediate savings on their electric bill or the customer may choose to install the measures themselves.

For the period of July 1, 2006 through June 30, 2007, a total of 697 audits were completed in Kentucky. This surpasses the annual goal of 500 by 197 audits. From January 2007 through June 2007, Duke Energy distributed 23,161 direct mail brochures and received 698 responses (3%). Nearly one-third of the responses are through our web enrollment process. Of those who responded, 417 received audits through June of 2007. Duke Energy has not had to mail any brochures since April 2007. If budget allows, we will conduct one more mailing in Kentucky in November.

Customer satisfaction ratings for the program to-date remain high - 4.8 on a five-point scale (5 being most satisfied). This score is the result of survey cards completed and returned to Duke Energy Kentucky from customers who have received an audit. The survey asks them to rate five components of the program with comments. The survey card rate of return is approximately 40%.

Since program year 2000, over 4198 customers have participated of which there were 485 in 2000; 500 in 2001; 513 in 2002; 507 in 2003; 569 in 2004; 506 in 2005; 701 in 2006 and 417 through June of 2007.

Evaluation Findings: Given that this program was most recently evaluated during the last filing period, no new evaluation studies were conducted for this program over the past 12 months. The most recent evaluation study results, are therefore, used for this filing. The program is scheduled to have an updated impact evaluation conducted during the next fiscal year period.

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

The Residential Comprehensive Energy Education program is operated under subcontract by Kentucky National Energy Education Development (NEED). NEED was launched in 1980 to promote student understanding of the scientific, economic, and environmental impacts of energy. The program is currently available in 46 states, the U.S. Virgin Islands, and Guam.

The program has provided unbiased educational information on all energy sources, with an emphasis on the efficient use of energy. Energy education materials, emphasizing cooperative learning, are provided to teachers. Leadership Training Workshops are structured to educate teachers and students to return to their schools, communities, and families to conduct similar training and to implement behavioral changes that reduce energy consumption. Educational materials and Leadership Training workshops are designed to address students of all aptitudes and have been provided for students and teachers in grades K through 12.

The Kentucky NEED program follows national guidelines for materials used in teaching, but also offers additional services such as: hosting teacher/student workshops, sponsoring teacher attendance at summer training conferences, sponsoring attendance at a National Youth Awards Conference for award-winning teachers and students, and providing curricula, free of charge, to teachers.

Overall, the program has reached teachers and students in 57 schools in the six counties served by Duke Energy Kentucky. There are currently over 200 teachers enrolled in the program. At a minimum, these teachers have impacted over 5,000 students. In addition, many of the teachers have multiple classes, so the number is potentially higher. Students who attend workshops are encouraged to mentor other students in their schools – further spreading the message of energy conservation. Teams of middle school and high school students serve as facilitators at workshops. Through this approach, all grade levels are either directly or indirectly presented the energy efficiency and conservation message. Several of the student teams have made presentations to community groups, sharing their knowledge of energy, promoting energy conservation and demonstrating that the actions of each person impact energy efficiency. It is intended that these students will also share this information with their families and reduce consumption in their homes.

Due to efforts of the Kentucky NEED program, the Governor's Office of Energy Policy was awarded a Special Projects grant from the U.S. Department of Energy. This Rebuild Kentucky project, which began in January 2002, established a new partnership to implement an Energy Smart Schools program in six Northern Kentucky counties. Kentucky NEED is a cost share partner in this project.

The program addresses: (1) building energy efficiency improvements through retrofits financed by use of energy saving performance contracts (ESPC) and improved new construction; (2) school transportation practices; (3) educational programs; (4) procurement practices; and (5) linkages between school facilities and activities within the surrounding community. Successful elements of the Energy Smart Schools program will be marketed to other schools statewide. (This program is now called Kentucky High Performance Sustainable Schools Program since Rebuild America is no longer a DOE program).

To improve and better document the energy savings associated with the program, a change was made in 2004 adding a new survey instrument for use in the classroom and an energy savings “kit” as a teaching tool. New curriculum was developed around this kit and survey to allow teachers to have actual in-home measures assessed and implemented. The result of this change has demonstrated that measures are being installed in the home. These kits include CFL’s, low-flow shower heads, faucet aerators, water temperature gauge, outlet insulation pads and flow meter bag.

The kits were tested in the spring of 2003 and began full application in the new school year beginning September 2003 when the science curriculum deals with these issues. The number of kits distributed from 2003-2005 totaled 985. During the 2006-07 school year, 235 kits were distributed to students. Other activities in the 2006-07 school year included: six teachers from six schools in the service territory attended a five day training conference for the NEED summer teacher training workshop, 182 teachers received NEED materials; and two teacher/student training workshops with 22 teachers and 110 students. A workshop was held in September, hosted by NEED at the request of



Northern Kentucky University, to provide training and materials for education majors. NEED promotes efficiency and conservation practices using lessons from the “Building Buddies” with kits, Monitoring & Mentoring with kit, Learning & ‘Conserving with kit, Energy House, Today in Energy, and the Energy Conservation Contract. Four schools also received assistance in designing and implementing an energy efficiency program for their schools. Kentucky NEED works with the Kentucky Office of Renewable Energy and Energy Efficiency to develop and facilitate the Kentucky Energy Smart Schools programs. NEED hosted the fifth annual High Performance Schools Workshop. Participants in the 2006-07 Youth Awards Program included: M. Yealey Elementary-Florence, KY; Glenn O. Swing Elementary-Covington, KY; Phillip A. Sharp Middle School-Butler, KY; and Twenhofel Middle School - Independence, KY. Students from Glenn O. Swing attended the national conference in Washington, D.C. summer of 2007.

During the summer of '07, Kentucky NEED staff worked with Kenton County Schools to develop their Energy WISE Manual. Due to the success of the Twenhofel NEED Team, Kenton County implemented a voluntary program, encouraging all schools in the district to form student energy teams. Training for the teams was held in September. All 18 schools in the district will have energy teams this year. These teams will promote energy efficiency and conservation measures in the schools and will monitor energy consumption.

In partnership with the Governor’s Office of Energy Policy, Kentucky NEED is promoting student participation in the Change a Light, Change the World campaign. Using NEED’s Change a Light (CAL) Teacher’s Guide, students are encouraged to facilitate CAL activities in their schools and communities. KOEP and Kentucky NEED

are offering \$350 mini-grants to student groups facilitating Change a Light. Kentucky students ranked 23<sup>rd</sup> in overall pledges during the 2006-07 campaign, in which hundreds of organizations participated.

Kentucky NEED is actively promoting the energy efficiency incentive program for schools, coordinating a presentation at the Northern KY Superintendents monthly meeting.

Evaluation Findings: No update to the most recent NEED impact evaluation was conducted during this filing period, therefore the results from the 2005 NEED impact evaluation is used for this filing and the cost effectiveness results. However, even though the 2005 impact estimates are used for this filing year, the cost effectiveness results have decreased, due to increasing costs for the program related to fewer kits being distributed and installed within customer homes. As such, future efforts should focus more attention on insuring that teachers and administrators follow through on the energy training and program material recommendations, such that program completion through kit distribution, installation and customer follow-up are possible. This program is scheduled for an update of impact evaluation findings and reporting during the next fiscal year cycle.

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

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, such as the refrigerator replacement portion of the Residential Conservation and Energy Education program. Evaluation funds are used for cost effectiveness analysis and evaluation, impact evaluation and process evaluation of program activities, such as those included as appendices to this filing. Funds going forward will be used to again monitor, evaluate and analyze these programs to improve cost effectiveness and program design. While more than half of the total funds have been spent for the twelve-month period ending June 30, several of the implemented impact evaluation studies were not completed until September and October, 2007, and have not yet been paid in full. 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, such 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 years. Duke Energy Kentucky believes that it is unnecessary to spend significant 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 years.

**Program 5: Payment Plus (*formerly Home Energy Assistance Plus*)**

From January 2002 through June 2006, the Residential Collaborative and Duke Energy Kentucky tested an innovative home energy assistance program called Payment Plus. The program was designed to impact participants' behavior (e.g., encourage meeting

utility bill payments as well as eliminate arrearages) and to generate energy conservation impacts. That program was extended with 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 – participants in this program 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 energy efficiency counseling, \$150 for participating in the budgeting counseling, and \$150 to participate 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 125 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 starting in October. Customers are tracked and the program evaluated after two years to see if customer energy

consumption dropped and changes in bill paying habits occurred.

Over the last five years, participants have been monitored and compared to a control group of customers with similar arrearages and incomes. This evaluation has looked at not only energy savings, but arrearage and payment practices. It is the only long-term impact and process evaluation in the country looking at both energy savings and arrearages from a single program. As a result, there is long-term evidence that the program is effective at both saving natural gas and having a positive impact on arrearages. The evaluation firm recommended that the program continue. 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. By expanding the program Duke Energy Kentucky is adding an additional 80 participants beginning Fall of 2007. Follow up educational reinforcement will take place for all participants beginning Fall 2007.

The cost-effectiveness results provided in the appendices indicate that this program is cost effective as designed. Nationally, low-income programs do not pass cost effectiveness tests so the Collaborative is excited about the level of these results.

Evaluation Findings: Last evaluation filed during the 2006 filing, and these findings are used for energy savings for the current year cost effectiveness results, given current year program implementation costs.

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

The purpose of the Power Manager program is to reduce demand by controlling residential air conditioning usage during peak demand conditions in the summer months.

The program is offered to residential customers with central air conditioning. Duke Energy Kentucky attaches a load control device to the customer's compressor to enable Duke Energy Kentucky to cycle the customer's air conditioner off and on when the load on Duke Energy Kentucky's system reaches peak levels. Customers receive financial incentives for participating in this program based upon the cycling option selected. If a customer selects Option A, their air conditioner is cycled to achieve a 1 kW reduction in load. If a customer selects Option B, the air conditioner is cycled to achieve a 1.5 kW load reduction. Incentives are provided at the time of installation: \$25 for Option A and \$35 for Option B. In addition, when a cycling event occurs, a Variable Daily Event Incentive based upon marginal costs is also provided.

The cycling of the customer's air-conditioning system has shown that there is minimal impact on the operation of the air-conditioning system or on the customer's comfort level. The load control device has 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. Research from other programs, including previous Duke Energy Ohio and Duke Energy Kentucky programs, has shown that the indoor temperature should rise approximately one to two degrees for control Option A and approximately two to three degrees for control Option B. Additionally, the indoor fan will continue to run and circulate air during the cycling event.

The initial design of Power Manager has been structured on the same basic principles as Duke Energy Kentucky's innovative PowerShare<sup>®</sup> program. Power

Manager combines direct load control with a flavor of “real time pricing” through the Variable Daily Event Incentive structure as described above. By implementing the Variable Daily Event Incentive structure, Duke Energy Kentucky can educate customers on the real time cost of electricity. Duke Energy Kentucky continues to explore opportunities to cross-market the Power Manager program with Duke Energy Kentucky’s other DSM programs thus tying both conservation and peak load management together as one package.

In 2006, Duke Energy Kentucky mailed 270,015 Power Manager marketing pieces and had 2,587 customers enrolled in the program with 1,958 switch installations completed from the enrollments. The cumulative installations as of the end of 2006 total 6,888 switches. The installation rate during 2007 was intentionally less than projected originally, due to a desire to ensure that existing switches, operations and systems were operating as efficiently and effectively as possible. Previous quality control assessments, measurements and verifications suggested that paging, installation, operations and signaling were not being effectively received within some areas. As such, significant effort during 2007 resulted in the successful increase in load reductions realized per household to an average of 1.04 kW per home, as reported within the Impact Evaluation Study provided in Appendix B. This quality management effort has provided increased assurance that the program operates as intended, and at a load reduction level that is clearly cost effective and worthy of further pursuit and customer promotion. Termed the “Duke A Quality Control” (QC) program, the effort was implemented in January of 2007 to visit 3,400 switches in the field. The program consisted of a general inspection of the health of the air conditioner, the switch installation, and retrieval of the event

performance data stored inside the switch. The switch interrogation equipment was enhanced during the first quarter of 2007, which enables Duke Energy Kentucky to receive information stored in the switch in an electronic format that enables faster data review versus transfer of data from a hard copy report onto a spreadsheet. As of June 2007, Duke Energy Kentucky completed 1,234 quality control inspections of the 3400 switches planned for review. Since resources were focused on the Quality Control efforts, Duke Energy Kentucky completed just 704 switch installations as of the end of June 2007, with 395 customer enrollments in 2007. Some of the 2006 customer enrollments were installed in 2007. It is expected that 1,500 or less of the projected 2,500 switch installations for 2007 will be completed due to the resources needed to complete the quality control program. The cost-effectiveness modeling results for Power Manager, as a result reflect the results of this successful effort.

Evaluation Findings: The 2007 Duke Energy Kentucky Power Manager Impact Evaluation study provided in Appendix C reports that the program successfully achieves an average load reduction per home of 1.04 kW, with favorable cost-effectiveness results, given the program costs. To conduct the study as cheaply and efficiently as possible, existing Duke Energy Kentucky meters, staff and logger equipment were used to save costs. To insure objectivity, Duke Energy Kentucky contracted with Integral Analytics (Dr. Michael Ozog) to review the study design, processes, results and statistics to insure that the study findings are reasonable, accurate and can be projected for integrated resource planning. This third party recommendation, review and comments can be found in the appendices.



Duke Energy Kentucky will continue to monitor and evaluate the load reductions attributable for the program, given its projected significance to integrated resource planning.

Given the findings of the impact evaluation study, Duke Energy Kentucky requests approval to continue the Power Manager program for five additional years, through the year 2012 to provide longer-term stability for operation of the program..

**Program 7: Energy Star Products**

As approved in Order 2004-00389, the Energy Star Products program provides market incentives and market support through retailers to build market share and usage of Energy Star products. Special incentives to buyers and in-store support stimulate demand for the products and make it easier for store participation. The program targets Residential customers' purchase of specified technologies through retail stores and special sales events. The first year of the program focused on compact fluorescent lamps (bulbs) (CFL) and torchiere lamps. Technologies may change over the future years of program operation based on new technologies and market responses.

There are several market barriers addressed through the program. The first is price. Purchase rewards are provided for customers to lower first cost of the item and stimulate interest. The second barrier is retailer participation. Through retail education, in-field sales support (signs, ads, *etc.*), and stimulated market demand, retailers stock more product, provide special promotions and plan sales strategies around these Energy Star products. Additional support is provided through manufacturer relationships that often can reduce prices through special large-scale purchases. Coordination occurs with the national Energy

Star initiatives such as “Change a Light, Change the World” promotion.

To stimulate the market and get customers to buy and install the efficient lighting, the program provides incentives or “customer rewards” through special in-store “Instant Reward” events that occur in stores at the time of purchase or at special promotional events in the community. Technology incentives start at \$2 per bulb and \$20 per torchiere. The program also provides training to sales staff of the retailers on the sales aids provided.

Duke Energy Kentucky has contracted with the Wisconsin Energy Conservation Corporation (WECC) to provide this service. Recognized as the national leader in this program and located in the region, Duke Energy Kentucky is taking advantage of WECC’s current activity to control costs and leverage other activity.

To reduce administrative costs and maintain cost-effectiveness of the program a revised approach to the market was implemented. Instead of year-round activities for the program, special campaigns are held at different times of the year and at different locations to promote these Energy Star Products. Two sales events took place in the 2005-06 filing period. The first event took place at Covington’s City Hall with the support of Covington’s Mayor Callery. Eight Do-It-Best retail stores participated in the sales promotion that lasted through February of 2006 and resulted in the sale of 24,616 CFL’s. A second event took place during April 2006 as part of Duke Energy Kentucky’s promotion of Earth Day. This sales promotion targeted Alexandria and Ludlow. Four True Value Hardware retailers in these areas participated in this sales promotion. The final results of this event have not been determined but as of June 2006, 2,269 CFL’s were purchased.

During this filing period, a total of five promotional events took place. Three events in the fall were planned in coordination with the October national “Change the Light, Change the World” campaign. They were held in Covington hosted by Mayor Callery’s office, Florence hosted by Mayor Diane Whalen’s office, and Newport hosted by Mayor Thomas Guidugli’s office. Thirteen local retailers participated in the program. In the spring in coordination with Earth Day, two events took place. One was held in Alexandria hosted by Mayor Dan McGinley’s office and the other in Ludlow hosted by Mayor Ed Schroeder’s office. Four local retailers supported the sales events in Alexandria and Ludlow. Sales in this filing period totaled 48,823 CFL’s and 737 torchiere’s, exceeding the goals by 8,823 CFL’s and 237 torchieres. With such a successful response, marketing costs were reduced which enabled these additional bulb incentives to be paid within the existing budget.

Evaluation Findings: The Impact Evaluation for this program is provided in Appendix D and reports that the energy savings for this program has been successful. Slightly more customer reported hours of use were found, indicating that more energy savings will be realized for this program than originally expected. Continued and expanded promotions for this type of program are likely to deliver additional savings. Some concern arose relative to the maximum number of coupons or bulbs that should be permitted per home, as Duke Energy Kentucky should guard against the possible customer behavior of “stockpiling” bulbs (i.e., more than 12) or inventorying bulbs for future use. The intent of the program is to promote and initiate use among large segments of customers and not to subsidize customers that are already using these types of energy savings devices within their homes.

**Program 8: Energy Efficiency Website, On-line Energy Assessment and Free Energy Efficiency Starter kit**

As approved in Order 2004-00389, Duke Energy Kentucky's residential website offers opportunities for customers to assess their energy usage and obtain recommendations for more efficient use of energy in their homes. This Kentucky program fits suitably into our new multi-state program design now referred to as our Residential Energy Assessment Program.

As an expansion to our previous energy efficiency website model, new website pages, new content and new on-line tools have been added. These on-line services help accomplish several things by providing energy efficiency information, tips, and bill analysis. However, Duke Energy Kentucky also intends to use these tools to help identify those customers who could benefit most by investing in new energy efficiency measures or practices. Those customers can then be targeted for participation in other Duke Energy Kentucky programs.

In November, 2006 our Quick-e-Audit tool was upgraded to the Home Energy Calculator provided by Apogee. In this new, easy to use energy analysis tool a customer provides information about their home, number of occupants, and other energy related home and family characteristics. This tool allows an unlimited number of potentially energy saving scenarios to be run and charts and tables compare the scenarios to show energy savings.

As an incentive to encourage customers to use the website, a free Energy Efficiency Starter Kit is offered. The kit is mailed directly to the customer's service address and provides the customer with the following measures:

- Showerhead, 1.5 GPM .
- Kitchen Swivel Aerator, 1.5 GPM
- Bathroom Aerator, 1.0 GPM
- 15 Watt CFL @
- 20 Watt CFL @
- Shrink Fit Window Kit
- Closed Cell Foam Weatherstrip, 17' Roll
- Switch and outlet draft stopper gaskets

The free kit offer was added to the Duke Energy Kentucky website in June, 2006. Through June 2007, 203 kits have been mailed. An identical program was initiated July 16, 2007 in the Duke Energy Ohio service area and this program announcement has since positively affected the Kentucky participation. We expect an increase in participation in the Kentucky website promotion as we increase our marketing in the greater Cincinnati area.

Evaluation Findings: The Website Audit Impact Evaluation is provided in Appendix D and indicates that the program savings, given the costs, are cost effective and successful. Future efforts for the program should focus on increasing the number of customers that use the website and take advantage of the program.

### **Program 9: Personal Energy Report (PER)**

The PER program provides Duke Energy Kentucky customers with a customized energy report aimed at helping them better manage their energy costs. With rising energy costs in all aspects of daily life, the customer is searching for information they can use and ideas they can implement which will impact their monthly energy bill. The PER program also includes the “*Energy Efficiency Starter Kit*” containing nine easily installed measures which demonstrate how easy it is to move towards improved home energy efficiency. For purposes of this pilot program, Duke Energy Kentucky has agreed to test the efficacy of the kit by sending it to 25% of the survey respondents. The program targets single family residential customers in the Duke Energy Kentucky market that have not received measures through the Home Energy House Call energy efficiency audit or Residential Conservation & Energy Education programs within the last three years.

The program gives information on the entire home from an energy usage standpoint providing 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. This program provides value because customers lack education on how they individually consume energy in their home and the steps which can be taken to lower their energy bills. This program is meant to educate the customer and put at their disposal, information, customized tips and simple to install measures which can all lower their energy costs.

To get this information, a customer completes an energy survey which generates the personalized energy report. Both are excellent educational tools. The survey stimulates the customer to think about how they use energy and then the PER provides

them with tools and information to lower their energy costs. Additionally, the PER provides instructions on how to install the energy measures demonstrating how easy it is to improve their efficiency.

To gain customer participation, the PER program commences with a letter to the customer, offering the Personalized Energy Report if they would return a short, 14 question 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 energy report. The report contains the following information:

- Month-to Month Comparisons of electric and/or gas usage including the amount of the bill
- Predictions of customer's usage based on 95<sup>th</sup> percentile weather conditions (extremely hot summer/extremely cold winter) and 5<sup>th</sup> percentile weather conditions (extremely mild summer/extremely mild winter). Also includes bill amounts based on 2006 tariffs.
- Trend chart showing usage of electric and/or gas by kWh/cf by month and amount of monthly bill
- Bill comparison of Duke Energy Kentucky vs. the average national electric and/or gas rate
- A disaggregation of how the customer uses electricity and/or gas
- Description of Budget Bill
- Customized energy tips

Customized tips are based upon the customer's specific answers to questions in the survey. As an example:

- If the age of the home is over 30 years, plastic window kits would be a recommended measure
- If over 50% of the ducts are in the attic, adding duct insulation would also be a measure.

As part of quality control and evaluation, Duke Energy Kentucky completes a follow-up survey with a sub-segment of the customers who received the offer and those who also responded to determine what drove their responses. An additional sub-segment of customers who received the "*Energy Efficiency Starter Kit*" also receive the survey and include questions regarding installation of the measures found in the kit.

For the 25% of customers who received The "*Energy Efficiency Starter Kit*", the kit contains the following items:

- 2 each 1.5 GPM showerheads
- 1 each Kitchen Swivel Aerator 2.2 GPM
- 1 each Bathroom Aerator 1.0 GPM
- 1 each Bath Aerator 1.5GPM
- 1 each Small Roll Teflon Tape
- 1 each 15 Watt CFL Mini Spiral
- 1 each 20 Watt CFL Mini Spiral
- 2 each 17' Roll Door Weatherstrip
- 1 each Combination Pack Switch/Outlet Gasket Insulators



- Installation instructions for all measures

Duke Energy Kentucky is using a similar kit in the Home Energy House Call and NEED programs with significant success.

For the pilot, mailings went out in three (3) waves:

Wave 1 - May 22, 2006 to 6250 customers; 1417 responses = 22.7% (with kits)

Wave 2 – July 5, 2006 to 5489 customers; 1393 responded = 25.4% (with kits)

Wave 3 – August 18, 2006 to 35,336 customer; 6,249 responded = 17.7% (w/o kits)

Total mailed = 47,075; Response = 9059; Kits shipped = 2810; Overall response rate = 19%

Findings of the research from this pilot are described below. For the pilot, the budget totaled was \$109,246 however total expenditures were \$67,749. The primary reason for the difference of \$41,497 was that the number of customers fitting the criteria within the target was only 47,000 versus the 72,000 originally expected.

Given the customer response and positive evaluation findings, Duke Energy Kentucky and the Collaborative requests the inclusion of this program as an ongoing program, which would qualify for collection of lost revenues and shared savings.

Evaluation Findings: Duke Energy Kentucky conducted a process and impact evaluation for the program as shown in Appendix E as well as a billing analysis of the pre and post usage by customers as provided in Appendix D. The program is cost-effective, given these findings. The kit measures, when sent, were estimated to achieve 212 kWh of savings from engineering estimates, and the pre and post usage analysis confirmed this

estimate with 204 kWh of savings observed. In addition, the audit recommendations spark additional savings recommendations that the customers can take to further achieve energy savings. Follow up surveys of intended customer actions revealed approximately 658 kWh of additional intended savings. However, given that these savings are intended and not actual, Duke Energy Kentucky will project that only 20% of these intentions are likely to be realized within a year. As such, the 2008 impact evaluation will target post participation on-site measurements and verifications of these intentions, and true up whatever additional or decremental savings occurred, relative to this 20% realization assumption.

#### **Program 10: C&I High Efficiency Incentive (Including Schools Initiative)**

The Commission's Order in Case No. 2004-00389 approved a new program for Duke Energy Kentucky to provide incentives to small commercial and industrial customers to install high efficiency equipment in applications involving new construction, retrofit, and replacement of failed equipment. In the original filing this program was to be jointly implemented with the Duke Energy Indiana territory to reduce administrative costs and leverage promotion. This joint program included expanded technologies beyond what was provided in Indiana. That expanded program in Indian has not yet been approved. However, a new C&I expanded program is approved in the Duke Energy Ohio's territory for implementation in that state. Given that approval, the program can now economically expand technologies in Kentucky to those initially proposed in the Kentucky filing and include the following:

##### **High-Efficiency Incentive Lighting**

- T-8 with Electric Ballasts replacing T-12

- LED Exit Signs New/Electronic
- CFL Fixture
- CFL Screw in
- T-5 with Elec. Ballast replacing T-12
- T-5 High Output with Elec. Ballast replacing T-12
- T-5 High Output High Bay
- Tubular Skylight
- Hi Bay Fluorescent
- 320 Metal Halide Pulse Start
- LED Traffic Signals
- Controls/Occupancy Sensors

#### **High Efficiency Incentive HVAC**

- Packaged Terminal AC
- Unitary AC & Heat Pump
- Rooftop HP & AC
- Ground Source HP – Closed Loop
- Air Cooled Chillers
- Water Cooled Chillers
- Window AC
- HP Water Heater
- Thermostats/Controls

#### **High Efficiency Incentive Pumps, Motors & Drives**

- NEMA Premium Motors 1 to 250 HP with greater than 1500 hours per year
- High Efficiency Pumps 1-20 HP
- Variable Frequency Drives 1-50 HP

#### **Refrigeration**

- Energy Star Refrigerators & Freezers
- Energy efficiency Ice Machines
- Head Pressure Controls
- Night Covers for displays
- Efficient Refrigeration Condensers
- Anti-sweat Heater Controls
- Vending Machine Controls

#### **Other Misc. Technologies**

- Injection Molder Barrel Wraps
- Engineered Air Compressor Nozzles
- Pellet Dryer Duct Insulation
- Energy Star Clothes Washers for Commercial Applications

Timing of the expansion will be dependent on the budget availability and market response to the existing technologies within the program.

Incentives are provided through the market providers (contractors & retail stores) based on Duke Energy Kentucky's cost-effectiveness modeling but with a high-end limit of 50% of measure cost. Using the Duke Energy Kentucky cost-effectiveness model assures cost-effectiveness over the life of the measure. Primary delivery of the program is through the existing market channels, equipment providers and contractors. Duke Energy Kentucky is using its current DSM team to manage and support the program. Additional outside technical assistance is being provided by Good Cents Solutions to analyze technical applications and provide customer/market provider assistance as necessary. Duke Energy Kentucky also will provide education and training to its market providers to understand the program and the appropriate applications for the technologies. Full program operations began in the last quarter of 2005. Results to date were beyond expectation. In the first nine months of the program, 36 applications were processed totaling \$313,350 in incentives. Duke Energy Kentucky attributes this to high installation rates of T-8, T-5 High Output, and High Bay Lighting technologies as well as to a pent-up demand in the marketplace. To respond to the market, the following adjustments were made to the program in order to serve more customers and remain cost effective:

- Incentives for T-8, T-5 and High Bay fixtures are no longer eligible in a "new construction" application, only retrofit applications. The new construction market is utilizing these technologies as a normal practice so incentives are now not needed.

- The incentive levels for T-8 High Bay and T-5 High Output High Bay fixtures were adjusted to align with price changes in the market.
- A cap of \$50,000 per facility per calendar year was implemented in an effort to serve more customers.
- A reservation system was instituted during the proposal stage, to ensure that customers will receive their incentives once the project is complete.

Even given these changes, the program still ran out of funds in April of 2007. There were seven applications waiting to get paid in the amount totaling \$81,248 and Duke Energy Kentucky received four reservation applications totaling \$83,279 for projects scheduled to be completed in July – Sept.

In the fall of 2006, Duke Energy Kentucky filed with the Commission a request for a 100% increase in funding along with an additional \$451,885 for a Kentucky Schools program to respond to market demand and customer opportunities – providing schools funding for facility assessments, custom and prescriptive measures rebates and energy efficiency education from the NEED organization. On May 15, 2007, the Commission approved Duke Energy’s application to expand the program.

During this filing period, 12,742 light fixtures have been installed of which 30% were T8 High Bay 6 lamp and T5 High Output High Bay 4 lamp fixtures. Twenty HVAC units were installed, 4 motors and no pumps. In the first quarter of 2008, Duke Energy Kentucky will review the program’s performance and adjust accordingly. Depending on the current market response and its impact on the current revised budget, Duke Energy Kentucky may incorporate the new measures by the end of the first quarter

2008. To-date, Kenton County Schools has been the only school in the Duke Energy Kentucky service territory to take advantage of the Schools rebate, but there have been several inquiries. Given that the Commission’s Order was issued May 15<sup>th</sup> and the filing period ended June 30<sup>th</sup>, it was unlikely to see significant impact for this filing period.

Letters to all eligible customers went out in April 2007 to promote the program. This mailing will go out again in the first quarter of 2008 so customers are aware that it is an ongoing program. Feedback from vendors has been very positive.

Evaluation Findings: Energy and demand savings from this evaluation exceeded the Company’s tracking system estimates and the program planning estimates used by Duke Energy Kentucky. The differences are due to a combination of original data entry set up errors within the tracking system and differences in the methods used to estimate savings between the original program design period and the time of the more robust and rigorous impact evaluation study. The gross energy and demand savings estimated by this evaluation are summarized Appendix F and below in tables 2 and 3.

**Table 2. Lighting Program Gross Energy and Demand Savings**

<b>Savings Basis</b>	<b>Source</b>	<b>kW</b>	<b>kWh</b>
Savings/measure	Planning Estimate		130
	Tracking System	0.12	56
	Evaluation Estimate	0.11	365
Savings/participant	Tracking System	28.5	13,186
	Evaluation Estimate	26.1	86,743

**Table 3. HVAC Program Gross Energy and Demand Savings**

<b>Savings Basis</b>	<b>Source</b>	<b>kW</b>	<b>kWh</b>
Savings/measure	Planning Estimate		130
	Tracking System	0.16	443
	Evaluation Estimate	0.69	763
Savings/participant	Tracking System	1.3	3,673
	Evaluation Estimate	5.7	6,336

The impact evaluation analysis was affected by several factors that could be improved in the future, as well:

1. **Uncertainty in lighting measure baseline.** The tracking system contained information on lighting fixtures installed, but no data were available on the type of lighting fixtures removed. AEC and TechMarket Works made assumptions on the type of fixture removed based on a review of the program engineering documentation. Recording the number and type of fixtures removed within the tracking system removes this uncertainty. This information is not always readily available or reliable, but applying some effort in this regard should improve the overall impact estimates in the future.
2. **Ambiguity in measure descriptions.** The lighting measure descriptions in the tracking system for T-8 fluorescent lamps were somewhat ambiguous. Although the lamp type, length and number of lamps per fixture were recorded, the lamp watts were not. Several styles of T-8 lamps with varying input watts are available, and adding a lamp wattage description will better define the specific type of the installed measure.

3. **Lack of building type information.** Lighting and HVAC measure savings calculations rely on an understanding of the building type. It was possible to identify the building type from the customer name in most cases, but an additional field indicating the building type or customer SIC or NAICS code would be helpful in making this determination in the future.

The problems identified from the above impact evaluation comments and suggestions from the impact evaluation report are being addressed through revision of the application forms which ask for fixture removed, wattage clarification, and building type. The full process, satisfaction and impact reports are included with this filing.

#### **Program 11: PowerShare**

The Commission's Order in Case No. 2006-00172 approved a revision to Duke Energy Kentucky's PowerShare program to allow customer premiums to be based on the avoided cost of new generation (a combustion turbine) instead of market values for capacity. This PowerShare update will first describe the program and then provide details on participation and curtailments for 2007 and the 2007 program evaluation.

**Brief Description:** PowerShare® 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. 4, Sheet No. 77). 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® called CallOption® and QuoteOption®:

- o CallOption® – A customer served under a CallOption® product agrees, upon notification by the Company, to reduce its demand or provide generation for purchase by the Company. Each time the Company exercises its option under the agreement, the Company will provide the customer a credit for the energy reduced or generation provided. If available, the customer may elect to buy through the reduction at a market-based price. In addition to the energy credit, customers on the CallOption® will receive an option premium credit. Only customers able to provide a minimum of 100 kW load response qualify for CallOption®.

- o QuoteOption® – Under the QuoteOption® 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® event and provide a Price Quote to the customer for each event hour. The customer will decide whether to reduce demand or provide generation during the event period. If they decide to do so, the customer will notify the Company and provide the Company an estimate of the customer's projected load reduction or generation. Each time the Company exercises the option, the Company will provide the customer an energy credit. There is no option premium for the QuoteOption® product since customer load reductions are voluntary. Only customers able to provide a minimum of 100 kW load response qualify for QuoteOption®.

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® program within the DSM programs.

**PowerShare 2007:** Our customer participation goal for 2007 was to retain all customers that currently participate and to get as many of these customers as possible to migrate to the CallOption® program. This would provide additional demand response that can reduce the need for new plant. Table 4 below compares account participation levels for 2006 and 2007 as well as MW's enrolled in the program. The change in methodology for setting incentives has increased participation in the CallOption® program.

**Table 4**

<b>Kentucky PowerShare Participation Update</b>					
<b>Enrolled Customers</b>					
CallOption			QuoteOption		
<u>2006</u>	<u>2007</u>	<u>Change</u>	<u>2006</u>	<u>2007</u>	<u>Change</u>
<b>0</b>	<b>2</b>	<b>2</b>	<b>54</b>	<b>49</b>	<b>-5</b>
<b>Enrolled Load Curtailment Potential (MW's)*</b>					
CallOption			QuoteOption		
<u>2006</u>	<u>2007</u>	<u>Change</u>	<u>2006</u>	<u>2007</u>	<u>Change</u>
<b>0.0</b>	<b>1.8</b>	<b>1.8</b>	<b>9.6</b>	<b>9.0</b>	<b>-0.6</b>
*Potential is 80% of enrolled load curtailment estimate					

During the summer of 2007, CallOption and QuoteOption events occurred on August 8 and August 9. The average hourly potential load curtailed, estimated in the 2007 program evaluation (see below), during these two events is 1,722 kW. Even though the temperatures on these two event days were extreme, a special note should be made regarding the MISO market prices for energy. The wholesale market prices were relatively low and therefore did not encourage a large QuoteOption participation. This

situation occurred due to the mild temperatures in the northern areas of MISO which allowed wholesale market prices for energy to remain relatively low even though the southern areas of MISO experienced extreme heat.

**PowerShare Program Evaluation 2007:** Integral Analytics time series regression based impact evaluation analysis confirmed 1,144 KW of peak load impact, consistent with a peak normal 93.5 degree summer weekday. In addition, given the buy through option observed from one of the customers, averaging 578 KW, the sum total peak load capability for the PowerShare program overall is 1,722 KW. The regression model impact estimates and load reduction results are provided in Appendix G. Again, these results are consistent with a peak normal 93.5 degree summer weekday and with the incentive pricing offered to customers during the two events in 2007.

### **III. CALCULATION OF THE 2007 DSM COST RECOVERY MECHANISM**

The reconciliation of the DSM rider 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 \$3.4 million. The projected level of expenditures is \$6.1 million.

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 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 number of participants for each measure times the UCT value and then subtracting the program costs. Shared savings only are valued for new installation of new DSM measures.

### **Outline of DSM Activity**

Duke Energy Kentucky is planning to offer the following DSM programs in Duke Energy Kentucky's service territory in 2008:

- 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 (*formerly* Home Energy Assistance Plus)
- Program 6: Power Manager
- Program 7: Energy Star Products
- Program 8: Energy Efficiency Website
- Program 9: Personal Energy Report (PER)
- Program 10: C&I High Efficiency Incentive (including Schools Initiative)
- Program 11: Power Share

## **2008 DSM Riders**

In accordance with the Commission's Order in Case No. 95-312, the Joint Applicants submit the proposed DSM Riders (Revised Appendices H and I). The Riders are intended to recover projected 2008 program costs, lost revenues and shared savings, to reconcile the actual DSM revenue requirement, as previously defined, to the revenue recovered under the DSM Riders for the period July 1, 2006 through June 30, 2007. Appendix J, page 1 of 5, 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, 2006 and June 30, 2007, and the revenues collected through the DSM Riders over the same period. The calculation of lost revenues and shared savings only covers the period from the date of the Order in Case No. 2004-00389 through June 30, 2007. The true-up adjustment is based upon the difference between the actual DSM revenue requirement and the revenues collected during the period July 1, 2006 through June 30, 2007. This page also incorporates information in appendix J, page 6 of 6 that reconciles past lost revenues and shared savings estimates to the values from the impact evaluation studies for the following programs:

- Power Manager
- Energy Star Products
- Energy Efficiency Website
- C&I High Efficiency Incentive (for Businesses and Schools)
- PowerShare

The actual DSM revenue requirement for the period July 1, 2006 through June 30,

2007 consists of: (1) program expenditures, lost revenues, and shared savings; and (2) amounts approved for recovery in the previous reconciliation filing. The actual program costs incurred are reflected in column (2) labeled "Projected Program Costs 7/2006 to 6/2007."

Appendix J, page 5 of 5 contains the calculation of the 2007 Residential DSM Riders. The calculation includes the reconciliation adjustments calculated in Appendix J, page 1 of 5 and the DSM revenue requirement for 2008. The residential DSM revenue requirement for 2008 includes the costs associated with the Residential DSM programs, the program development funds, the Energy Education and Bill Assistance Program (Payment Plus), the Power Manager program, the Energy Star Products program, the Energy Efficiency Website program, the PER program, and any applicable net lost revenues and shared savings (Appendix J, pages 2 and 3 of 5). Total revenue requirements are incorporated along with the projected electric and gas volumes (Appendix J, page 4 of 5) in the calculation of the Residential DSM Rider.

Appendix J, page 5 of 5 also contains the calculation of the 2008 Commercial and Industrial DSM Rider. The calculation includes the reconciliation adjustments calculated in Appendix J, page 1 of 5 and the DSM revenue requirement for 2007. The Commercial & Industrial DSM revenue requirement for 2008 includes the costs associated with the commercial and industrial DSM program (C&I High Efficiency Incentive), the PowerShare® program, the High Efficiency School Incentive program, and the associated net lost revenues and shared savings (Appendix J, pages 2 and 3 of 5). The 2008 Commercial and Industrial DSM 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® 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 J, page 4 of 5) in the calculation of the Residential DSM Rider.

The Company's proposed 2007 DSM Riders, shown as Appendices H and I, replace the current DSM Riders, which were implemented in the first available billing cycle of May 2007. The electric DSM rider, proposed to be effective with the first billing cycle in January 2008, 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. 41

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 2008 was calculated by dividing the sum of: (1) the reconciliation amount calculated in Appendix J, page 1 of 5; and (2) the DSM Revenue Requirement associated with the DSM programs projected for calendar year 2008, by the projected sales for calendar year 2008. DSM Program Costs for 2008 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 J, page 5 of 5.

#### Calculation of the Non-Residential Charge

The proposed non-residential charge per kWh for 2008 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 J, page 1 of 5; and (2) the DSM Revenue Requirement associated with the C&I High Efficiency Incentive Program projected for calendar year 2008, by the respective projected sales for calendar year 2008. 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 calendar year 2008, by total non-residential projected sales for calendar year 2008. DSM Program Cost for 2008 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.

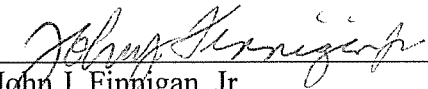
#### Allocation of the DSM Revenue Requirement

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 amounts associated with the reconciliation of the Rider are similarly allocated as demonstrated in Appendix J, page 2 of 5. 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. However, all non-residential customers, including Rate TT customers, will be charged for the PowerShare® program.

**WHEREFORE**, the Joint Applicants respectfully request that the Commission review and approve this Application and DE-Kentucky gives notice that the new rates will take effect 30 days from the date of this Application.

Respectfully submitted,

DUKE ENERGY KENTUCKY, INC.

By:   
John J. Finnigan, Jr.  
Associate General Counsel  
(Attorney No. 86657)  
Duke Energy Shared Services, Inc.  
Room 25ATII  
P. O. Box 960  
Cincinnati, Ohio 45201-0960  
(513) 419-1843

**CERTIFICATE OF SERVICE**

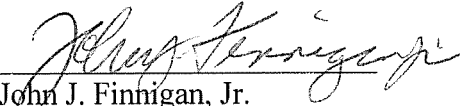
I hereby certify that a copy of the foregoing filing was served on the following via ordinary United States mail, postage prepaid, this 14<sup>th</sup> day of November, 2007:

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

Richard Raff  
Public Service Commission  
730 Schenkel Lane  
Frankfort, Kentucky 40602

Florence W. Tandy  
Northern Kentucky Community Action Commission  
P.O. Box 193  
Covington, Kentucky 41012

Carl Melcher  
Northern Kentucky Legal Aid, Inc.  
302 Greenup  
Covington, Kentucky 41011

  
John J. Finnigan, Jr.