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Energy Efficiency/Demand Response Plan
Plan Year 1 (6/1/2008-5/31/2009)
Evaluation Report:
Lights for Learning Program
Ameren Service Territory

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Final Report

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E EXECUTIVE SUMMARY

E.1 Evaluation Objectives

The goal of this report is to present a summary of the findings from the evaluation of the 2008 – 2009 school year¹ DCEO Lights for Learning™ program (L4L). The main goals of this program are to provide schools and organizations with ways to educate students on the benefits of energy efficiency while conducting school fundraising by selling Compact Fluorescent Light bulbs (CFLs) and LED lighting. The program has been offered statewide since 2005 and receives funding and support from the Illinois Department of Commerce and Economic Opportunity (DCEO), ComEd, and Ameren Illinois Utilities through the Illinois Energy Efficiency Portfolio Standard beginning with the 2008 – 2009 school year. Lights for Learning was developed and trademarked by the Midwest Energy Efficiency Alliance (MEEA). MEEA administers the program in Illinois and has selected Applied Proactive Technologies (APT) to implement the program and coordinate order fulfillment through Energy Federation, Inc. (EFI).

The primary objectives of this evaluation are to quantify gross energy impacts from the program for PY1 and to determine key process-related program strengths and weaknesses and identify ways in which the program can be improved. The impact evaluation activities will address net impacts beginning in PY2.

E.2 Evaluation Methods

The methods used for impact evaluation were to review default energy savings assumptions for lighting products offered through the program and to quantify gross savings impacts from a review of the program reporting data. The impact evaluation activities will address net impacts beginning in PY2. Energy impacts for the L4L program are presented in separate reports for ComEd and Ameren, and utility impacts are further separated into sales occurring through DCEO public sector customers (e.g., public high schools) and utility private sector customer organizations (e.g., private schools). Both reports identify identical statewide program impacts for products sales outside of the EEPS (“DCEO Non-EEPS” includes organizations without an electric meter, for example “Campfire girls” and youth groups).

The methods used for the process evaluation for PY1 included in-depth interviews with program staff, contract implementers and school fundraiser coordinators. A review and evaluation of program materials, and tracking database was also conducted. Participant spillover will be examined using a self-report survey of CFL purchasers in PY2 and PY3 and therefore is not included as part of the PY1 evaluation.

E.3 Key Findings

During the 2008-2009 school year (PY1), 139 schools and organizations participated statewide in the L4L program in Illinois, completing 161 fundraisers, where 2,394 students sold a total of 36,916 CFLs (from

¹ The L4L program for the 2008 – 2009 School Year began June 1, 2008 and ended May 31, 2009. This is referred to as Program Year 1 (PY1) of the Illinois Energy Efficiency Portfolio Standard (EEPS).

nine product options), LED nightlights, and LED holiday strands (from two product options).² Table 1 below provides PY1 DCEO reported and evaluation-adjusted gross savings estimates and parameters for the lighting products distributed for Ameren and DCEO non-EEPS.

Table 1. PY1 Gross and Net Savings Estimates

Gross and Net Parameter and Savings Estimates	DCEO-Ameren EEPS	Ameren Private	Total Ameren (public + private)	DCEO Non-EEPS
<i>Units Purchased: There are no evaluation adjustments to units purchased</i>				
CFL units purchased	4,973	3,529	8,502	3,126
LED night lights purchased	339	270	609	99
LED holiday lights purchased	65	188	253	116
Total All Units purchased	5,377	3,987	9,364	3,341
<i>Annual Hours of Use:</i>				
DCEO	1,095 hours, average for all units purchased			
Evaluation-Adjusted	854 (CFLs) / 2,920 (night lights) / 272 (holiday)			
<i>Installation Rate:</i>				
DCEO	1.0			
Evaluation-adjusted	0.9			
<i>Coincidence Factor:</i>				
DCEO	Not addressed			
Evaluation-adjusted	0.081 (CFLs) / 0.0 (LED night and holiday lights)			
<i>First-Year Gross MWh and Coincident MW Savings</i>				
DCEO reported Gross MWh Savings	275	204	479	171
Evaluation-Adjusted Gross MWh Savings	220	157	377	130
Realization Rate on MWh	80%	77%	79%	76%
Evaluation Gross Coincident MW savings	0.02	0.01	0.03	0.01
<i>First-Year Net MWh and Coincident MW Savings from Evaluation-Adjusted Gross Savings</i>				
Net-to-Gross Ratio (80% for PY1) ³	80%	80%	80%	80%
Net MWh Savings	176	126	302	104
Net Coincident MW Savings	0.02	0.01	0.03	0.01

² Midwest Energy Efficiency Alliance, *ENERGY STAR Lights for Learning Fundraiser, Summary Report, Results, and Lesson Learned, State of Illinois, 2008-2009 School Year*, June 26, 2009. Chicago, IL

³ The PY1 evaluation did not estimate the net-to-gross ratio. The value of 80% is drawn from the program plan presented in ComEd's 2008-2010 Energy Efficiency and Demand Response Plan (November 15, 2007).

Source: Analysis of program annual report data.

Key Impact Findings

The evaluation-adjusted per unit gross impact for the Ameren territory is 40.3 kWh per unit averaged over all lighting products. The PY1 evaluation-adjusted value compares with an ex ante value of 51.1 kWh per unit assumed by DCEO averaged for all lighting products sold. The difference arises from the following factors:

- The PY1 evaluation assumes an installation rate of 0.9 versus DCEO's assumption of 1.0 for the ex ante value. If the 0.9 installation rate were applied to DCEO's ex ante value of 51.1 kWh per unit, the ex ante value would be reduced to 46.0 kWh per unit.
- The PY1 evaluation assumes CFL hours of use equal 2.34 hours per day versus DCEO's assumption of 3.0 hours per day for the ex ante value. If the 2.34 evaluation adjusted hours of use were applied to the ex ante value of 51.1 kWh per unit, the ex ante value would be reduced to 39.9 kWh per unit.
- If both of the evaluation-adjusted parameters (2.34 hours of use and a 0.9 installation rate) were applied to DCEO's ex ante value of 51.1 kWh per unit, the ex ante value would be reduced to 35.9 kWh per unit.
- The PY1 evaluation estimates a wattage reduction for each lighting product offered through the program, and calculates gross kWh and kW reductions from the PY1 participation profile. As a result, average non-coincident wattage reduction per unit for the program, including the 0.9 installation rate, is 48.2 watts for all products combined. This compares with the DCEO assumption of 46.7 watts for the ex ante average non-coincident wattage reduction.

The PY1 evaluation did not estimate the net-to-gross ratio, but set it at the ComEd planning value of 0.80. The net-to-gross ratio will be addressed in PY2 and PY3.

We recommend the program create a technical reference manual to document the default savings values for each lighting product offered through the program. This activity should be done in coordination with the evaluation team, as certain key assumptions will be examined through the impact evaluation processes for several programs in Illinois.

The evaluation plan for PY2 includes a phone survey of a random sample of lighting product purchasers to allow program-specific data collection on key parameters including installation rate, base wattage, hours of use, and daily operating profile.

Key Process Findings

The process evaluation resulted in the following key findings:

- The design and implementation strategy of the Lights for Learning program is effective and allows the program to meet its goals with high participant satisfaction.
- In PY1, the Lights for Learning program completed 161 fundraisers for 139 schools – slightly surpassing its goal of 160 fundraisers. The number of schools participating in the fundraiser grew by 40% compared to the 2007-2008 school year (139 vs. 99), when EEPs become legislation in August 2008. This resulted in a 12% increase in the number of students participating in the fundraiser in PY1 and a 4% increase in the number of energy-saving bulbs sold.
- Participating school fundraiser coordinators expressed very high satisfaction with the program in PY1, including the bulbs' prices and the 50% revenue split of proceeds. All interviewed coordinators rated the overall program design, including marketing/promotional materials, on-site

presentations and merchandise delivery, as good or excellent. Some cited minor issues with the wait time or bulb breakages, but these problems were quickly rectified.

- The program emphasizes marketing at events like conferences and workshops, citing a higher interest level from face-to-face marketing than other methods. The marketing materials that were evaluated show the messages to be clear and actionable.
- The evaluation of the program tracking data shows inconsistent data being tracked between MEEA and APT, which is discussed further in the body of the report.

The program employs multiple quality assurance and verification activities to help ensure the program meets its education mission and goals. These activities range from formal documentation in a database to informal checks on the lessons taught in the classrooms. Based on the program's size, target population, resources and goals, these activities are sufficient.

1 INTRODUCTION TO LIGHTS FOR LEARNING PROGRAM

1.1 Program Description

The Lights for Learning program began in the 2005-2006 school year. The program is sponsored by the Illinois Department of Commerce and Economic Opportunity (DCEO), Commonwealth Edison (ComEd), and Ameren Illinois Utilities. The program targets any size K-12 school, group, organization, or community college on the benefits of energy efficiency and energy conservation. The program educates students on the benefits of energy efficiency and energy conservation through 1) educational presentations, 2) a school fundraiser of energy-saving bulbs, and 3) teacher curriculum for classroom instruction.

The school fundraiser is based on the sale of energy-saving bulbs to the general public - with schools retaining 50% of the sale proceeds from the program. The majority of schools and organizations also request in-school educational presentations which range in size from individual classrooms to whole-school audiences. Teachers are provided with a curriculum to help implement environmental and energy-related lessons that are tailored to meet the specific age level of the students. This curriculum was developed by MEEA and APT with input from the program's sponsoring utilities. Schools/organizations are able to utilize the educational presentations even if they opt not to participate in the fundraiser.

1.1.1 Implementation Strategy

The Lights for Learning program is administered by the Midwest Energy Efficiency Alliance (MEEA). MEEA hired Applied Proactive Technologies, Inc. (APT) as the program implementer across Illinois. The program implements three key components for the program:

1. Educational presentation; and
2. School fundraiser
3. Curriculum for classroom instruction

Educational Presentations and Assemblies

The program offers custom 35-45 minute presentations for schools/organizations in an effort to increase K-12 student education on the benefits of energy efficiency and energy conservation. Schools are able to request presentations without having to sign-up for the fundraiser. In PY1, program staff from MEEA and APT conducted a total of 202 in-school presentations to more than 16,500 students throughout the state. The program measures the effectiveness of the presentations on three metrics that educational associations typically use; what do you know?, what do you want to learn?, and what have you learned? Larger presentations may also include an exercise bike to show energy demonstrations.

In PY1, the program offered various incentives to motivate and reward students. Students who sold 25 or more bulbs received a t-shirt, while students who sold 50 or more bulbs received a t-shirt and \$10 book store gift card. The program also rewarded the two top-selling schools with a commemorative globe.

School Fundraiser

The Lights for Learning program offers a fundraiser that sells energy-saving light bulbs. Schools and organizations participating in the program receive 50% of the sale proceeds from the fundraiser. Energy Federation, Inc (EFI) serves as the provider of energy-saving bulbs sold through the fundraiser. The energy-saving bulbs provided by EFI were all rated at 6,000 to 10,000 life hours and manufactured by Maxlite, General Electric and Earthmate. EFI handled the receipt, fulfillment and shipment of bulb orders, as well as customer service.

The education coordinator at APT is the main point of contact between the school coordinator and the program. The education coordinator works with the teachers and/or fundraising coordinators to ensure that they have received all the materials for the program, including but not limited to posters, banners, and order forms. Each student receives an individual order form for standard and specialty bulbs to track their total bulb sales.

EFI maintains warehouses in Wisconsin and Massachusetts. Because of the proximity of the Wisconsin warehouse, orders could be delivered within one week. The program advertises a wait time of 14 days.

At the conclusion of the fundraiser, the school fundraising coordinator calculates the total bulb orders on a spreadsheet provided by APT and mails/emails it to EFI for processing. APT then reimbursed EFI after receiving payment from fundraiser participants. Teachers receive a survey to gauge if they found the program to be effective, knowledgeable, and overall a positive learning experience for their students.

Curriculum for Classroom Instruction

The program also provides teachers a curriculum to help implement environmental and energy-related lessons. This curriculum was developed by MEEA and APT with input from the program's sponsoring utilities. As with the presentations, the curriculum can be customized to meet the requirements of participating classes' age and grade level.

Product Offerings for PY1

Table 2 lists the ENERGY STAR qualified products offered for sale through the L4L program in PY1.

Table 2. Products Offered in PY1

Manufacturer	Description	Wattage	Lifetime Hours
Earthmate	Mini Spiral	13 Watt	10,000
Earthmate	Spiral	20 Watt	10,000
Earthmate	Spiral	23 Watt	10,000
Maxlite Mini Bulb	Capsule	13 Watt	8,000
Greenlite LED Nitelite	Color Changing Night Light	0.8 Watt	30,000+
TCP	Spiral (3 pack)	14 Watt	10,000
GE	Reflector	15 Watt	8,000
Maxlite	Dimmable	25 Watt	6,000
Earthmate	3-Way	33 Watt	10,000
Diogen LED Holiday Light Strand 25 Ft.	Warm White	2.4 Watt	30,000+
Diogen LED Holiday Light Strand 25 Ft.	Multi-Color	2.4 Watt	30,000+

Source: MEEA Summary Report for 2008 – 2009 school year.

1.1.2 Marketing Strategy

Responsibility for the marketing and promotion of the Lights for Learning program is shared by MEEA and APT. APT facilitates most of the communication between the program and the participating schools or organizations. This includes both direct customer communication such as fulfilling information requests, signing up participants in the program, helping with questions and issues, and more indirect communication including mailings, newsletters and feedback survey.

Schools and organizations learn of the program through advertised contests, the program’s website [Lights4Learning.org], and through direct marketing mail pieces and newsletters. The program uses promotional incentives as a way to increase participation and reward success in the fundraiser, including:

- A Lights for Learning dog tag/key chain for each participating student, regardless of the number of CFLs sold;
- A Lights for Learning t-shirt for students who sell 25 or more bulbs;
- A t-shirt and \$10 bookstore gift card for students who sell 50 or more bulbs;
- A trophy for each school participating in the fundraiser which is engraved with the organization’s name and “Lights for Learning Partner [2009]” and a framed certificate of appreciation; and
- A commemorative globe for the two top-selling schools or groups.

The program emphasizes marketing at events like conferences and workshops, citing a higher interest level from face-to-face marketing than other methods. At these events, potential participants receive information on how the program operates, how to sign up, answers to frequently asked questions, information on CFL recycling and disposal and energy saving tips

MEEA and APT work together to design the marketing collateral and revise materials including the sponsor-branded order form and sell sheet.

The program updated its marketing materials in PY1 to include:

1. Editing and revising the teacher toolkits for each sponsor, including FAQ sheets and posters;
2. Creating new standard and specialty bulb order forms for both utility sponsors. Each form included a “Take the Energy Star pledge” form encouraging consumers to help fight global warming; and
3. Adding information on CFL recycling and disposal to both the teacher toolkits and standard order forms to address concerns over the mercury content in the bulbs.

Additionally, new marketing collateral designed for PY1 included new banner stands for the program’s displays at targeted events, signage for permanent program kiosks, an overhaul of the program website, a YouTube contest and ads in major Chicago newspapers. All marketing materials contain a toll-free number, the cell number and email address of the program coordinator and program website. Schools and organizations also often create their own materials to promote the program.

1.2 Evaluation Questions

The evaluation sought to answer the following key researchable questions. Some of the researchable questions will be not be addressed until Program Years 2 and 3.

Impact Questions:

1. What are the gross impacts from this program?
2. What are the net impacts from this program? (to be addressed in PY2 and PY3)
3. Did the program meet its energy and demand goals? If not, why not?

Process Questions:

1. Has the program designed changed from the plan filed on November 15, 2007? If so, how, why, and was this an advantageous change?
2. Is implementation on track and meeting goals? Has the program been implemented in a manner consistent with program design?
3. How effective is the program implementation, design and processes, and marketing efforts?
4. Are school fundraising coordinators satisfied with the program?
5. What areas could the program improve to create a more effective program for school participants, and/or program partners?

2 EVALUATION METHODS

2.1 Analytical Methods

Gross Program Savings

We conducted a technical review of L4L program algorithms and default savings values to assess the reasonableness of underlying technology assumptions and calculated savings values. DCEO calculated gross energy and non-coincident demand savings resulting from the PY1 L4L program using the following savings algorithms:

$$\text{Per Unit kWh Savings} = \text{Delta Watts} * \text{HOU}$$

Where HOU = Hours of Use

$$\text{Annual kWh Savings} = \text{Program units}^4 * \text{Per Unit kWh Savings}$$

$$\text{Per Unit kW Savings} = \text{Delta Watts}/1000$$

$$\text{Annual kW Savings} = \text{Program units} * \text{Per Unit kW Savings}$$

We recommend that the DCEO algorithms be revised as follows to include an installation rate and a mean coincident load factor to calculate peak kW:

$$\text{Per Unit kWh Savings} = \text{Delta Watts} * \text{HOU} * \text{Installation Rate}$$

$$\text{Per Unit kW Savings} = \text{Delta Watts}/1000 * \text{Installation Rate}$$

Where Installation Rate accounts for units installed within the program year (and not placed into storage or since removed from installation).

$$\text{Per Unit Peak kW Savings} = \text{Per Unit kW Savings} * \text{Mean Load Coincidence Factor}$$

Where Mean Load Coincidence Factor is calculated as the percentage of program units turned on during peak hours (weekdays from 1 p.m. to 6 p.m. Central Time) throughout June, July, and August.

$$\text{Annual Peak kW Savings} = \text{Program units} * \text{Per Unit Peak kW Savings}$$

For PY1, the evaluation team is using consistent assumptions across programs that offer residential lighting measures. Table 3 below shows the data sources used to estimate the input parameters in the

⁴ For CFLs, each individual CFL is a unit, so a three-pack of CFLs counts as 3 units. Each LED night light is a unit. Each strand of LED holiday lights is a unit.

energy and demand savings algorithms for the L4L program. Each of these parameters is described in further detail below.

Table 3: Gross Savings Parameter Data Sources

Gross Savings Input Parameters	PY1 Evaluation Data Source	DCEO Data Source
Purchased Units	Program Tracking Data	Program Tracking Data
Delta Watts	DEER ⁵ /RMST ⁶ Report/US DOE Report ⁷	MEEA analysis
Hours of Use	DEER	MEEA Analysis
Installation Rate	DEER	Not included
Mean Load Coincidence Factor	DEER	Not addressed

Program Units

The number of units distributed through the program is a key parameter in the calculation of total gross and net program savings and is derived from the L4L tracking data provided to the evaluation team by MEEA.

Delta Watts

The delta watts parameter is a measurement of the wattage displaced by the newly installed program CFL or LED product. DCEO used 46.7 watts for their displaced wattage value and obtained that estimate from MEEA analysis. To estimate the number of watts displaced by the program unit, the evaluation team used secondary data for the wattage of the prior bulb. Once the wattage of the prior bulb has been estimated, the displaced watts (or delta watts) is calculated as the difference between the prior wattage and the wattage of the new CFL or LED, which came from program records.

Hours of Use

In order to estimate the energy savings resulting from a newly installed CFL or LED, it is necessary to understand the number of hours the lamp is turned on each day (which can be annualized by multiplying the daily value by the number of days on per year). DCEO assumed the lights were on 3 hours per day, consistent with the value used by Energy Star. During PY1, phone surveys were undertaken in the ComEd Residential Lighting program evaluation to ask participants to estimate the average number of hours per day each of their installed program bulbs was turned on. This data allows for the calculation of an average self-reported HOU estimate across various installed program bulbs. However, a review of past

⁵ California Public Utilities Commission (CPUC) and the California Energy Commission (CEC), *Database for Energy Efficiency Resources (DEER)*. The data is accessible on the DEER website (<http://eega.cpuc.ca.gov/deer/>) through a database search tool.

⁶ RMST report refers to Itron Inc., *California Residential Efficiency Market Share Tracking: Lamps 2007*. Prepared for Southern California Edison, December 2008.

⁷ Navigant Consulting, *Energy Savings Estimates of Light Emitting Diodes in Niche Lighting Applications*. Prepared for US DOE, October 2008.

evaluations,^{8,9} which was completed as part of the ComEd Residential Lighting program evaluation found that self-reported estimates of hours of use can be highly inaccurate. The self-reported estimates of HOU reported in two of the evaluations reviewed (both collected during on-site surveys) ranged from underestimating actual¹⁰ HOU by 20% to overestimating actual HOU by 40%¹¹. Based on this inaccuracy in the self-reported data, the evaluation team decided to turn to a more reliable data source. Because the budget for this evaluation did not allow for conducting a lighting logger study in PY1, the HOU estimates used to calculate the ex post program impacts were based on the DEER HOU estimates.¹² We believe this represents a better source for the hours of operation than Energy Star because of the use of lighting logger data.

Installation Rate

In order for a program unit to contribute energy savings to the L4L program, it must be installed within the program year. DCEO did not adjust savings for installation rate which equates to an assumed value of 1.0. This parameter can be estimated by surveying participants and asking whether or not they had installed (and not since removed) any of the CFLs or LED products they purchased through the L4L program and their responses used to calculate the installation rate for the program. Because the budget for this evaluation did not allow for conducting a participant survey in PY1, the installation rate estimates used to calculate the ex post program impacts were based on the DEER estimates.

Mean Load Coincidence Factor

The mean load coincidence factor allows for the estimation of the average demand savings that occur during the utility peak period. DCEO did not address peak reduction. This parameter can be calculated as the percentage of time customers self-reported each of their installed program bulbs to be turned on during the peak period. Because the budget for this evaluation did not allow for conducting a participant survey in PY1, the estimates used to calculate the ex post program impacts were based on the DEER estimates.

Net Program Savings

The primary objective of net savings analysis is to determine a program's net effect on customers' electricity usage, accounting for free-ridership and spillover. This requires estimating what would have happened in the absence of the program. Thus, after gross program impacts have been assessed, net program impacts are derived by estimating a Net-to-Gross (NTG) ratio that quantifies the percentage of

⁸ EcoNorthwest, *Evaluation of the SCE 2004-05 Small Business Energy Connection Program*. Prepared for Southern California Edison, April 2007.

⁹ Itron Inc., *2003 Statewide Express Efficiency Program Measurement and Evaluation Study*. Prepared for California's Investor-Owned Utilities (PG&E, SCE, SDG&E and SoCalGas), March 2005.

¹⁰ "Actual" hours of use are determined by installing lighting data loggers on all bulbs of interest that capture the exact moment the bulbs are turned on and off.

¹¹ HOU estimates gathered during phone surveys are believed to be even less accurate than those gathered during on-site surveys.

¹² The DEER HOU estimates are based on lighting logger studies conducted in California.

the gross program impacts that can reliably be attributed to the program. Once free-ridership and spillover have been estimated the Net-to-Gross (NTG) ratio is calculated as follows:

$$\text{NTG Ratio} = 1 - \text{Free-ridership Rate} + \text{Spillover Rate}$$

Participant free-ridership and spillover were not estimated for PY1. Free-ridership and spillover will be addressed in the PY2 and PY3 program evaluation activities. The PY1 evaluation will use a NTG ratio equal to 0.80, matching the ComEd program planning assumption.¹³

$$\text{NTG Ratio} = 0.80$$

2.2 PY1 Data Collection Activities

The data collected for the evaluation of the Lights for Learning program was gathered during a number of primary and secondary research activities between July-August, 2009. Primary research consisted of in-depth phone interviews with program staff from DCEO, MEEA and APT and with fundraising coordinators at participating schools and organizations.

Table 4 provides a summary of these data collection activities including the targeted population, the sample frame, and timing in which the data collection occurred.

Table 4. Data Collection Activities

Data Collection Type	Targeted Population	Sample Frame	Sample Design	Sample Size	Timing
Review of Program Materials	Lights for Learning Program Participants	Tracking Database, Promotional Materials, Summary Report	-	-	July 2009
In-depth Phone Interviews	MEEA	Contact from DCEO	LFL Administrative Program Manager	1	July 2009
	Applied Proactive Technologies	Contact from MEEA	LFL Implementation Manager	1	July 2009
	DCEO	Contact from DCEO	LFL Program Manager	1	July 2009
	Participating fundraising coordinators	PY1 Tracking Database	PY1 Participants	6	July-Aug 2009

¹³ The value of 80% is drawn from the program plan presented in ComEd's 2008-2010 Energy Efficiency and Demand Response Plan (November 15, 2007). Page D-2 of the ComEd plan provides a footnote stating the net to gross ratio of 80% is drawn from the California Energy Efficiency Policy Manual, version 2 (2003).

2.3 Data Sources

Tracking Data

The evaluation team was provided program tracking databases from both MEEA and APT. While similar, the two databases contained different fields. The MEEA tracking file provided for the evaluation contained customer name, customer address, customer city, total bulbs, utility name, school type, e-mail address, and school/home phone number. The APT PY1 tracking file provided for the evaluation contained customer name, customer address, customer city, utility name, school type, email address, telephone number, and primary contact.

Program and Implementer Staff Interviews

Three in-depth interviews were conducted as part of this evaluation. These interviews were conducted with the DCEO program manager (Carol Kulek), the MEEA program manager (Chad Bulman) and the APT program manager (Jackie Perrin). These interviews were completed over the phone in July of 2009. The interviews with DCEO and MEEA focused on program processes to better understand the goals of the program, how the program was implemented, the perceived effectiveness of the program and also verified evaluation goals. The interviews with the APT program manager explored the implementation of the program in more detail and also covered areas of data tracking and quality assurance.

Fundraising Coordinator Interviews

Six in-depth interviews with fundraising coordinators at participating schools and organizations were conducted as part of this evaluation. These interviews were completed over the phone in July and August, 2009. The interviews focused on participants' perception of program processes, their experience with program staff, and their overall satisfaction with the program's fundraising and educational components.

3 PROGRAM LEVEL RESULTS

3.1 Impact Evaluation Results

3.1.1 Verification and Due Diligence

This section provides the results of the evaluation of DCEO's verification and due diligence activities for the Lights for Learning program. We explored the quality assurance and verification activities currently carried out by program and implementation staff. We compared these activities to similar residential programs to determine:

1. If any key quality assurance and verification activities that should take place are currently not being implemented.
2. If any of the current quality assurance and verification activities are redundant, overly time-consuming, and therefore might be simplified or even dropped.
3. If any of the current quality assurance and verification activities are biased (i.e., incorrect sampling that may inadvertently skew results, purposeful sampling that is not defensible, etc.).

Data Collection

This assessment primarily relied on in-depth interviews with program and implementation staff, school coordinators, and documentation of current program processes.

Results

Fundraiser Quality

APT has created several processes designed to ensure a high-quality fundraiser. At the outset of the fundraiser, APT provides schools with a checklist for a successful fundraiser, which includes presenting the accrued knowledge of the fundraiser to students and teachers through custom presentations or assemblies. The fundraiser information sheet states that "each coordinator will receive the following materials to support the fundraiser." During the course of the fundraiser, APT makes multiple contacts with the school fundraising coordinator through emails and phone calls to check in on the status of the program, including status of order placement, order receipt, prize receipt and payment status. Finally, based on the information gathered through these conversations, APT updates the Lights for Learning database.

Assessment: The program has sufficient procedures in place for ensuring a high-quality fundraiser. If not already implemented, expanding the database to track each step of the fundraiser process is recommended.

Order Collection Procedures

Participating students complete individual standard and specialty bulb order forms and hand them to their teacher or fundraising coordinator at the conclusion of the fundraiser. The coordinator then tabulates the orders in a spreadsheet provided by APT and sends in the group order to APT for processing.

Assessment: The two order forms are seen as confusing for the teachers. Other than double-checking each student's order form and the group spreadsheet for mistakes, no formal verification process is needed for this step.

Order Fulfillment

After receiving the group order spreadsheet from a school or organization, APT checks the number of bulbs and sends the order to EFI, for processing within 48 hours. Each shipment contains bulbs that are individually packaged, but are not separated by student, teacher or grade. Upon receipt of the bulk order of bulbs, the school's fundraising coordinator must distribute the bulbs to the correct student, using the bags provided by APT.

If a bulb arrives at the school broken, the fundraising coordinator contacts APT and a replacement bulb is sent. EFI has established practices to minimize breakage, such as organizing orders by ZIP code to ensure a minimal amount of handling once they leave their facility.

Assessment: For the size of this program, quality control checks for the fulfillment of the bulb orders are sufficient. Each order is checked multiple times before it is distributed to the student. Although some coordinators have complained about the time needed to sort the bulbs for each student, this step minimizes the handling of bulbs by EFI and allows the coordinator to spot any broken bulbs before they reach the student.

Curriculum

The Lights for Learning program aims to educate students on the benefits of energy efficiency, energy conservation and Energy Star. To accomplish this, the program provides a yearly updated curriculum that educators can adapt and incorporate into their individual lesson plans over the course of the year. The curriculum has been designed for teachers to use across students' age and abilities. This curriculum was developed by MEEA and APT with input from the program's sponsoring utilities.

Most schools and organizations participating in the Lights for Learning program requested in-school educational presentations. The presentations are modified to meet the specific age level of the students to account for their attention spans and ability to understand key concepts. Presentations ranged in size from individual classrooms to whole-school audiences. The Lights for Learning educational presenter was often asked to present to multiple classes or groups at each school.

Assessment: Although teachers are provided a standard curriculum linked to the education goals of the program, the program lacks systematic verification to ensure 1) if the curriculum is being used and 2) how teachers use the curriculum. Interviews with school coordinators revealed some teachers are using the curriculum in their science and math classes. One school was able to incorporate the curriculum into a science project, and a math project. This same school coordinator claims that everything that they do with educating students on recycling and energy efficiency has been reinforced with the curriculum. This is one example which can serve as case studies for other schools to model. To drive school use of the curriculum, the evaluation team encourages that program staff capture additional case studies in the marketing materials.

In the absence of verification of the curriculum's implementation, the program staff presentations is a method for ensuring that the program's key messages are relayed to teachers and students to best help them promote energy conservation and energy efficiency. At the conclusion of the presentations, teachers can complete a survey and provide their feedback on the effectiveness of the presentation, including if it increased students' knowledge and if it was a positive learning experience for students.

If the Lights for Learning program staff desires to incorporate a formal verification of the curriculum usage and lessons taught outside of the presentation, a survey of teachers and/or fundraiser coordinators would be a valuable tool.

Summary and Recommendations

Overall, the Lights for Learning program employs multiple quality assurance and verification activities to help ensure the program meets its education mission and goals. These activities range from formal documentation in a database to informal checks on the lessons taught in the classrooms. Based on the program’s size, target population, resources and goals, these activities are sufficient.

Table 5 summarizes the quality assurance and verification activities currently carried out by the Lights for Learning program. It also features recommended changes to current procedures, as well as suggestions regarding additional activities that MEEA and APT could implement to enhance current quality assurance and verification.

Table 5. Summary of Quality Assurance Activities in Place and Recommendations

QA Activities in Place	Recommended Change
<ul style="list-style-type: none"> • Fundraiser quality 	<ul style="list-style-type: none"> • Expand tracking database to include all steps in fundraising process
<ul style="list-style-type: none"> • Order collection procedure 	<ul style="list-style-type: none"> • None
<ul style="list-style-type: none"> • Fulfillment of order 	<ul style="list-style-type: none"> • None
<ul style="list-style-type: none"> • Curriculum 	<ul style="list-style-type: none"> • Survey of teachers to capture use and benefits of curriculum to use as case studies

3.1.2 Tracking System Review

The tracking databases provided by MEEA and APT were different in the level of detail and ease of use. The 2008-09 active list of participants from APT contained 139 records, one for each participant in the Lights for Learning fundraiser in PY1. The list provided to the evaluation team in August, 2009 included participant information (e.g., address, school type), primary contact (telephone #, email), and utility provider (e.g., ComEd, Ameren). Our review of the APT tracking data uncovered minor problems, including the exclusion of the presentation date given to each school and the total number of bulbs sold by each school.

The evaluation team also evaluated the 2008-09 tracking database provided by MEEA. While this file contained information on the number of bulbs sold by school, the file had fewer records than the APT database. The data in the MEEA tracking database was not as thorough as the data provided by APT. For example, the MEEA database did not include a primary contact name – only a primary email address contact for each participating school. However, the MEEA database provided the total bulbs sold for each school, while this was missing from the 2008-09 APT tracking database.

The data that was not included in either database that would have been helpful was the date the bulbs were mailed out to each participating school. Furthermore, data indicating how each school became aware of the program, and the date of their in-school presentation was absent from the database and should be included. MEEA and APT should work to ensure that there is consistent data between the two databases.

3.1.3 Gross Program Impact Parameter Estimates

We conducted a technical review of measures offered through L4L to assess the reasonableness of underlying technology assumptions and calculated savings values.

DCEO Ex Ante Impact Parameter Assumptions Used for Lights for Learning

DCEO uses the assumptions presented in Table 6 for calculating gross impacts in the L4L program.

Table 6. DCEO L4L Default Savings Assumptions for Ex Ante Impacts

Gross Impact Parameter	L4L Assumed Value per Unit Purchased
Average Incandescent Wattage (base)	66.7 Watts
Average CFL Wattage	20.0 Watts
Watts Saved	46.7 Watts
Daily Hours on	3.0 hours
Operating Days per Year	365
Annual Hours of Operation	1,095 hours
Hours Rated Life	8,000 hours
Annual kWh Saved	51.1 kWh/year
Non-coincident kW reduced	0.0467 kW
LED Lighting Savings Assumptions	Not Addressed
Installation Rate	Not Addressed
Mean Load Coincidence Factor	Not Identified
HVAC Energy Interactive Effects	Not Addressed

Source: Excel spreadsheet file name "L4L EEPS Detail Dec1-Feb28" 2009 Savings and Benefit Cost Assumptions. Provided by MEEA.

Within the Excel spreadsheet that provided the assumptions for the table above, the source of the assumed values are not specifically documented, but the spreadsheet includes a footnote that the assumptions are consistent with ComEd deemed savings values. Our evaluation-adjustments to these parameters are provided below. As discussed in Section 2, gross impact assumptions such as lighting hours of use will be adjusted through the evaluation process to provide consistency across residential lighting evaluation efforts.

PY1 Evaluation-Adjusted Impact Parameter Assumptions for Lights for Learning

The evaluation team calculated L4L program savings by summing the savings for each product type sold through the program. The savings for each product was calculated following the recommended algorithms presented in Section 2. As discussed in that section, the PY1 evaluation used evaluation-adjusted gross impact parameter assumptions that are consistent with other residential lighting evaluations. Tables 7, 8, and 9 below identify the evaluation-adjusted assumptions.

Table 7 provides the evaluation adjusted baseline and L4L product watts used to calculate non-coincident displaced watts for each product. DCEO use a single average value of 46.7 watts to represent the program. The L4L product efficient wattage and specifications were taken from the L4L annual report¹⁴ and from the Energy Federation Inc. web site (<http://www.energyfederation.org>). Base wattage sources are noted in the table.

Table 7. Evaluation Adjusted Gross Impact Parameters – Delta Watts

Product Type	Base Wattage	L4L Product Wattage	Delta Watts	Source of Base Wattage
13W Spiral	60	13	47	DEER ¹⁵
14W 3 Pack	60	14	46	DEER
20W Spiral	75	20	55	DEER
23W Spiral	100	23	77	DEER
25W Dimmable	100	25	75	DEER
33W 3-Way	150	33	117	DEER
Maxlite Capsule	60	13	47	DEER
Reflector	60	15	45	DEER
Sample Kit (15W, 20W, 25W Spiral)	78	20	58	Average for kit
	60	15	45	DEER
	75	20	55	DEER
	100	25	75	DEER
Night Light	4	0.8	3.2	Energy Federation Inc.
Multicolor 25' LED Holiday Strand	92	2.4	89.6	US DOE Report ¹⁶
White 25' LED Holiday Strand	92	2.4	89.6	US DOE Report

Table 8 below provides the evaluation adjusted hours of use to calculate energy savings for each product. DCEO use a single average value of 3 hours per day for 365 days per year to calculate program impacts. Data sources are noted in the table.

¹⁴ Midwest Energy Efficiency Alliance, *ENERGY STAR Lights for Learning Fundraiser, Summary Report, Results, and Lesson Learned, State of Illinois, 2008-2009 School Year*, June 26, 2009. Chicago, IL.

¹⁵ California Public Utilities Commission (CPUC) and the California Energy Commission (CEC), *Database for Energy Efficiency Resources (DEER)*. The data is accessible on the DEER website (<http://eega.cpuc.ca.gov/deer/>) through a database search tool.

¹⁶ Navigant Consulting, *Energy Savings Estimates of Light Emitting Diodes in Niche Lighting Applications*. Prepared for US DOE, October 2008.

Table 8. Evaluation Adjusted Gross Impact Parameters – Hours of Use

Product Type	Hours/Day	Days/Yr	Hours/Yr	Source of Hours
CFLs	2.34	365		DEER
Night Light	8	365		Energy Federation Inc.
25' LED Holiday Strand			272	US DOE Report

Table 9 below provides the evaluation adjusted assumptions for installation rate and mean coincident load factor used to calculate energy and peak demand savings for each L4L product. The PY1 evaluation does not address HVAC system interactive effects. DCEO savings calculations do not address the factors shown in Table 9. Data sources are noted in the table.

Table 9. Evaluation Adjusted Gross Impact Parameters - Other

Gross Impact Parameter	PY1 Evaluation Value	Source
Installation Rate	0.90	DEER
Mean Load Coincidence Factor (CFLs)	0.081	DEER
Mean Load Coincidence Factor (LEDs)	0	Evaluation Assumption for PY1
HVAC Energy Interactive Effects	1.0	Evaluation Assumption for PY1

L4L PY1 Program Participation

The evaluation calculated L4L program savings by summing the savings for each product type sold through the program, based on unit sales and savings per unit for each product type. DCEO calculates savings using an average savings value and total units sold. Program participation is based on sales of individual products, as reported in the L4L annual report. The evaluation did not adjust the unit sales figures provided by the program.

Table 10. L4L PY1 Program Participation Units

Product Type	DCEO- Ameren EEPS Units	Ameren Private Units	Total Ameren (public + private) Units	DCEO Non-EEPS Units
13W Spiral	1,025	600	1,625	1,414
14W 3 Pack (3 units each pack)	1,776	1,068	2,844	651
20W Spiral	635	586	1,221	364
23W Spiral	642	461	1,103	162
25W Dimmable	207	58	265	78
33W 3-Way	270	156	426	114
Maxlite Capsule	228	248	476	105
Reflector	190	274	464	115
Sample Kit (15W, 20W, 25W Spiral) (3 units each kit)	-	78	78	123
Night Light	339	270	609	99
Multicolor 25' LED Holiday Strand	35	111	146	70
White 25' LED Holiday Strand	30	77	107	46
TOTAL CFLs	4,973	3,529	8,502	3,126
TOTAL LED Night Lights	339	270	609	99
TOTAL LED Holiday Lights	65	188	253	116
TOTAL All Units	5,377	3,987	9,364	3,341

Source: Midwest Energy Efficiency Alliance, ENERGY STAR Lights for Learning Fundraiser, Summary Report, Results, and Lesson Learned, State of Illinois, 2008-2009 School Year, June 26, 2009. Chicago, IL

3.1.4 Gross Program Impact Results

The evaluation calculated L4L program savings by summing the savings for each product type sold through the program, based on unit sales and savings per unit for each product type. The savings for each product was calculated following the recommended algorithms presented in Section 2, using the evaluation-adjusted impact parameters of Tables 7, 8, and 9 combined with the unit sales figures provided in Table 10. The evaluation savings calculation is compared with the DCEO calculation method and results in Table 11.

Table 11. PY1 Gross Savings Calculation Method and Results

Approach	Calculation Method	DCEO- Ameren EEPS MWh	Ameren Private MWh	Total Ameren MWh	DCEO Non- EEPS MWh
DCEO Reported	Total #units * 51.1 kWh per unit	275	204	479	171
Evaluation- Adjusted	“Bulb-by-bulb” analysis with results shown in Tables 12 and 13	220	157	377	130
Realization Rate		80%	77%	79%	76%

Bulb-by-bulb savings analyses are provided for evaluation adjusted gross kWh in Table 12 below, and gross coincident kW in Table 13.

Table 12. L4L PY1 Evaluation-Adjusted Gross Annual kWh Savings

Product Type	DCEO-Ameren EEPS kWh	Ameren Private kWh	Total Ameren kWh	DCEO Non-EEPS kWh
13W Spiral	37,032	21,677	58,709	51,086
14W 3 Pack	62,799	37,764	100,563	23,019
20W Spiral	26,846	24,775	51,621	15,389
23W Spiral	37,999	27,286	65,286	9,589
25W Dimmable	11,934	3,344	15,278	4,497
33W 3-Way	24,283	14,030	38,313	10,253
Maxlite Capsule	8,237	8,960	17,197	3,793
Reflector	6,572	9,478	16,050	3,978
Sample Kit (15W, 20W, 25W Spiral)	-	3,498	3,498	5,515
Night Light	2,851	2,271	5,121	833
Multicolor 25' LED Holiday Strand	768	2,435	3,202	1,535
White 25' LED Holiday Strand	658	1,689	2,347	1,009
TOTAL kWh CFLs	215,703	150,812	366,514	127,119
TOTAL kWh LED Night Lights	2,851	2,271	5,121	833
TOTAL kWh LED Holiday Lights	1,426	4,124	5,549	2,544
TOTAL All kWh	219,979	157,206	377,185	130,496
CFL Impacts/Unit	43.4	42.7	43.1	40.7
LED Night Lights Impact/Unit	8.4	8.4	8.4	8.4
LED Holiday Impact/Unit	21.9	21.9	21.9	21.9
All Units Impact/Unit	40.9	39.4	40.3	39.1

Source: Assumptions of Tables 7, 8, 9, and 10 in Section 3.1.3

Table 13. L4L PY1 Evaluation-Adjusted Gross Coincident kW Savings

Product Type	DCEO-Ameren EEPS kW	Ameren Private kW	Total Ameren kW	DCEO Non-EEPS kW
13W Spiral	3.5	2.1	5.6	4.8
14W 3 Pack	6.0	3.6	9.5	2.2
20W Spiral	2.5	2.3	4.9	1.5
23W Spiral	3.6	2.6	6.2	0.9
25W Dimmable	1.1	0.3	1.4	0.4
33W 3-Way	2.3	1.3	3.6	1.0
Maxlite Capsule	0.8	0.8	1.6	0.4
Reflector	0.6	0.9	1.5	0.4
Sample Kit (15W, 20W, 25W Spiral)	-	0.3	0.3	0.5
Night Light	-	-	-	-
Multicolor 25' LED Holiday Strand	-	-	-	-
White 25' LED Holiday Strand	-	-	-	-
TOTAL kW CFLs	20.5	14.3	34.8	12.1
TOTAL All kW	20.5	14.3	34.8	12.1
CFL Impacts/Unit	0.0041	0.0041	0.0041	0.0039
All Units Impact/Unit	0.0038	0.0036	0.0037	0.0036

Source: Assumptions of Tables 7, 8, 9, and 10 in Section 3.1.3

The evaluation-adjusted per unit gross impact for the Ameren territory is 40.3 kWh per unit averaged over all lighting products. The PY1 evaluation-adjusted value compares with an ex ante value of 51.1 kWh per unit assumed by DCEO averaged for all lighting products sold. The difference arises from the following factors:

- The PY1 evaluation assumes an installation rate of 0.9 versus DCEO's assumption of 1.0 for the ex ante value. If the 0.9 installation rate were applied to DCEO's ex ante value of 51.1 kWh per unit, the ex ante value would be reduced to 46.0 kWh per unit.
- The PY1 evaluation assumes CFL hours of use equal 2.34 hours per day versus DCEO's assumption of 3.0 hours per day for the ex ante value. If the 2.34 evaluation adjusted hours of use were applied to the ex ante value of 51.1 kWh per unit, the ex ante value would be reduced to 39.9 kWh per unit.
- If both of the evaluation-adjusted parameters (2.34 hours of use and a 0.9 installation rate) were applied to DCEO's ex ante value of 51.1 kWh per unit, the ex ante value would be reduced to 35.9 kWh per unit.
- The PY1 evaluation estimates a wattage reduction for each lighting product offered through the program, and calculates gross kWh and kW reductions from the PY1 participation profile. As a result, average non-coincident wattage reduction per unit for the program, including the 0.9 installation rate, is 48.2 watts for all products combined. This compares with the DCEO assumption of 46.7 watts for the ex ante average non-coincident wattage reduction.

3.1.5 Net Program Impact Parameter Estimates

Once gross program impacts have been estimated, net program impacts are calculated by multiplying the gross impact estimate by the program Net-to-Gross (NTG) ratio. As mentioned above, estimation of the NTG ratio for the L4L program was not included in the PY1 evaluation. For PY1, net impacts are based on a NTG ratio equal to 0.80¹⁷. The PY1 NTG ratio is calculated as:

$$\text{NTG Ratio} = 1 - \text{Free-ridership} + \text{Spillover}$$

$$\text{NTG Ratio} = 0.80 \text{ (Not evaluated for PY1)}$$

3.1.6 Net Program Impact Results

Table 14 below provides the program-level evaluation-adjusted net impact results for the PY1 L4L program.

Table 14 Net Parameter and Savings Estimates

Net Parameter and Savings Estimates	DCEO-Ameren EEPS	Ameren Private	Total Ameren	DCEO Non-EEPS
Total First-Year Evaluation-Adjusted Gross MWh Savings	220	157	377	130
Total First-Year Evaluation-Adjusted Gross Coincident MW Savings	0.02	0.01	0.03	0.01
Net-to-Gross Ratio (Not evaluated in PY1)	0.80	0.80	0.80	0.80
Total First-Year Net MWh Savings	176	126	302	104
Total First-Year Net Coincident MW Savings	0.02	0.01	0.03	0.01

The net-to-gross ratio will be addressed in PY2 and PY3.

3.2 Process Evaluation Results

The process evaluation component of the Lights for Learning evaluation focused on changes to the program, program metrics and progress to date performance, marketing strategy, implementation strategy, and school experience and satisfaction. Data sources for the process evaluation include evaluation of program documentation and in-depth interviews with program staff and implementers (n=3), and school coordinators (n=6).

¹⁷ The value of 80% is drawn from the program plan presented in ComEd's 2008-2010 Energy Efficiency and Demand Response Plan (November 15, 2007). Page D-2 of the ComEd plan provides a footnote stating the net to gross ratio of 80% is drawn from the California Energy Efficiency Policy Manual, version 2 (2003).

3.2.1 Program Theory Logic Model

This section contains the program theory, logic model, and performance indicators of the Lights for Learning program. This model was based on discussions with program staff and implementers as well as program documentation. The program theory and logic model is intended to be used:

- As a communication tool by
 - allowing the implementer to show reasoning to other stakeholders
 - bringing common understanding between implementer and evaluator
- As an evaluation tool to
 - Focus evaluation resources
 - Clearly show what evaluation will do and expected answers from evaluation
 - Provide a way to plan for future work effort

The theory is explicated through text that describes why a program intervention is expected to bring about change. It may reference other theories of behavioral change (e.g., theory of planned behavior, normative theory) or be based on interviews with the program managers. Our goal for this task is to 1) clearly write up the theory behind the program intervention and 2) determine if the theory is plausible. The entire evaluation will test different parts of the model that indicate whether the theory is working or not.

A logic model (LM) is a graphic presentation of the intervention – what occurs and clear steps as to what change the activities undertaken by the intervention are expected to bring about in the targeted population. Logic models can be impact or implementation oriented. An impact model is sparse in terms of how the program works, but clearly shows the outputs of the program and what they are aimed at affecting. Outcomes are changes that could occur regardless of the program and should be written as such. The implementation model is how the program works and typically resembles a process flow chart. The attached model is an impact model.

We use numbered links with arrows between each box in the logic model. These numbers allow us to:

- Clearly discuss different areas of the model
- Describe why moving from one box to the other brings about the description in the later box
- Set up hypotheses for testing of specific numbered links
- Explicate what we will and will not be testing within the evaluation

Creation of the logic model

While there are several different “looks” to logic models, for our purposes, we are using a multi-level Visio document that has a generic statement about resources in the header, activities in the first row, outputs of those activities in the second row, and outcomes in the third (proximal) and fourth (distal) rows. External factors are shown on the bottom of the diagram. The logic model for the Lights for Learning program is provided in Figure 1 below.

Based on past experience, we are using proximal (influence) and distal (influence) outcomes rather than the typically used short term and long term outcomes. We have found that the issue of timing of when an outcome may occur can get in the way of creating the best model. There can be distal outcomes (i.e., things that happen that are not directly under the “touch” of the program) that occur relatively quickly in

time. As well, there can be proximal outcomes (i.e., outcomes that happen that are under the direct influence of the program) that can take a long time. For example, the Lights for Learning program attempts to increase the knowledge of students on the benefits of energy efficiency, CFLs and Energy Star through educational presentations and the fundraiser. Taking this one step further, the increased knowledge obtained through the program may influence how students and their families consume energy and/or purchase and install energy efficient products, including CFLs. The program typically does not directly attempt to change student behavior, so the outcome is distal to the program influence, but may occur relatively quickly.

When we created the boxes in the logic model, we used the following “road-map”.

Activities – these are discrete activities that roll up to a single “box” that is shown in the model. It separates out activities that may be performed by different groups. Marketing typically has its own box. Each activity has an output. We used program documentation (implementation plans) and/or discussion with program managers to determine activities.

Outputs – As indicated before, these are items that can be counted or seen. It may be the marketing collateral of a marketing campaign, the audits performed by a program, or the number of completed applications. All outputs do not need to lead to an outcome, but if they don’t, we have given a reason why they are included in the model. We used the same sources as for activities to determine outputs.

Proximal Outcomes – these are changes that occur in the targeted population that the program directly “touches”. Multiple proximal outcomes may lead to one or more distal outcomes.

Distal Outcomes – these are changes that are implicitly occurring when the proximal outcome occurs. For example, an EE program may use marketing to bring about Awareness, Knowledge, or Attitudes as a proximal outcome which leads to the distal outcomes of: intent to take actions, which leads to actual installation of EE equipment, which leads to energy impacts.

External Factors – these are known areas that can affect the outcomes shown, but are outside of the program’s influence. Typically, these are big areas such as the economy, environmental regulations, codes / standards for energy efficiency, weather, etc. Sometimes these arose from our discussions with the program managers, but often they were thought about and included based on our knowledge.

Expanding the Impact Model

Once the impact model was drafted, a table that describes the links, the potential performance indicators that could be used to test the link, the potential success criteria that would indicate the link was successful, and potential data sources of the link was created. This is provided in Table 15 for the Lights for Learning program.

When thinking about how to write each of the performance indicators, we asked ourselves “What would I look at to judge whether the link description actions are occurring” and wrote the answer as the performance indicator.

For example, if the link description was:

- The program's marketing collateral is effective at getting schools and organizations to participate in the CFL fundraiser

Then the performance indicator was:

➤ Clarity of the marketing collateral and the number of participants in the program fundraiser.

And the success criteria was:

➤ Half of all schools receiving marketing collateral participate in the program fundraiser

Success criteria were created by us and are thought to be reasonable.

Figure 1. Preliminary Logic Model

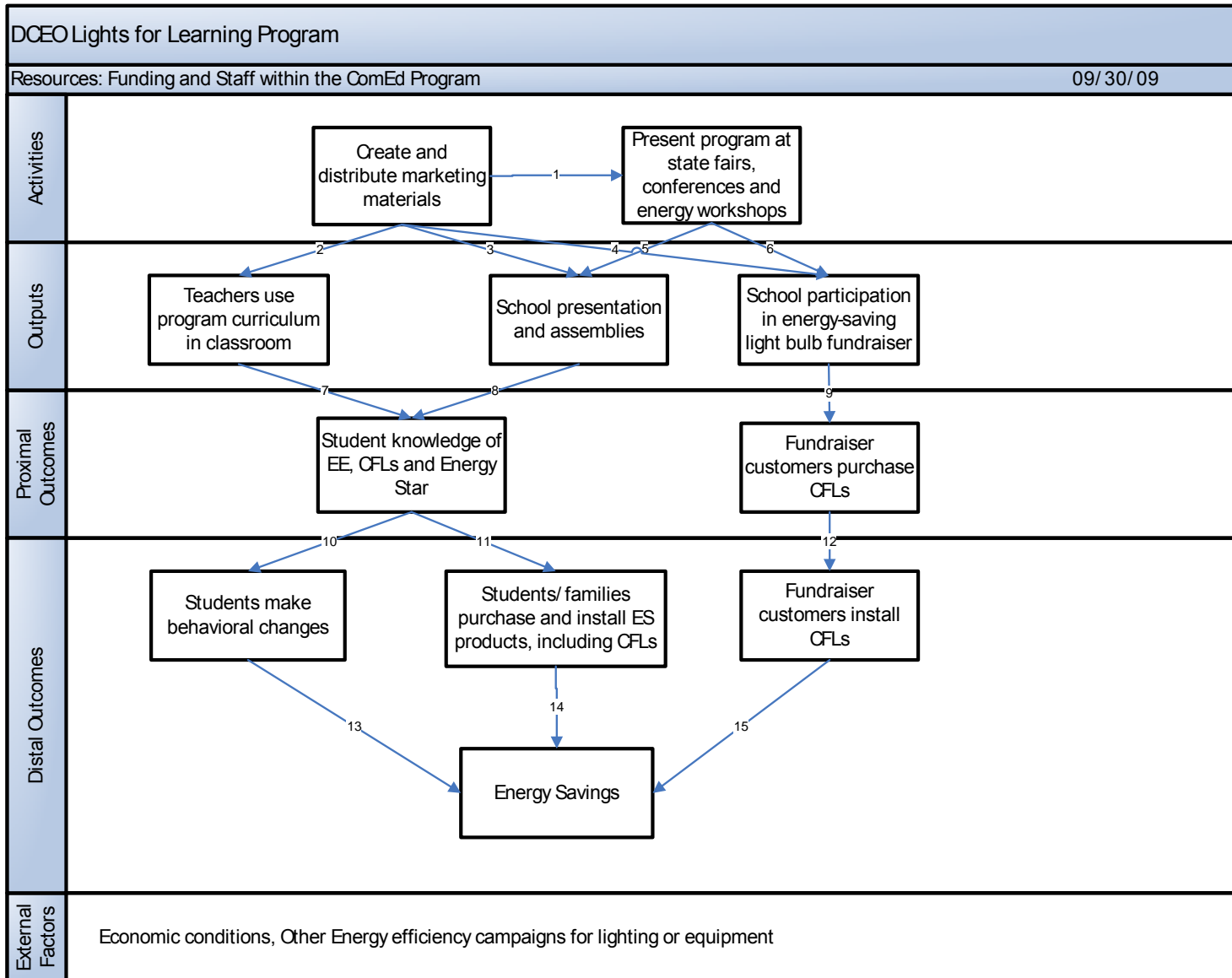


Table 15. Performance Indicators Table

Link	Description of Link	Potential Performance Indicator	Potential Success Criteria for Performance Indicator	Evaluator Data Collection Activities Associated with Link
1	MEEA and APT create marketing collateral such as brochures, flyers and posters is used to supplement the program's presentations at state fairs, conferences and workshops.	<ol style="list-style-type: none"> 1. Breath of marketing materials 2. Clarity of marketing collateral 	<ol style="list-style-type: none"> 1. Number of teachers requesting additional information and/or sign-up at events 2. Marketing collateral is clear and easy to understand 	Program staff interviews; review of marketing materials
2	The program's marketing collateral efforts lead to teacher utilizing the program's curriculum in their lesson plans to supplement their energy efficiency/conservation lessons.	<ol style="list-style-type: none"> 1. Number of teachers incorporating curriculum into lesson plans 2. Marketing collateral is clear and informative 	<ol style="list-style-type: none"> 1. Curriculum meets or exceeds program goals of teacher usage 2. Curriculum/marketing is clear and easy to incorporate into lesson plans 	Program staff interviews; school coordinator interviews
3	The program's marketing collateral is effective at getting schools and organizations to request educational presentations on the benefits of energy efficiency and conservation.	<ol style="list-style-type: none"> 1. Clarity of marketing collateral 2. Number of schools/organizations participating in educational presentations/assemblies 	<ol style="list-style-type: none"> 1. 50% of schools receiving marketing collateral request educational presentations 	Program materials; program tracking database; program staff interviews
4	The program's marketing collateral is effective at getting schools and organizations to participate in the CFL fundraiser	<ol style="list-style-type: none"> 1. Clarity of marketing collateral 2. Number of schools/organizations participating in the fundraiser 	<ol style="list-style-type: none"> 1. 50% of schools receiving marketing collateral participate in fundraiser 	Program materials; program tracking database; program staff interviews
5	The promotion of the program at fairs, conference and workshops also leads to requests for educational presentations and assemblies. Program implementers find that in-person discussions with school representatives to be the most effective recruiting tactic in getting schools to request educational presentations and assemblies.	<ol style="list-style-type: none"> 1. Number of schools/organizations participating in educational presentations/assemblies 	<ol style="list-style-type: none"> 1. 50% of teachers speaking with program staff at event request educational presentations 	Program materials; program tracking database; program staff interviews
6	The program's promotion at fairs, conferences and energy workshops lead to schools and organizations participating in the energy-savings light bulb fundraiser.	<ol style="list-style-type: none"> 1. Number of schools/organizations participating in fundraiser 	<ol style="list-style-type: none"> 1. Meet or exceed annual goals (160 fundraisers in PY1) 2. 50% of schools/organizations are previous fundraiser participants 	Program materials; program tracking database; program staff interviews
7	Students gain additional knowledge about energy efficiency, CFLs and Energy Star products through their teachers' use of the program's curriculum within lesson plan(s).	<ol style="list-style-type: none"> 1. Depth and clarity of classroom curriculum 2. Number of students exposed to L4L curriculum 	<ol style="list-style-type: none"> 1. Increased knowledge of energy efficiency and conservation information 2. Increased knowledge of CFL bulbs and other Energy Star products 	Teacher interviews; program staff interviews

Link	Description of Link	Potential Performance Indicator	Potential Success Criteria for Performance Indicator	Evaluator Data Collection Activities Associated with Link
8	Students attending the educational presentations/assemblies also gain knowledge about energy efficiency, CFLs and Energy Star products.	<ol style="list-style-type: none"> 1. Depth and clarity of presentation covering EE, CFL and ES related issues 2. Number of students participating in presentations/assemblies 	<ol style="list-style-type: none"> 1. Increased knowledge of energy efficiency and conservation information 2. Increased knowledge of CFL bulbs and other Energy Star products 	Teacher interviews; program staff interviews
9	Students who participate in the fundraiser receive their bulb orders and provide them to customers.	<ol style="list-style-type: none"> 1. Total number of light bulbs sold through fundraiser 2. Distribution of wattage types sold 	<ol style="list-style-type: none"> 1. 50% of bulbs sold through fundraiser are equivalent 60 watt bulbs or greater 	Program materials; program tracking database; program staff interviews
10	Students utilize their knowledge of EE obtained from the presentations and classroom lessons to make behavioral changes at home.	<ol style="list-style-type: none"> 1. Total number of students applying the information learned to make behavior changes related to energy efficiency. 	<ol style="list-style-type: none"> 1. Turning off lights. 2. Turning down thermostats 	Teacher interviews in PY2
11	Students utilize their knowledge of Energy Star products to have their family install Energy Star products, including CFLs.	<ol style="list-style-type: none"> 1. Total number of students/families installing EE/Energy Star products. 	<ol style="list-style-type: none"> 1. Asking parents to purchase Energy Star products 	Teacher interviews in PY2
12	Fundraiser customers install the energy-saving light bulbs in their homes. Furthermore, customers who have uninstalled CFLs at home now install the bulbs as a result of student messaging of the benefits of CFLs learned from the fundraiser.	<ol style="list-style-type: none"> 1. Total number of fundraiser-purchased CFLs installed in their home 2. Total number of uninstalled CFLs now being installed in their homes" 	<ol style="list-style-type: none"> 1. 75% of fundraiser-purchased energy-saving light bulbs are installed in homes. 	Customer survey in PY2
13	Behavior changes among participating students result in energy savings.	<ol style="list-style-type: none"> 1. Total number of students making behavioral changes 2. Types of behavioral changes" 	<ol style="list-style-type: none"> 1. kWh savings. 	Teacher interviews in PY2
14	Fundraiser participants who additionally install EE/Energy Star products/appliances, including CFLs result in energy savings for the program	<ol style="list-style-type: none"> 1. Total number of student families installing a CFL in their home 2. Total number of student families purchasing an Energy Star appliance" 	<ol style="list-style-type: none"> 1. 50% of student families intend to install a CFL within the next 3 months 2. 20% of student families intend to purchase an Energy Star appliance within the next 12 months 	Customer survey in PY2
15	Fundraiser participants who install energy-saving light bulbs result in energy savings for the program	<ol style="list-style-type: none"> 1. Total number of CFLs installed in their home 2. CFL wattage types installed in home 3. Room where CFLs are installed" 	<ol style="list-style-type: none"> 1. 50% of participants have installed or intend to install all purchased CFLs within the next month 2. kWh savings 	Customer survey in PY2

3.2.2 Program Metrics and Progress to Date

The Lights for Learning program is meeting key program metrics. The program has been successful in establishing realistic goals. In PY1, the Lights for Learning program completed 161 fundraisers for 139 schools – slightly surpassing its goal of 160 fundraisers. The number of schools participating in the fundraiser grew by 40% compared to the 2007-2008 school year (139 vs. 99), when EEPS became legislation in August 2008. This resulted in a 12% increase in the number of students participating in the fundraiser in PY1, and a 4% increase in the number of energy-saving bulbs sold.

3.2.3 Marketing Strategy

Marketing Materials

A content review of the marketing material shows the messages to be clear and actionable. The materials provide information about the program, including how to sign-up, frequently asked questions, participants testimonials, as well as recycling and disposal information. This information is consistent among the toolkits for ComEd and Ameren service customers. Furthermore, a review of the Lights for Learning website (L4Lprogram.org), shows consistent messages with the print materials, plus more information on weekly energy-saving tips, contests, photos, news and links. Adding videos from a sample of educational presentations/assemblies to the website would showcase the value proposition of the presentations directly to other schools.

Depth interviews with school fundraising coordinators revealed that they learn about the program in a number of ways, including directly from DCEO, ComEd and Ameren, as well as at annual conferences and through their own research on education related to the environment and energy.

Fundraising coordinators found the marketing materials provided to them for distribution to students were effective, but believed that the in-class presentations were more helpful in driving interest in the program among students. One coordinator suggested that the program provide electronic logos and marketing collateral on CD-ROMs or the website to help schools create their own materials.

Present Program at Events

Both program staff and school coordinators view direct face-to-face meetings at events, workshops and fairs as a very effective approach for building awareness of and participation in the program. The program should continue this strategy – attending key state events which blend energy and education stakeholders. Marketing the program at an Earth Day event has proven to be successful and should continue.

3.2.4 Implementation Strategy

Based on feedback from school fundraiser coordinators as well as discussions with the program and implementation staff, the current implementation strategy is effective and allows the program to meet its goals with high participant satisfaction.

Educational Presentations and Assemblies

In PY1, program staff from MEEA and APT conducted a total of 202 in-school presentations to more than 16,500 students throughout the state. The program can adapt the contents of the presentation based

on the size of the audience and their age and grade level. This adaptability allows for the greatest learning impact for students. The program provides teachers with related energy efficiency and conservation material to include in their lesson plans as part of their social science or science curriculum. Larger presentations may also include an exercise bike to show energy demonstrations, which both program staff and school coordinators view as a strong component to getting students engaged in the presentations.

Interviews with school fundraiser coordinators indicate that the presentations and related lessons are successful in increasing students' knowledge of energy efficiency behaviors and products which can be applied both at home and as part of the CFL fundraiser. More interviews with teachers addressing outcomes of the educational aspects of the program (as indicated in the logic model) are suggested for the PY2 evaluation.

School Fundraiser

The program slightly exceeding its goal of 160 fundraisers in PY1. The new incentives and prizes are viewed by coordinators as being effective for motivating students and schools to participate in the fundraiser. If future budget allows, the program should consider increasing the incentives and prizes to schools to further entice and motivate school and student efforts.

Some coordinators expressed confusion between the standard and specialty bulb order forms. Program staff should attempt to minimize confusion among coordinators and streamline the ordering process by combining standard and specialty bulbs onto one order form.

Our evaluation identified no specific implementation problems between APT and EFI. However, in an effort to increase sales of energy-saving bulbs, APT and EFI should continue to re-evaluate the product mixture of bulbs offered in PY2 to include additional LED bulbs.

The program advertises a wait time of 14 days. In practice, most interviewed fundraising coordinators stated that the bulbs were received within this time, even accounting for some backlog. One school experienced a longer wait time of about three to four weeks due to the earliness and size of their order; EFI did not have the bulbs in stock yet. Some schools noted broken bulbs in their orders. This problem was quickly rectified by contacting APT staff and listing the broken items. The replacement bulbs arrived within a week.

Some interviewed fundraiser coordinators were unaware of the prizes or did not know if their school received them. The program may consider taking photos of students who win prizes, so the school can share them with other teachers and students.

3.2.5 School Experience and Satisfaction

Interviews with school fundraiser coordinators revealed very high satisfaction with the program. All six coordinators interviewed rated the overall program design, including marketing/promotional materials, on-site presentations and merchandise delivery, as good or excellent. One school noted that the wait time for the bulbs was longer than expected, but this was mainly attributed to the school being one of the first participants of the program year, as well as their large order. Some schools cited incidents of bulb breakage during delivery, but said that this was quickly rectified. Schools were very pleased with both the bulbs' prices and the 50% revenue split of proceeds.

Coordinators were also very satisfied with the program's implementation process. They stated that the program staff (primarily APT) was very responsive and helpful regarding any problems or questions. Some schools noted that the fundraiser was one of the easiest and best experiences they have had with a

fundraiser. None of the interviewed coordinators had specific goals for the number of bulbs sold or revenue from the fundraiser, but most said that the number of bulbs sold surpassed their expectations.

Two common areas for improvement were identified by school fundraiser coordinators. First, several schools expressed frustration that the bulbs arrived in bulk orders instead of broken out by grade, class or student, since this required the coordinator or teachers involved in the fundraiser to manually sort the orders. However, this is not unlike some other school fundraising program approaches. Moving away from this approach would cost the program more. Secondly, as previously noted, some coordinators expressed confusion between the standard and specialty bulb order forms, and hope that the order forms could be consolidated into a single form. One coordinator noted that the order spreadsheet could be improved, as she had to create her own version to tabulate the individual student orders.

In addition to their satisfactory experience with the program, many of the coordinators expressed delight with the Lights for Learning program's focus on CFLs and energy efficiency. They believe that the program, through both its educational and fundraiser components, encourages discussion about saving energy at home - leaving a positive impact on the community.

3.3 Cost Effectiveness

This section addresses the cost effectiveness of the Lights for Learning program. Cost effectiveness is assessed through the use of the Total Resource Cost (TRC) test. The TRC test is defined in the Illinois Power Agency Act SB1592 as follows:

“ ‘Total resource cost test’ or ‘TRC test’ means a standard that is met if, for an investment in energy efficiency or demand-response measures, the benefit-cost ratio is greater than one. The benefit-cost ratio is the ratio of the net present value of the total benefits of the program to the net present value of the total costs as calculated over the lifetime of the measures. A total resource cost test compares the sum of avoided electric utility costs, representing the benefits that accrue to the system and the participant in the delivery of those efficiency measures, to the sum of all incremental costs of end-use measures that are implemented due to the program (including both utility and participant contributions), plus costs to administer, deliver, and evaluate each demand-side program, to quantify the net savings obtained by substituting the demand-side program for supply resources. In calculating avoided costs of power and energy that an electric utility would otherwise have had to acquire, reasonable estimates shall be included of financial costs likely to be imposed by future regulations and legislation on emissions of greenhouse gases.”¹⁸

For the DCEO Ameren programs, assessment of cost-effectiveness begins with a valuation of each conservation program's net “total resource” benefits, as measured by the electric avoided costs, total incremental costs of measures installed, and administrative costs associated with the program. A program is deemed cost-effective if its net “total resource” benefits are positive, i.e.,:

¹⁸ Illinois Power Agency Act SB1592, pages 7-8.

$$\frac{\text{Total Resource Benefits}}{\text{Total Resource Costs}} \geq 1$$

where,

$$\text{Total Resource Benefits} = PV \left(\sum_{\text{year}=1}^{\text{measurelife}} \left(\sum_i^{i=8760} (\text{impact}_i \times \text{avoidedcost}_i) \right) \right)$$

and,

$$\text{Total Resource Cost} = PV (\text{Incremental Measure Costs} + \text{Utility Costs}).$$

Benefits used in the TRC test calculation include the full value of time and seasonally differentiated generation, transmission and distribution, and capacity costs and also take into account avoided line losses. For each energy-efficiency measure included in a program, hourly (8,760) system-avoided costs were adjusted by the hourly load shape of the end use affected by the measure to capture the full value of time and seasonally-differentiated impacts of the measure. Evaluated impacts were provided to AIU for the DCEO program. End-use load shapes were also employed in calculating peak load impacts for energy-efficiency measures in AIU programs. To calculate the peak load impacts from energy-efficiency measures, end-use load shapes were used to identify the average reduction in demand over AIU’s top hours defined as summer weekdays from 3 p.m. until 7 p.m. Non-energy benefits such as water savings were not factored into the calculation. Additionally, consistent with The State of Illinois Commerce Commission Order 07-0539 (“the Order”) Section 12-103(f)(5), gas benefits were not accounted for under the program.

Future benefits for the TRC are discounted by 9% based on Ameren’s weighted average cost of capital (WACC). Benefits are also adjusted for line losses. Annual avoided costs were adjusted to an hourly stream of costs using hourly system load data to capture seasonality and pricing differences. Consistent with the Order, avoided costs include estimates for financial costs associated with legislation and regulation related to greenhouse gas emissions. The carbon costs are introduced in the 2014 (Program Year 6) costs, valued at \$15 per ton.

The cost component of the analysis considered incremental measure costs and direct utility costs. Incremental measure costs are the incremental expenses associated with installation of energy-efficiency measures and ongoing operation and maintenance costs, where applicable. These costs include the incentive as well as the customer contribution. Utility costs include any customer payments and the expenses associated with program development, marketing, delivery, operation, and evaluation, or monitoring and verification (EM&V).

Table 16 summarizes the unique inputs used to assess the TRC ratio for the Lights for Learning program in PY1. Most of the unique inputs come directly from the evaluation results presented previously in this report. DCEO administration, implementation and other costs come from the budgets filed as part of the

2008 DCEO Energy Efficiency Plan.¹⁹ Incentive costs come from the DCEO program tracking data. Avoided costs for both demand and energy match what was used by AIU for assessing the TRC ratio of their own energy efficiency projects. Avoided costs include estimates for financial costs associated with legislation and regulation related to greenhouse gas emissions. The carbon costs are introduced in the 2014 (Program Year 6) costs, valued at \$15 per ton.

Table 16. Inputs to TRC Assessment for Lights for Learning Program

Item	Value
Measure Life (years)	Varies by Measure
Participants	9364
Annual Gross Energy Savings (MWh)	377
Gross Coincident Peak Savings (MW)	.035
Net-to-Gross Ratio	80%
DCEO Incentive Costs	\$0
Participants Contribution to Incremental Measure Costs	\$25,329
DCEO Administration Costs	\$67,459

Based on these inputs, the TRC for this program is 1.67 and the program passes the TRC test.

¹⁹ Exhibits 1.2 through 1.10 in DCEO testimony filed in Docket Nos. 07-0539 and 07-0540.

4 CONCLUSIONS AND RECOMMENDATIONS

This section highlights the findings and recommendations from the evaluation of the Lights for Learning program implemented by MEEA, APT and EFI on behalf of the Illinois DCEO. The primary objectives of this evaluation are to quantify gross energy impacts from the program for each of the following years: PY1, PY2 and PY3; quantify evaluation adjusted net impacts in PY2 and PY3; and to determine key process-related program strengths and weaknesses and identify ways in which the program can be improved.

4.1 Conclusions

The Lights for Learning program evaluation team analyzed program documents, tracking data and conducted in-depth interviews with program staff, contractor implementers and school fundraiser coordinators. The following conclusions were drawn from these activities.

4.1.1 Program Marketing

Participants are satisfied with the program materials and support received from APT. In-person meetings at state fairs, and workshops will continue to serve as the program's catalyst for enrolling new participants. The incentives and prizes have been effective at motivating students in participating in the fundraiser. While the website offers rich content, it lacks video which can showcase the content of the educational presentations/assemblies.

4.1.2 Program Implementation

Overall, the current implementation strategy is effective and allows the program to meet its goals with high participant satisfaction. However, the process of providing schools the bulbs in bulk did frustrate some school coordinators who had to spend additional time manually sorting the orders by student name. Depending on the school and its resources, this issue might prevent schools from participating in the future. However, this is not unlike some other school fundraising program approaches.

4.1.3 Program Impacts

The evaluation-adjusted per unit gross impact for the Ameren territory is 40.3 kWh per unit averaged over all lighting products. The PY1 evaluation-adjusted value compares with an ex ante value of 51.1 kWh per unit assumed by DCEO averaged for all lighting products sold. The evaluation-adjusted value is lower than the DCEO default value because:

- The PY1 evaluation assumes an installation rate of 0.9 versus 1.0 for the ex ante value.
- The PY1 evaluation assumes CFL hours of use equal 2.34 hours per day versus 3.0 hours per day for the ex ante value.

The PY1 evaluation did not estimate the net-to-gross ratio, but set it at a value of 0.80 until the net-to-gross ratio can be addressed in PY2 and PY3.

4.2 Recommendations

Process Recommendations

Although the Lights for Learning program met its fundraiser participation goals for PY2, there are some changes that could be made to the program processes to improve operations and ensure the program continues to meet its goals in the future.

1. Collect intelligence from non-fundraiser program participants.

The program had set a goal of conducting 160 fundraisers and was able to exceed this goal by one. Furthermore, 202 education presentations were conducted in PY1, which shows that not all schools who signed up for a presentation also selected the fundraiser. It is important to understand why schools receiving the presentation decided against the fundraiser. Capturing this information will improve the contents of the program and likely increase the number of participants to the fundraiser.

2. Create electronic marketing materials for schools

Schools and organizations often create their own materials to promote the program. The program should provide digital items such as electronic logos and marketing collateral on CD-ROMs or the website to help schools create their own materials to promote the program.

3. Include video(s) of educational presentations or assemblies on website

Leverage the program website by adding videos from a sample of educational presentations or assemblies. This marketing strategy will provide the program with an additional channel to showcase the value proposition of its educational presentations to a wider audience.

4. Coordinate the tracking of school bulb sales and educational presentations between the MEEA and APT databases.

Both MEEA and APT have separate files for tracking program participation. The two organizations should work to ensure that there is consistent data between the two databases. Additionally, the databases should track whether schools incorporated the program curriculum into teacher's lesson plans. APT states that they are in frequent contact with participating schools and organizations regarding the different elements of the program, but this information could be tracked more consistently.

5. Create Single Standard and Specialty Order Form for Sponsors

In order to reduce participant confusion about the separate standard and specialty order forms, program staff should look for ways to merge both order forms into one single form for each sponsor.

6. Contact a random sample of participating teachers for a follow up survey

Many of the Lights for Learning program anticipated outputs and outcomes center on educating students about energy efficiency and Energy Star products. To best evaluate the effectiveness of the educational aspects of the program, a survey of participating teachers is recommended. This survey would cover what elements of the curriculum are being taught, how well students understand this information and what actions the students take at home as a result of the program.

7. Ship Bulb Orders by Grade

EFI should investigate the added costs and complexity of packaging all orders by grade. This would reduce coordinator time in sorting out bulbs orders and in turn might retain schools who might have decided the extra work involved was not worth participating in future fundraisers.

Impact Recommendations

1. Develop a Technical Reference Manual to document default savings values in coordination with the evaluation team.

We recommend the program create a technical reference manual to document the default savings values for each lighting product offered through the program. The technical reference manual can build off of the default savings values presented in Section 3. This activity should be done in coordination with the evaluation team, as certain key assumptions will be examined through the impact evaluation processes for several programs.

2. Provide product purchaser contact information to the evaluation team to allow an impact and process survey.

The evaluation plan for PY2 includes a phone survey of a random sample of lighting product purchasers to allow program-specific data collection on key parameters including installation rate, base wattage, hours of use, and daily operating profile.

5 APPENDICES

5.1 Data Collection Instruments

The data collection instruments used in this evaluation consisted of in-depth interview guides for the DCEO program manager, the MEEA program manager and APT implementation manager. Additionally, an in-depth interview guide was used to collect information from participating schools.



DCEO Lights for Learning Interview Guide DCEO and MEEA

July 17, 2009

Name of Interviewee: _____ Date: _____
Title: _____ Company: _____

Introduction

Hi, may I please speak with [NAME]?

My name is ___ and I'm calling from Opinion Dynamics, we are part of the team hired to conduct an evaluation of DCEO's Public Sector Energy Efficiency programs. We're currently in the process of conducting interviews with program managers and key staff in order to improve our understanding of DCEO's programs. At this time we are interested in asking you some questions about the Lights for Learning program (L4L).

Roles and Protocols

1. What is your role and main responsibilities in the L4L program? What is the role and main responsibilities of your organization in the program? Have these changed over time? How long have you carried these out?
2. What is the involvement of ComEd, Ameren and DCEO in the L4L program? What is each organization contribution to the program?
3. Can you describe the relationship between MEEA, APT, and EFI with respect to the program? What is each organization responsible for? What responsibilities are shared?

Overall Goals and Objectives

4. Can you describe the goals of the L4L program?
5. How, if at all, has the program changed from its planning stages to its rollout to now?
6. What performance metrics are you currently using to measure the performance of the program? Is there any documentation of the program goals performance that you can share with us?
7. According to the following metrics, has the program met its goal for the 2008 Program Year? Why or why not?
 - a. The total number of K-12 schools and/or youth groups that participated;
 - b. The total number of CFL bulbs sold;
 - c. The total number of school assemblies/classroom presentations
 - d. The ability to leverage industry dollars to increase program cost-effectiveness; and
 - e. The amount of energy saved each year
8. To what extent, if any, have the conditions in U.S. economy impacted your ability to meet each of the 2008 Program Year goals?
9. In your opinion, how effective has the overall L4L Program been thus far? What elements of the program are working best? What elements need improvement?
10. In the program description, it states that the L4L program may be expanded to LEDs and other advanced lighting technologies in the future. When will a decision be made about this? What are the consideration factors for program expansion?

Program Operation and Implementation

11. I would like to learn more about the program implementation approach. Can you give me an overview of the program? Has the approach changed from what is described in the plan?
 - a. If yes – why were changes made?
 - b. What changes were made?
 - c. Have the changes produced favorable results?

12. How has the program design been adjusted for the 2008 Program Year? What was the process for revising and finalizing the program design and implementation plan for the 2008 program year? Are you happy with how the program has evolved?

13. Are there regular interactions between MEEA, APT, EFI, ComEd and/or DCEO where issues are raised and addressed, data is documented, status reports are delivered, issues resolved, etc? Please describe any infrastructure and communication protocols that help streamline the process.

14. Are there any challenges that have occurred during program implementation? If so, what were they and how were they handled? Does a contractor operations manual exist? If so, can we please obtain a copy?

15. In the implementation plan, it states that EFI negotiated the best bulb prices for MEEA. Does the negotiated vendor price and sale price change each program year?

16. What prices do schools sell the bulbs for? How is the selling price for each bulb determined? Are these prices consistent with the current retail market prices for CFLs?

17. Is the product mix of CFL sales in the 2008 Program Year as it was expected for the program? If not, why not? What should it be and how does the program get to that mix of bulb sales?

18. What percentage of CFLs sold are from direct purchase orders and what percentage are from advance school orders?
 - a. What happens to the CFLs that are sold through advance orders, but never sold and installed?
 - b. What procedures do you have in place to verify that advance orders are sold and not in storage at the school somewhere?

19. Are schools receiving 50% of all profits, as stated in the implementation plan?

20. In the FAQ sheet it states that the L4L fundraiser “tailors every sale to your needs” – either via door-to-door sales or booths. What is the process for determining the best fundraising strategy for each school? How are the visits documented and communicated to MEEA, DCEO, ComEd, etc?

21. In the implementation plan, it states that the program will be further expanded under the EEPS program. When and by how much will the L4L program be expanded and are there any milestones that need to be reached before the program is expanded under the EEPS program?

Incentives

22. Please describe the incentive strategy. What does the \$1.50 and \$3.00 incentive represent?
- a. What was the process for determining incentive levels?
23. What do you perceive to be the level of satisfaction among participating schools with the incentives prices of \$1.50 and \$3.00 for each CFL purchased for fundraiser sales? How do they perceive receiving 50% of all profits?
24. Does the program still provide schools with the opportunity to earn up to an additional \$1,000 sales bonuses? What are the targets/conditions for the additional bonus?
- a. Do you still offer prizes for those students that are able to sell over 25 bulbs?
25. Are you planning any changes in incentive levels in 2009 program year and beyond?

Marketing and Recruitment Activities

26. In the estimated budget, it shows ComEd and Ameren contributing zero dollars to marketing activities. Can you please explain how the marketing budget is determined and the source of funds?
27. How is the program marketed? How do K-12 school fundraising coordinators become aware of the program? Is there a marketing database that captures activities and attributes participation to the specific marketing activity?
- a. Does the program have the appropriate levels of resources (e.g., staff, materials) needed for intense school and youth group recruitment activities? If not, what is needed?
28. Do you think the level of marketing and promotion has been appropriate so far? Have the promotional efforts successful? Did they reach the right audience?
29. In your opinion, what marketing strategy/activity has been most successful in influencing schools to participate? Are there any aspects of the marketing program that could use improvement?
30. Do you anticipate making any changes to marketing efforts for the 2008 Program Year? If so, please describe these changes. Do you have documentation of these changes? If so, how can we arrange to obtain copies?

31. When does most of the recruitment of schools take place? Have you found that some times of the year are better than others for recruiting? (Probe: *do you still recruit during the busy school months of Sept, Oct and Nov or do you wait during the spring term for large recruitment efforts?*)
 - a. Does the program currently or in the future plan to target any non-school entities (e.g., museums, parks and recreation)
32. How many schools participated in the 2008 Program Year?
 - a. Has recruitment of schools met program expectations?
33. On average, how many days is the fundraiser and is this a sufficient amount of time? Does the length vary by school?
34. Has the follow up and sales support process between MEEA and APT been running smoothly? Has the product warehousing and shipment process between MEEA and EFI been running smoothly?
 - a. Are there procedures in place for you to learn about any problems that might come up?
 - b. Do you know if there have been problems with schools not submitting all of the required and/or correct customer purchase information?

Data Tracking

35. Can you please briefly describe what customer purchase data is stored and tracked for this program?
36. Can you describe the process for populating the program tracking database? Who captures the data and how? Does APT or EFI maintain the data tracking systems? Are they consistently maintained and updated? How do ComEd, DCEO and MEEA receive standard and/or custom reports? Can we receive an electronic file of the program tracking database?
37. Are you happy with the program tracking systems? Are you receiving what you are asking for? Does the database contain all required customer data to support program tracking and evaluation? Is there a process for requesting additional data?
38. Do you know of any issues currently with missing data? (e.g., schools that have not provided customer level data, etc.)

Quality Assurance and Quality Control

39. Please describe any quality assurance and control procedures in place to support marketing, shipments, customer tracking, etc.
40. What processes are in place in terms of documenting and reporting these procedures?

From this point forward

41. Do you anticipate making any other changes to the program in the next 2-3 years?
42. Are there any other process-related issues that I have not raised that you would like to see explored in this evaluation?
43. Do you know who the best person would be to speak with at APT? (If not, I'll follow up with APT.)
44. Is there anything else relevant to the program or program's progress that we have not discussed that we should know about?

Thank you very much for taking the time in assisting us with this evaluation. Your contribution is a very important part of the process. We might follow-up with you by phone later, if additional questions arise.



DCEO Lights for Learning Interview Guide - APT

July 17, 2009

Name of Interviewee: _____ Date: _____
Title: _____ Company: _____

Introduction

Hi, may I please speak with [NAME]?

My name is ___ and I'm calling from Opinion Dynamics, we are part of the team hired to conduct an evaluation of DCEO's Public Sector Energy Efficiency programs. We're currently in the process of conducting interviews with contractors of the Lights for Learning (L4L) program in order to improve our understanding of DCEO's programs. At this time we are interested in asking you some questions about the L4L program.

Roles and Protocols

1. What is the nature of APT's business? What is your organization's role and main responsibilities in the L4L program? What is your primary role?
 - a. Have these changed over time?
 - b. How long have you carried these out?
2. In your opinion, how effective has the Illinois L4L program been thus far? What elements of the Illinois program are working best? What elements need improvement?

Overall Goals and Objectives

3. Can you describe the goals of the L4L program?
4. What performance metrics is your organization using to measure its performance against the goals of the program?
5. To what extent, if any, have the conditions in U.S. economy impacted your ability to meet each of the 2008 Program Year goals?

Program Operation and Implementation

6. Are there any challenges that have occurred during program implementation? If so, what were they and how were they handled? Does a contractor operations manual exist? If so, can we please obtain a copy?
7. How are the particular program bulbs selected? What is the mix of product? Do you revisit this every year? Do they need to be Energy Star rated or have gone through independent quality testing?

8. What percentage of CFLs sold are from direct purchase orders and what percentage are from advance school orders? What happens to the CFLs that are sold through advance orders, but never sold and installed?
9. Are there regular interactions between MEEA, APT, EFI, DCEO, and ComEd where issues are raised and addressed, data is documented, status reports are delivered, issues resolved, etc? Please describe any infrastructure and communication protocols that help streamline the process.
10. In the FAQ sheet it states that the L4L fundraiser “tailors every sale to your needs” – either via door-to-door sales or booths. What is the process for determining the best fundraising strategy for each school? How are the visits documented and communicated to MEEA, DCEO, ComEd, etc?

Recruitment of and Interaction with School Fundraising Coordinators

11. How has recruitment of K-12 schools and/or youth groups occurred?
 - a. Does the program have the appropriate levels of resources (e.g., staff, materials) needed for intense school and youth group recruitment activities? If not, what is needed?
12. When does most of the recruitment of schools take place? Have you found that some times of the year are better than others for recruiting? (Probe: *do you still recruit during the busy school months of Sept, Oct and Nov or do you wait during the spring term for large recruitment efforts?*)
 - a. Does the program currently or in the future plan to target any non-school entities (e.g., museums, parks and recreation)
13. How many schools participated in the 2008 Program Year?
 - a. Has recruitment of schools met program expectations?
14. On average, how many days is the fundraiser and is this a sufficient amount of time? Does the length vary by school?
15. I noted in the program material that the program targets Earth Day as a great venue for the fundraiser. Is this still the case? Are there any other times/events that you encourage the schools to use to boost their fundraising?
16. Is the product mix of CFL sales in the 2008 program year as it was expected for the program? If not, why not? What should it be and how does the program get to that mix of bulb sales?
17. Has the follow up and sales support process between MEEA and APT been running smoothly? Has the product warehousing and shipment process between MEEA and EFI been running smoothly?
 - a. Are there procedures in place for you to learn about any problems that might come up?
 - b. Do you know if there have been problems with schools not submitting all of the required and/or correct customer purchase information?

Data Tracking

18. Can you please briefly describe what customer purchase data is stored and tracked for this program?
19. Can you describe the process for population the program tracking database? Who captures the data and how? Does APT or EFI maintain the data tracking systems? Are they consistently maintained and updated? How do ComEd, DCEO and MEEA receive standard and/or custom reports? Can we receive an electronic file of the program tracking database?

Quality Assurance and Quality Control

20. Please describe any quality assurance and control procedures in place to support marketing, shipments, customer tracking, etc.
21. What processes are in place in terms of documenting and reporting these procedures?

From this point forward

22. Do you anticipate making any other program implementation changes to the program in the next 2-3 years? Is it expected that the responsibilities partnership agreement between MEEA and APT will change during this time? If yes, how so?
23. Are there any other process-related issues that I have not raised that you would like to see explored in this evaluation?
24. Is there anything else relevant to the program or program's progress that we have not discussed that we should know about?

Thank you very much for taking the time in assisting us with this evaluation. Your contribution is a very important part of the process. We might follow-up with you by phone later, if additional questions arise.



DCEO Lights for Learning Interview Guide School Fundraising Coordinators

July 15, 2009

Name of Interviewee: _____ Date: _____
Title: _____ Company: _____

Introduction

Hi, may I please speak with [NAME]?

My name is ___ and I'm calling from Opinion Dynamics, we are part of the team hired to conduct an evaluation of the Lights for Learning program. We're currently in the process of conducting interviews with school fundraising coordinators in order to gauge your level of satisfaction with the program and to help us improve the program. At this time we are interested in asking you some questions about the Lights for Learning fundraiser (L4L).

Roles and Goals

1. What is your role in the school? What are your main responsibilities?
2. What was the process for selecting the L4L program as a school fundraising activity? (e.g., school committee, students, parents, etc)?
 - a. Which month did you have the fundraiser?
 - b. Was it conducted in the school, door-to-door, or via another approach?
3. What was the **most important** motivating factor for participating in the L4L program?
 - a. How many school years have you participated in the LFL program?
4. What are some of the **other factors** that led to this decision?
5. What were the school's goals for the L4L program? Which goals were met and which were not and why?
6. How much money did the school collect as a result of the L4L fundraiser program? Are you happy with this amount, or did you expect to collect more?

Program Design and Implementation

7. Looking back with how things went, what are your overall impressions of the L4L program?

- a. What, if any problems, did your school experience with the program?
 - b. How were they resolved?

8. What areas of the L4L program need improvement? (e.g., marketing, sales support, education activities, order fulfillment, etc). Conversely, which areas is the program very strong in?

9. How would you rate the overall program design – (e.g., marketing/promotional materials, on-site presentations, merchandise delivery, etc)? Would you say the program design is poor, good or excellent? Which areas of the design does the program fall short of being excellent? What improvements would you recommend to the program administrators?

10. How would you rate the overall implementation process (e.g. working with L4L implementation and field staff from beginning to end)? Would you say the process was easy, difficult or very difficult? Which areas of the implementation process does the program fall short of being easy? What improvements would you recommend to the program administrators?
 - a. In your opinion, has the program been implemented in a manner consistent with the program design?

11. The fundraiser information sheet states that “each coordinator will receive the following materials to support the fundraiser:”
 - a. Order form – one per student
 - b. Posters – For placement at school or businesses, featuring space for contact information
 - c. Certificates of participation – One for each class or organization at the conclusion
 Did you receive everything as is mentioned above?

12. The FAQ sheet states that “help is available through the entire process.” Did you find this to be true? Please explain where help could have been improved.

13. What is your overall satisfaction with the L4L program? Would you say you were extremely dissatisfied, somewhat dissatisfied, somewhat satisfied, satisfied or extremely satisfied? Please explain why and what could have been done to improve your satisfaction level (ask only if satisfaction level is first three).
 - a. Would you recommend this fundraiser to other schools? Why/why not?
 - b. Would you sign-up to do this fundraiser again? Why/why not?

Incentives and Bulb Prices

14. What is your level of satisfaction with the incentive prices of \$1.50 and \$3.00 for each CFL purchased for the fundraiser? Would you say you were extremely dissatisfied, somewhat dissatisfied, somewhat satisfied, satisfied or extremely satisfied? Please explain why and what could have been done to improve your satisfaction level (ask only if satisfaction level is first three).
 - a. How about your level of satisfaction with receiving 50% of all profits?

15. What was the overall perception among purchasers of CFL bulbs prices at the fundraiser? Were the prices of the bulbs perceived as being at current market prices?
 - a. Did the sizes and styles of the CFL bulbs meet the needs of all customers?

16. Did students that sold 25 or more bulbs win a prize? What was the prize?

17. Did your school also collect an additional \$1,000 sales bonus?

Order and Delivery

18. In the fundraising information sheet it states that bulbs will be shipped to the school within 14 days for distribution to each student? Were the bulbs shipped within 14 days? If not, did anyone communicate the estimated shipment date to you/others?

- a. Did each student receive the correct total number of bulbs to fulfill their individual sales orders?

19. How satisfied are you with the overall ordering and delivery process? Would you say you were extremely dissatisfied, somewhat dissatisfied, somewhat satisfied, satisfied or extremely satisfied? Please explain why and what could have been done to improve your satisfaction level (ask only if satisfaction level is first three).

Marketing and Promotion

20. How would you rate the effectiveness of the marketing activities and promotional materials to:

- a. Increase student awareness of the benefits of CFL bulbs (*Not at all, Somewhat, Very*)
- b. Persuade schools to participate in the fundraiser (*Not at all, Somewhat, Very*)
- c. Influence the community to purchase CFL bulbs (*Not at all, Somewhat, Very*)
- d. Influence the purchasers to install and keep CFL bulbs in their homes to conserve energy and save money (*Not at all, Somewhat, Very*)

21. Are you satisfied with the amount of marketing activities and promotional materials your school received for the L4L fundraiser? In your opinion, what marketing activity or material was most impactful to the success of the fundraiser?

- a. Which component of the marketing activities and promotional materials had the greatest impact on the success of the fundraiser?

22. Are there any aspects of the marketing activities and promotional materials that could use improvement?

Awareness and Education

23. How has the L4L fundraiser educated your students on the energy, economic, and environmental benefits of CFL bulbs?

- a. Has your school introduced or reinforced curriculum in this area?
- b. Does your school now install CFL bulbs in its classrooms, offices, etc., as opposed to incandescent light bulbs? Why/why not?

24. What educational impact do you believe the fundraising event had on the community (e.g., parents, groups, etc)?

25. Is there anything else relevant to your experience with the L4L fundraising program that we have not discussed that we should know about?

Thank you very much for taking the time to speak with me. Your contribution is a very important part of the process. We might follow-up with you by phone later, if additional questions arise.