STATE OF ILLINOIS
ILLINOIS COMMERCE COMMISSION

Central Illinois Light Company d/b/a AmerenCILCO, Central Illinois Public Service Company d/b/a AmerenCIPS, and Illinois Power Company d/b/a AmerenIP. Verified Petition for Approval of Integrated Electric and Natural Gas Energy Efficiency Plan.	))))))	Docket No. 10-0568

:

STAFF GROUP CROSS EXHIBIT 1

STIPULATED DATA REQUEST RESPONSES

The Staff witnesses of the Illinois Commerce Commission ("Staff") and Central Illinois Light Company ("AmerenCILCO"), Central Illinois Public Service Company ("AmerenCIPS"), and Illinois Power Company ("AmerenIP") (the "AIU") have stipulated that the following data request responses and attachments, attached hereto, should be entered into the evidentiary record in the instant energy efficiency proceeding:

A AIC-DB 1.2	Q JLH 3.03 Attach 2 Ameren Illinois Fixed Savings Comparison
B ST 1.02	R JLH 3.04
C ST 1.04	S JLH 3.05
D ST 1.07	T JLH 5.01
E JLH 1.05	U JLH 5.02
F JLH 1.05 Attach 1	V JLH 5.03
G JLH 1.05 Attach 2 Ameren Illinois Fixed Values	W JLH 5.04
H JLH 2.01	X JLH 5.05

OFFICIAL FILE
ILL. C. C. DOCKET NO. 10-0568
Staff Group Cross Exhibit No. 1
Witness
Date 11-18-10 Reporter CB

I JLH 2.02	Y JLH 5.06
J JLH 2.03	Z JLH 5.07
K JLH 2.04	AA JLH 5.08
L JLH 2.05	
M JLH 3.01	
N JLH 3.02	
O JLH 3.03	
P JLH 3.03 Attach 1 Ameren IL Final Lighting EMV Report PY1	

WHEREFORE, Staff respectfully requests that the attached documents be entered into evidence in this proceeding.

November 18, 2010

Respectfully submitted,

JAMES V. OLIVERO
JESSICA CARDONI
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AIC-DB 1.2

ILLINOIS COMMERCE COMMISSION STAFF RESPONSE TO AMEREN UTILITIES' DATA REQUESTS DOCKET NO. 10-0568

AIC-DAB 1.2 In lines 175-177, Mr. Brightwell states "if the Commission rejects the Demand Response component of Ameren's plan, I recommend that the monies budgeted to demand response be reallocated across the electric efficiency portfolio." Does Mr. Brightwell believe that a separate demand response program is not required or needed?

Response: Dr. Brightwell has not formed an opinion as to whether a separate demand response program is required or needed. The lines quoted above are an answer to the question on lines 173-174: "What do you recommend as the savings targets if the Commission rejects Ameren's Demand Response plan **as proposed by Staff witness Ms. Hinman**?" (emphasis added) Dr. Brightwell merely calculated the additional savings that could be achieved if Ms. Hinman's recommendation was accepted by the Commission.

Prepared by: David Brightwell

Date Requested: November 8, 2010

Date Submitted: November 9, 2010

ST 1.02

Ameren Illinois Company
Response to ICC Staff Data Requests
Docket No. 10-0568
Verified Petition for Approval of Integrated Electric and Natural Gas Energy Efficiency Plan.
Response Date: 10/27/2010

ST 1.02

Referring to Ameren Exhibit 1.1, Table 6 (Total), please provide the amount of incentive compensation expense by program (both O&M and capitalized) included in the proposed Energy Efficiency and Demand-Response Plan ("Plan") budgets. Provide all supporting workpapers, calculations, and allocations of the amounts in this response. If applicable, provide workpapers and supporting documents in Excel format with working formulas.

RESPONSE

Prepared By: Keith Martin
Title: Manager, Customer Service & Energy Efficiency
Phone Number: 309-677-5562

The plan budgets as proposed do not include any Ameren Illinois employees. However, if Ameren Illinois decides to hire incremental employees for positions supporting energy efficiency plans, their costs, as described in Rider EDR and GER, are appropriately included as "incremental costs" within the cost recovery formula.

ST 1.04

Ameren Illinois Company
Response to ICC Staff Data Requests
Docket No. 10-0568
Verified Petition for Approval of Integrated Electric and Natural Gas Energy Efficiency Plan.
Response Date: 10/27/2010

ST 1.04

Is it Ameren's position that, if the Commission approves the proposed Plan programs that include incentive compensation costs, the Commission is approving Ameren's incentive compensation plans as prudent? If yes, please provide the basis for this position in Docket No. 10-0568. If no, explain where in the tariff it provides for incentive compensation plan costs to be reviewed for prudence.

RESPONSE

Prepared By: Ryan Schonhoff
Title: Regulatory Consultant
Phone Number: 314 554 4190

Objection. The question appears to call for a legal analysis and conclusion. Notwithstanding the objection, Ameren Illinois answers as follows:

No, approval of an energy efficiency plan is not the same as approval of incentive compensation costs. If the Commission chooses to examine incentive compensation plan costs included in the riders, such review could be done in the annual reconciliation proceeding. The company suggests that the portion of incentive compensation allowed through Riders match the percentage allowed in base delivery rates in the most recent delivery services rate case. This would minimize review of annual incentive compensation costs included within energy efficiency plans. Applying the percentage from the most recent rate case would appropriately leave discussion of prudence of ratepayer funded incentive compensation within regular rate cases, rather than the energy efficiency plans.

ST 1.07

Ameren Illinois Company
Response to ICC Staff Data Requests
Docket No. 10-0568
Verified Petition for Approval of Integrated Electric and Natural Gas Energy Efficiency Plan.
Response Date: 10/27/2010

ST 1.07

Please provide copies of all incentive compensation plans related to all incentive compensation amounts included in the proposed Plan program budgets.

RESPONSE

Prepared By: Keith A. Martin
Title: Manager of Customer Service & Energy Efficiency
Phone Number: 309-677-5562

The proposed Plan budget does not explicitly include incentive compensation expenses because no Ameren Illinois employees are assumed to be included in the Plan. This does not mean that Ameren Illinois will not seek to hire incremental employees to administer the energy efficiency Plans at some point during program years 4 – 6. Please also see ST 1.02.

JLH 1.05

Ameren Illinois Company
Response to ICC Staff Data Requests
Docket No. 10-0568
Verified Petition for Approval of Integrated Electric and Natural Gas Energy Efficiency Plan.
Response Date: 10/18/2010

JLH 1.05

Please provide a comprehensive list of all values that Ameren Illinois is asking the Commission to "deem" in this docket (e.g., specific measure level annual savings values, hours of operations, realization rates, net-to-gross ratios). This list should be provided in an unlocked Excel spreadsheet with working formulas and should contain references as to where these proposed values are cited in the Company's filed testimony.

RESPONSE

Prepared By: Karen Kansfield
Title: Consultant
Phone Number: 309-677-5045

Mr. Martin addresses Ameren Illinois' proposal to use fixed values (consistent with Mr. Weaver's testimony) on page 13, lines 291-294 of Mr. Martin's testimony. In his testimony, Mr. Weaver specifies the types of values Ameren Illinois proposes to fix on pages 20-21, lines 475-488, and provides the rationale for fixed values. As stated in Mr. Weaver's testimony on page 22, lines 515-516, fixed values for use going forward should be based on the best information from the most recent evaluation and planning activities available. This requires consideration of Appendix A (see Ameren Ex. 2.0, p. 21) which is the basis for determining the proposed Plan's targets, both savings and spending, and is based on the DSM Potential Study and industry norms. This also requires consideration of the savings values and NTG ratios that Ameren Illinois proposes to be fixed and which reflect the most recent evaluation and planning activities available (see JLH 1.05 Attach 2). The business program savings values were derived from the attached Ameren Illinois Business Measures Assumptions (see JLH 1.05 Attach 1). (Please note that the business program measure codes in the JLH 1.05 Attach 2 tables correspond with the measures and measure codes in JLH 1.05 Attach 1 which provides the assumptions and calculations used to determine savings values.)

As specified in Mr. Weaver's testimony on page 24, lines 563 – 577, some programs use a customized approach, and therefore, fixed savings values are not explicitly provided for three programs. However, Ameren Illinois is proposing to fix NTG ratios for these three programs. These three programs are BUS-Custom Incentive, BUS-Retro-commissioning and BUS-New Construction.

JLH 1.05 Attach 1

ActOnEnergy™

Ameren Illinois Business Program

Measure Savings Algorithms and Assumptions

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1.0 Introduction

This reference manual provides methods, formulas and default assumptions for estimating energy savings and peak reduction impacts from measures and projects that receive cash incentives from the Ameren Illinois Business Program.

The reference manual is organized by program (or program component), end use and measure. Each section provides mathematical equations for determining savings (algorithms), as well as default assumptions for all equation parameters that are not based on site-specific information. In addition, any descriptions of calculation methods or baselines are provided, as appropriate. The parameters for calculating savings are listed in the same order for each measure. Algorithms are provided for estimating annual energy and demand impacts. Data assumptions are based on Illinois specific data, where available. Where Illinois data was not available, data from neighboring regions is used where available and in some cases, engineering judgment is used.

Data sources used, in the general order of preference, included, but were not necessarily limited to the following:

- AIU Energy Efficiency and Demand Response Plan (dated November 15, 2007)
- AIU Natural Gas Energy Efficiency Plan (dated February 11, 2008)
- 2004-2005 Database for Energy Efficiency Resources (CA DEER database)
- 2007-2008 Database for Energy Efficiency Resources (CA DEER database) Update
- ComEd Program Design Information
- Other EE Program Design Information (e.g. Efficiency Maine, Focus on Energy, etc.)
- GDS/SAIC Staff expertise

2.0 Gross-to-Net Savings Calculation

The algorithms shown with each measure calculate gross customer electric savings without counting the effects of line losses from the generator to the customer, free ridership, spillover, or persistence. The algorithms do not distribute the savings among the different costing periods. The formulae for converting gross customer-level savings to net generation-level savings (counting free ridership, spillover and persistence) for the different costing periods are as follows:

$$\text{Net kWh}_i = \Delta\text{kWh} \times (1+\text{LLF}_i) \times (1\text{-FR+SPL}) \times \text{PF} \times \text{AF}_i$$

and

$$\text{Net kW}_j = \Delta\text{kW} \times (1+\text{LLF}_j) \times (1\text{-FR+SPL}) \times \text{PF} \times \text{CF}_j$$

where

NetkWh_i	=	kWh energy savings at generation-level, net of free riders and persistence, and including spillover, for period *i*
i	=	subscript used to denote variable energy rating periods (Winter Peak, Winter Off-Peak, Summer Peak, Summer Off-Peak)
ΔkWh	=	gross customer annual kWh savings for the measure
LLF_i	=	line loss factor for period *i*
FR	=	freeridership
SPL	=	spillover for measure
PF	=	persistence factor for measure
AF_i	=	allocation of annual energy savings by season for period *i*
netkW_j	=	kW demand savings, net of free riders and persistence, and including spillover, for season *j*
j	=	subscript used to denote variable seasonal peaks (Summer, Winter and Spring/Fall).
ΔkW	=	gross customer connected load kW savings for the measure
LLF_j	=	line loss factor for seasonal peak *j*
CF_j	=	the percent of kW savings that is concurrent with Illinois seasonal peak, for season *j*

All of the parameters except line loss factors (LLF), allocation factor (AF), and coincidence factor (CF) for the above equations may be found in the specific section for the measure. AF and CF are summarized in Table 2.

3.0 Interactive Effects

The TRM provides specific savings algorithms for many prescriptive measures. When a customer installs a prescriptive measure, the savings are determined according to these algorithms. In some cases these algorithms include the effects of interactions with other measures or end uses (e.g., cooling and heating effects from interior lighting waste heat). For "custom" measures, ActOnEnergy performs site-specific customized calculations. In this case, ActOnEnergy takes into account interactions between measures (e.g., individual savings from installation of window film and replacement of a chiller are not additive because the first measure reduces the cooling load met by the second measure). ActOnEnergy will calculate total savings for the package of custom measures being installed, either as a single package or in rank order of measures as described below. If a project includes both prescriptive and custom measures, the prescriptive measures will be calculated in the normal manner. However, the prescriptive measures will be assumed to be installed prior to determining the impacts for the custom measures. Custom interior lighting measures will use the standard prescriptive algorithm to estimate waste heat impacts.

4.0 Persistence

Persistence factors may be used to reduce lifetime measure savings in recognition that initial engineering estimates of annual savings may not persist long term. This might be because a measure is removed or stops functioning prior to the end of its normal engineering lifetime, because it is not properly maintained, it is overridden, it goes out of calibration (controls only), or for some other reason. Each measure algorithm contains an entry for persistence factor. The default value if none is indicated is 1.00 (100%). A value lower than 1.00 will result in a downward adjustment of lifetime savings and total resource benefits. For any measure with a persistence value less than 1.00, the normal measure life ("Engineering Measure Life") will be reduced to arrive at an "Adjusted Measure Life" for the purposes of measure screening, savings, Forward Capacity Market claims, and tracking. The "Adjusted Measure Life" used will be equal to the product of the Engineering Measure Life and the persistence factor. Both the Engineering Measure Life and the Adjusted Measure Life will be shown in each measure algorithm.

5.0 Glossary

The following glossary provides definitions for necessary assumptions needed to calculate measure savings.

Baseline Efficiency (η_{base}): The assumed standard efficiency of equipment, absent an ActOnEnergy program.

Coincidence Factor (CF): Coincidence factors represent the fraction of connected load expected to be "on" and using electricity coincident with a particular system peak period, on a diversified basis. Coincidence factors are provided for summer and winter peak periods.

Connected Load: The maximum wattage of the equipment, under normal operating conditions, when the equipment is "on."

Energy Interactive Effects: Measure interaction occurs where installation of an energy efficiency measure that has a primary effect on one end use (such as lighting) produces a corresponding secondary effect on another end use (such as heating or cooling). Interactive effects can cause an increase or decrease in the energy consumption associated with the secondary end use. The issue becomes even more complex when considering interactive effects across electricity and natural gas consumption. Examples of significant measure interactions include heating penalties and cooling benefits associated with installation of energy efficient lighting and equipment, and insulation/air sealing measures that save electricity used for cooling and natural gas used for heating.

Freeridership (FR): A program's ***free ridership rate*** is the percentage of program participants deemed to be free riders. A ***free rider*** refers to a customer who received an incentive through an energy efficiency program who would have installed the same or a smaller quantity of the same high efficiency measure on their own within one year if the program had not been offered.

Full Load Hours (FLH): The equivalent hours that equipment would need to operate at its peak capacity in order to consume its estimated annual kWh consumption (annual kWh/connected kW).

High Efficiency (η_{effic}): The efficiency of the energy-saving equipment installed as a result of an efficiency program.

Lifetimes: The number of years (or hours) that the new high efficiency equipment is expected to function. These are generally based on engineering lives, but sometimes adjusted based on expectations about frequency of remodeling or demolition.

Line Loss Factor (LLF): The marginal electricity losses from the generator to the customer meter – expressed as a percent of meter-level savings. The Energy Line Loss Factors vary by period. The Peak Line Loss Factors reflect losses at the time of system peak, and are shown for two seasons of the year (winter and summer). Line loss factors are the same for all measures.

Load Factor (LF): The fraction of full load (wattage) for which the equipment is typically run.

Operating Hours (HOURS): The annual hours that equipment is expected to operate.

Persistence (PF): The fraction of gross measure savings obtained over the measure life.

Allocation of Annual Energy Savings by Season (AF): Allocation factors for defined times of the year that describe when energy savings will be realized for a specific measure. Allocation factors have been developed for four time periods: winter on and off-peak; and summer on and off-peak.

Spillover (SPL): Spillover refers to energy-efficient equipment installed in any facility in the program service area due to program influences, but without any financial or technical assistance from the Program. It is expressed as a percent or fraction of the gross savings attributable to program participation.

Incremental Cost: The cost difference between the installed cost of the high efficiency measure and the standard efficiency measure.

6.0 Loadshapes

The following table includes a listing of measure end-uses and associated loadshapes.

Table 2 Measure End-Uses and Associated Loadshapes

#	Enduse	Coincidence Factor (CF)		Allocation of Annual Energy Savings by Season (AF)			
		Winter	Summer	Winter		Summer	
				Peak	Off Peak	Peak	Off Peak
1	Commercial Lighting	50%	70%	50%	10%	30%	10%
2	Commercial Motors	100%	100%	50%	10%	30%	10%
3	Commercial HVAC	1.5%	72%	15%	2.5%	60%	17.5%
4	Commercial Refrigeration	100%	0%	33%	37%	12%	18%
5	Commercial Flat	100%	100%	32%	35%	16%	18%

All loadshape numbers referenced in the measure characterizations correspond to the most recent generation of the loadshape as detailed in the loadshape table shown above. The coincidence factors in the standard load profile shown above are based on the listed assumptions for full load hours. To account for the effect on peak savings from a change in full load hours, use of full load hours different than the standard will result in an automatic adjustment of the coincident peak factors (% of connected load kW) used in screening and reported in the database, unless custom coincident peak factors are also entered. The coincidence factors are multiplied by the ratio of [custom full load hours]/[standard full load hours], with a maximum value of 100% for each factor. As a result, coincidence factors for particular measures may be higher or lower than the standard factors listed above even when a standard load profile is used.

8.0 Mapping Strategy

In many instances the DEER database was used as a basis for savings calculations. For those measures that used the DEER information the following strategy was used to map the building types between those in the DEER database and the building types used in the ActOnEnergy program.

[illegible]	[illegible]
Education - Primary School	School/College
Education - Secondary School	
Education - Community College	
Education - University	
Grocery	Grocery
Health/Medical - Hospital	Medical
Health/Medical - Nursing Home	
Lodging - Hotel	Hotel/Motel
Lodging - Motel	
Lodging – Guest Room	
Manufacturing - Light Industrial	Manufacturing/Industrial
Office - Large	Office
Office - Small	
Restaurant - Sit-Down	Restaurant
Restaurant - Fast-Food	
Retail - 3-Story Large	Retail/Service
Retail - Single-Story Large	
Retail - Small	
Storage - Conditioned	Warehouse/Distribution
Storage - Unconditioned	
Warehouse - Refrigerated	

Commercial Measures

Lighting

High Performance T8 Relamp and Reballast

Measure Code: BPL60

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: The incremental costs are from the GDS Model Ameren IL Lighting dated 6-9-08. Light Calcs – FINAL ComEd.xls.

Description: Upgrade an existing T12 or T8 fixture with new High-Performance or Low-Wattage T8 Lamps and Ballasts. Lamp and Ballast combination must be listed on the CEE List (www.cee1.org).

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times N_L \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times N_L \times ISR$

ΔkW = Gross customer connected load kW savings for the measure
ΔkW_S = Gross customer connected load kW savings per lamp, found in table below
N_L = Number of lamps being replaced
ISR = In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh = Gross customer annual kWh savings for the measure
ΔkWh_S = Gross customer connected load kWh savings per lamp, found in table below

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Office	0.012	40.03	0.016	53.39
School (K-12)	0.006	26.24	0.008	34.99
College/University	0.010	48.09	0.013	64.14
Retail/Service	0.013	58.23	0.017	77.66
Restaurant	0.010	73.95	0.014	98.63
Hotel/Motel	0.009	68.62	0.012	91.52
Medical	0.011	125.59	0.015	167.51
Grocery	0.012	80.18	0.016	106.94
Warehouse	0.011	46.45	0.015	61.95
Light Industry	0.013	54.36	0.017	72.50
Heavy Industry	0.013	54.36	0.017	72.50
Average = Miscellaneous	0.011	61.25	0.015	81.69

Baseline
One or more existing T12 or T8 fixtures with lamps and ballasts.

High Efficiency
This is an upgrade of an existing baseline fixture with new high-performance or low-wattage T8 lamps and new high-performance or low-wattage ballasts. The new high-performance or low-wattage lamps and ballasts must be listed on the Consortium for Energy Efficiency's (CEE) "Qualifying lamps, 120- and 277-volt ballasts" (high-performance) or "Reduced-wattage qualifying lamps, ballasts" (low-wattage) spreadsheets, located at http://www.cee1.org/com/com-lt/com-lt-main.php3.

Operating Hours
See Appendix D.

Loadshape
Loadshape #1.

Persistence
The persistence factor is assumed to be one.

Lifetimes[1]
11 years

Calculations
Per Lamp Demand Savings = Non-coincident Demand Savings X Demand Interactive Effects X Coincident Diversity Factor

Per Lamp Energy Savings = Non-coincident Demand Savings X Energy Interactive Effects X Hours of Operation

Where the Reference Tables below and the Hours of Operation in Appendix D are used to calculate the demand and energy savings per lamp by building type.

Reference Tables

[illegible]	[illegible]	[illegible]	[illegible]
Office	1.25	0.81	1.17
School (K-12)	1.23	0.42	1.15
College/University	1.22	0.68	1.15
Retail/Service	1.19	0.88	1.11
Restaurant	1.26	0.68	1.15
Hotel/Motel	1.14	0.67	1.14
Medical	1.26	0.74	1.18
Grocery	1.25	0.81	1.13
Warehouse	1.09	0.84	1.06
Light Industry	1.08	0.99	1.04
Heavy Industry	1.08	0.99	1.04
Average = Miscellaneous	1.19	0.77	1.12

[1] Measure Life Study prepared for The Massachusetts Joint Utilities by ERS. November 17, 2005.

Premium	4-lamp	4 ft	F40T12 / ES	34	144	F32T8 / ES	28	96	0.012	35%
T8s	3-lamp	4 ft	F40T12 / ES	34	103	F32T8 / ES	28	72	0.010	25%
	1-lamp	4 ft	F40T12 / ES	34	43	F32T8 / ES	28	25	0.018	10%
	2-lamp	4 ft	F40T12 / ES	34	72	F32T8 / ES	28	48	0.012	30%
Weighted Average	----	----	----	----	----	----	----	----	**0.012**	----
	2 lamp	8 ft	F96T12 / ES	60	132	F96T8	57	100	0.016	75%
	1-lamp	8 ft	F96T12 / ES	60	77	F96T8	57	60	0.017	25%
Weighted Average	----	----	----	----	----	----	----	----	**0.016**	----

New Fluorescent Fixtures

Measure Code: BPL62

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: The incremental costs are from the GDS Model Ameren IL Lighting dated 6-9-08. Light Calcs – FINAL ComEd.xls.

Description: 2 to 4 ft. New Lighting Fixture with T5 or High-Performance T8 Lamps and Ballasts Replacing T12 fixture. T5 and High Performance T8 Systems are eligible. T8 Lamp and Ballast combination must be listed on the CEE List (www.cee1.org).

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times N_L \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times N_L \times ISR$

ΔkW = Gross customer connected load kW savings for the measure
ΔkW_S = Gross customer connected load kW savings per lamp, found in table below
N_L = Number of lamps being replaced
ISR = In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh = Gross customer annual kWh savings for the measure
ΔkWh_S = Gross customer connected load kWh savings per lamp, found in table below

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Office	0.012	40.03	0.016	53.39
School (K-12)	0.006	26.24	0.008	34.99
College/University	0.010	48.09	0.013	64.14
Retail/Service	0.013	58.23	0.017	77.66
Restaurant	0.010	73.95	0.014	98.63
Hotel/Motel	0.009	68.62	0.012	91.52
Medical	0.011	125.59	0.015	167.51
Grocery	0.012	80.18	0.016	106.94
Warehouse	0.011	46.45	0.015	61.95
Light Industry	0.013	54.36	0.017	72.50
Heavy Industry	0.013	54.36	0.017	72.50
Average = Miscellaneous	0.011	61.25	0.015	81.69

Baseline
One or more existing T12 fixtures with lamps and ballasts.

High Efficiency
A new two-foot to four-foot fixture with new T5 lamps and new ballasts or new high-performance T8 lamps and new high-performance ballasts. There are no requirements regarding the new T5 lamps and ballasts. There are not any requirements for T8 lamps which are less than four feet in length, or for the ballasts that support these T8s, other than that they be high-performance. The new high-performance four-foot T8 lamps and ballasts must be listed on the Consortium for Energy Efficiency's (CEE) "Qualifying lamps, 120- and 277-volt ballasts" spreadsheets, located at http://www.cee1.org/com/com-lt/com-lt-main.php3.

Operating Hours
See Appendix D.

Loadshape
Loadshape #1.

Persistence
The persistence factor is assumed to be one.

Lifetimes
11 years

Calculations
Per Lamp Demand Savings = Non-coincident Demand Savings X Demand Interactive Effects X Coincident Diversity Factor

Per Lamp Energy Savings = Non-coincident Demand Savings X Energy Interactive Effects X Hours of Operation

Where the Reference Tables below and the Hours of Operation in Appendix D are used to calculate the demand and energy savings per lamp by building type.

Reference Table

[illegible]	[illegible]	[illegible]	[illegible]
Office	1.25	0.81	1.17
School (K-12)	1.23	0.42	1.15
College/University	1.22	0.68	1.15
Retail/Service	1.19	0.88	1.11
Restaurant	1.26	0.68	1.15
Hotel/Motel	1.14	0.67	1.14
Medical	1.26	0.74	1.18
Grocery	1.25	0.81	1.13
Warehouse	1.09	0.84	1.06
Light Industry	1.08	0.99	1.04
Heavy Industry	1.08	0.99	1.04
Average = Miscellaneous	1.19	0.77	1.12

Premium	4-lamp	4 ft	F40T12 / ES	34	144	F32T8 / ES	28	96	0.012	35%
T8s	3-lamp	4 ft	F40T12 / ES	34	103	F32T8 / ES	28	72	0.010	25%
	1-lamp	4 ft	F40T12 / ES	34	43	F32T8 / ES	28	25	0.018	10%
	2-lamp	4 ft	F40T12 / ES	34	72	F32T8 / ES	28	48	0.012	30%
Weighted Average	----	----	----	----	----	----	----	----	**0.012**	----
	2 lamp	8ft	F96T12 / ES	60	132	F96T8	57	100	0.016	75%
	1-lamp	8ft	F96T12 / ES	60	77	F96T8	57	60	0.017	25%
Weighted Average	----	----	----	----	----	----	----	----	**0.016**	----

Fluorescent Fixtures with Reflectors

Measure Code: BPL63

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: The incremental costs are from the GDS Model Ameren IL Lighting dated 6-9-08. Light Calcs – FINAL ComEd.xls.

Description: 4ft. Open Systems with T5 or High-Performance T8 Lamps and Ballasts. T5 and High Performance T8 Systems are eligible. T8 Lamp and Ballast combination must be listed on the CEE List (www.cee1.org).

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times N_L \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times N_L \times ISR$

ΔkW = Gross customer connected load kW savings for the measure
ΔkW_S = Gross customer connected load kW savings per lamp, found in table below
N_L = Number of lamps being replaced
ISR = In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh = Gross customer annual kWh savings for the measure
ΔkWh_S = Gross customer connected load kWh savings per lamp, found in table below

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Office	0.012	40.03	0.016	53.39
School (K-12)	0.006	26.24	0.008	34.99
College/University	0.010	48.09	0.013	64.14
Retail/Service	0.013	58.23	0.017	77.66
Restaurant	0.010	73.95	0.014	98.63
Hotel/Motel	0.009	68.62	0.012	91.52
Medical	0.011	125.59	0.015	167.51
Grocery	0.012	80.18	0.016	106.94
Warehouse	0.011	46.45	0.015	61.95
Light Industry	0.013	54.36	0.017	72.50
Heavy Industry	0.013	54.36	0.017	72.50
Average = Miscellaneous	0.011	61.25	0.015	81.69

Baseline
A new installation, and/or a four-foot open system (fixture) with lamps and ballasts.

High Efficiency
This is an upgrade of an existing four-foot baseline fixture or installation of a new four-foot fixture with new T5 lamps and new ballasts or new high-performance four-foot T8 lamps and new high-performance ballasts. The fixtures for both the T5 and T8 lamps and ballasts must include either an aluminum/silver reflector or a new white integral reflector, each with a minimum surface reflectivity of 87%. There are no requirements regarding the new T5 lamps and ballasts. The new high-performance four-foot T8 lamps and ballasts must be listed on the Consortium for Energy Efficiency's (CEE) "Qualifying lamps, 120- and 277-volt ballasts" spreadsheets, located at http://www.cee1.org/com/com-lt/com-lt-main.php3.

Operating Hours
See Appendix D.

Loadshape
Loadshape #1.

Persistence
The persistence factor is assumed to be one.

Lifetimes
11 years

Calculations
Per Lamp Demand Savings = Non-coincident Demand Savings X Demand Interactive Effects X Coincident Diversity Factor

Per Lamp Energy Savings = Non-coincident Demand Savings X Energy Interactive Effects X Hours of Operation

Where the Reference Tables below and the Hours of Operation in Appendix D are used to calculate the demand and energy savings per lamp by building type.

Reference Table

[illegible]	[illegible]	[illegible]	[illegible]
Office	1.25	0.81	1.17
School (K-12)	1.23	0.42	1.15
College/University	1.22	0.68	1.15
Retail/Service	1.19	0.88	1.11
Restaurant	1.26	0.68	1.15
Hotel/Motel	1.14	0.67	1.14
Medical	1.26	0.74	1.18
Grocery	1.25	0.81	1.13
Warehouse	1.09	0.84	1.06
Light Industry	1.08	0.99	1.04
Heavy Industry	1.08	0.99	1.04
Average = Miscellaneous	1.19	0.77	1.12

Premium	4-lamp	4 ft	F40T12 / ES	34	144	F32T8 / ES	28	96	0.012	35%
T8s	3-lamp	4 ft	F40T12 / ES	34	103	F32T8 / ES	28	72	0.010	25%
	1-lamp	4 ft	F40T12 / ES	34	43	F32T8 / ES	28	25	0.018	10%
	2-lamp	4 ft	F40T12 / ES	34	72	F32T8 / ES	28	48	0.012	30%
Weighted Average	----	----	----	----	----	----	----	----	**0.012**	----
	2 lamp	8ft	F96T12 / ES	60	132	F96T8	57	100	0.016	75%
	1-lamp	8ft	F96T12 / ES	60	77	F96T8	57	60	0.017	25%
Weighted Average	----	----	----	----	----	----	----	----	**0.016**	----

High Efficiency Fluorescent Fixtures

Measure Code: BPL64

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: The incremental costs are from the GDS Model Ameren IL Lighting dated 6-9-08. Light Calcs – FINAL ComEd.xls.

Description: Recessed or Surface Mounted High Efficiency Troffer Fixture with High-Performance T8 Lamps and Ballasts Replacing T12 fixture. T8 Lamp and Ballast combination must be listed on the CEE List (www.cee1.org).

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times ((W_{BASE} - W_{EE}) / 1000) \times N_F \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times ((W_{BASE} - W_{EE}) / 1000) \times N_F \times ISR$

ΔkW = Gross customer connected load kW savings for the measure
ΔKw_S = Gross customer connected load kW savings per watt reduced, found in table below
W_{BASE} = Baseline connected kW from current fixture
W_{EE} = Energy efficient connected kW from proposed fixture
N_F = Number of fixtures being replaced
ISR = In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh = Gross customer annual kWh savings for the measure
ΔkWh_S = Gross customer connected load kWh savings per watt reduced, found in table below

[illegible]	[illegible]	[illegible]
Office	0.001	3
School (K-12)	0.001	2
College/University	0.001	4
Retail/Service	0.001	5
Restaurant	0.001	6
Hotel/Motel	0.001	6
Medical	0.001	8
Grocery	0.001	7
Warehouse	0.001	4
Light Industry	0.001	4
Heavy Industry	0.001	4
Average = Miscellaneous	0.001	**5**

Baseline
One or more existing T12 fixtures with lamps and ballasts.

High Efficiency
A new high-efficiency recessed or surface mounted T8 troffer fixture with high-performance lamps and high-performance ballasts. For the purposes of this measure, a fixture means one new fixture with two to three lamps and one ballast. The new fixture must have an overall fixture efficiency in excess of 83% for prismatic lensed fixtures or an overall fixture efficiency in excess of 75% for parabolic fixtures. The new high-performance T8 lamps and ballasts must be listed on the Consortium for Energy Efficiency's (CEE) "Qualifying lamps, 120- and 277-volt ballasts" spreadsheets, located at http://www.cee1.org/com/com-lt/com-lt-main.php3.

Operating Hours
See Appendix D.

Loadshape
Loadshape #1.

Persistence
The persistence factor is assumed to be one.

Lifetimes
11 years

Calculations
Per Lamp Demand Savings = Non-coincident Demand Savings X Demand Interactive Effects X Coincident Diversity Factor

Per Lamp Energy Savings = Non-coincident Demand Savings X Energy Interactive Effects X Hours of Operation

Where the Reference Tables below and the Hours of Operation in Appendix D are used to calculate the demand and energy savings per lamp by building type.

Reference Table

[illegible]	[illegible]	[illegible]	[illegible]
Office	1.25	0.81	1.17
School (K-12)	1.23	0.42	1.15
College/University	1.22	0.68	1.15
Retail/Service	1.19	0.88	1.11
Restaurant	1.26	0.68	1.15
Hotel/Motel	1.14	0.67	1.14
Medical	1.26	0.74	1.18
Grocery	1.25	0.81	1.13
Warehouse	1.09	0.84	1.06
Light Industry	1.08	0.99	1.04
Heavy Industry	1.08	0.99	1.04
Average = Miscellaneous	1.19	0.77	1.12

Low Glare High Efficiency Recessed Fixtures

Measure Code: BPL65

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: The incremental costs are from the GDS Model Ameren IL Lighting dated 6-9-08. Light Calcs – FINAL ComEd.xls.

Description: T5 or High Performance T8 Fixture with Low Glare Feature replacing T12 fixture. T5 and High Performance T8 systems are eligible. T8 Lamp and Ballast combination must be listed on the CEE List (www.cee1.org).

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times ((W_{BASE} - W_{EE}) / 1000) \times N_F \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times ((W_{BASE} - W_{EE}) / 1000) \times N_F \times ISR$

ΔkW = Gross customer connected load kW savings for the measure
ΔkW_S = Gross customer connected load kW savings per watt reduced, found in table below
W_{BASE} = Baseline connected kW from current fixture
W_{EE} = Energy efficient connected kW from proposed fixture
N_F = Number of fixtures being replaced
ISR = In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh = Gross customer annual kWh savings for the measure
ΔkWh_S = Gross customer connected load kWh savings per watt reduced, found in table below

[illegible]	[illegible]	[illegible]
Office	0.001	3
School (K-12)	0.001	2
College/University	0.001	4
Retail/Service	0.001	5
Restaurant	0.001	6
Hotel/Motel	0.001	6
Medical	0.001	8
Grocery	0.001	7
Warehouse	0.001	4
Light Industry	0.001	4
Heavy Industry	0.001	4
Average = Miscellaneous	0.001	**5**

Baseline
One or more existing T12 fixtures with lamps and ballasts.

High Efficiency
A new low-glare, high-efficiency, recessed fixture with new T5 lamps and new ballasts or new high-performance T8 lamps and new high-performance ballasts. For the purposes of this measure, a fixture means one new fixture with two lamps and one ballast. The new fixture for both the T5 and T8 lamps and ballasts must incorporate advanced glare control features and have an overall fixture efficiency in excess of 80%. There are no requirements regarding the new T5 lamps and ballasts. The new high-performance T8 lamps and ballasts must be listed on the Consortium for Energy Efficiency's (CEE) "Qualifying lamps, 120- and 277-volt ballasts" spreadsheets, located at http://www.cee1.org/com/com-lt/com-lt-main.php3.

Operating Hours
See Appendix D.

Loadshape
Loadshape #1.

Persistence
The persistence factor is assumed to be one.

Lifetimes
11 years

Calculations
Per Lamp Demand Savings = Non-coincident Demand Savings X Demand Interactive Effects X Coincident Diversity Factor

Per Lamp Energy Savings = Non-coincident Demand Savings X Energy Interactive Effects X Hours of Operation

Where the Reference Tables below and the Hours of Operation in Appendix D are used to calculate the demand and energy savings per lamp by building type.
Reference Table

[illegible]	[illegible]	[illegible]	[illegible]
Office	1.25	0.81	1.17
School (K-12)	1.23	0.42	1.15
College/University	1.22	0.68	1.15
Retail/Service	1.19	0.88	1.11
Restaurant	1.26	0.68	1.15
Hotel/Motel	1.14	0.67	1.14
Medical	1.26	0.74	1.18
Grocery	1.25	0.81	1.13
Warehouse	1.09	0.84	1.06
Light Industry	1.08	0.99	1.04
Heavy Industry	1.08	0.99	1.04
Average = Miscellaneous	1.19	0.77	1.12

Controls for H.I.F. Systems

Measure Code: BPL72

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: The incremental costs are from the GDS Model Ameren IL Lighting dated 6-9-08. For high-occupancy buildings (offices, retails,etc) the Time Off is 20% (source: DEER). For low-occupancy buildings (warehouses, etc) the Time Off is 50%. The Annual Operating Hours are taken from DEER's non-CFL Table, except for Guest Rooms operating hours, which have been corrected to 1,145 hrs.

Description: Occupancy controlled (Hi/Lo-HIF) or Daylight Dimming Systems (DDS-HIF).

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times W_{CTRL} \times N_C \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times W_{CTRL} \times N_C \times ISR$

ΔkW = Gross customer connected load kW savings for the measure
ΔkW_S = Gross customer connected load peak kW savings per watts controlled, found in table below
W_{CTRL} = Watts controlled by HIF control
N_C = Number of controls being installed
ISR = In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh = Gross customer annual kWh savings for the measure
kWh_S = Gross customer connected load kWh savings per watts controlled, found in table below

[illegible]	[illegible]	[illegible]
Office	0.0002025	0.66
School (K-12)	0.0001033	0.43
College/University	0.0001659	0.79
Retail/Service	0.0002094	0.93
Restaurant	0.0001714	1.21
Hotel/Motel	0.0001528	1.13
Medical	0.0001865	1.53
Grocery	0.0002025	1.32
Warehouse	0.0004578	2.20
Light Industry	0.0005346	2.23
Heavy Industry	0.0005346	2.23
Average = Miscellaneous	0.0002656	1.33

*** Per Watt Controlled**

Baseline
A new installation, and/or one or more high-intensity fluorescent (HIF) lighting fixtures.

High Efficiency
This is an upgrade that adds occupancy sensors or daylight dimming capability to a current or new HIF system. The new controls must direct the ballasts based on occupancy levels or daylight levels. In directing the ballasts when dimming the HIFs in the presence of sunlight, the controls must have automated multilevel capability, i.e., the controls must be able to direct the ballasts and associated lights to deliver multiple light levels. Additionally, the new controls must direct more than 125 watts each.

Incentives for this measure may not be combined with other control incentives.

The controls must have microprocessor (i.e., all digital) control, have multiple outputs, have single and dual timer operation, have selectable lamp switching, have zero arc point switching, support mounting heights ranging from 12 feet to 50 feet, have four or more interchangeable passive infrared radiation (PIR) lens options, and be listed with both Underwriters Laboratory (UL) and Underwriters Laboratories of Canada (cUL).

Operating Hours
Operating hours will be based on the facility type.

Loadshape
Loadshape #1.

Persistence
The persistence factor is assumed to be one.

Lifetimes
8 years

Remote Mounted Occupancy Sensors

Measure Code: BPL73

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: The incremental costs are from the GDS Model Ameren IL Lighting dated 6-9-08. For high-occupancy buildings (offices, retails,etc) the Time Off is 20% (source: DEER). For low-occupancy buildings (warehouses, etc) the Time Off is 50%. The Annual Operating Hours are taken from DEER's non-CFL Table, except for Guest Rooms operating hours, which have been corrected to 1,145 hrs.

Description: Remote Mounted Occupancy Sensor. Wall switchplate mounted sensors are not eligible.

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times W_{CTRL} \times N_{OS} \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times W_{CTRL} \times N_{OS} \times ISR$

ΔkW = Gross customer connected load kW savings for the measure

ΔkW_S	= Gross customer connected load peak kW savings per watts controlled, found in table below
W_{CTRL}	= Watts controlled by HIF control
N_{OS}	= Number of occupancy sensors being installed
ISR	= In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh	= Gross customer annual kWh savings for the measure
kWh_S	= Gross customer connected load kWh savings per watts controlled, found in table below

[illegible]	[illegible]	[illegible]
Office	0.0002025	0.66
School (K-12)	0.0001033	0.43
College/University	0.0001659	0.79
Retail/Service	0.0002094	0.93
Restaurant	0.0001714	1.21
Hotel/Motel	0.0001528	1.13
Medical	0.0001865	1.53
Grocery	0.0002025	1.32
Warehouse	0.0004578	2.20
Light Industry	0.0005346	2.23
Heavy Industry	0.0005346	2.23
Average = Miscellaneous	0.0002656	1.33

*** Per Watt Controlled**

Baseline
A new installation, and/or one or more high-intensity (HIF), fluorescent, compact fluorescent, or other type of lighting fixtures.

High Efficiency
This is an upgrade that adds remote mounted occupancy sensors to a current or new lighting system. Each sensor must control more than 125 watts each. Switchplate sensors mounted on walls are not eligible.

Operating Hours
Operating hours will be based on the facility type.

Loadshape
Loadshape #1.

Persistence
The persistence factor is assumed to be one.

Lifetimes
8 years

Occupancy Sensors

Measure Code: BPL74

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: The incremental costs are from the GDS Model Ameren IL Lighting dated 6-9-08. For high-occupancy buildings (offices, retails,etc) the Time Off is 20% (source: DEER). For low-occupancy buildings (warehouses, etc) the Time Off is 50%. The Annual Operating Hours are taken from DEER's non-CFL Table, except for Guest Rooms operating hours, which have been corrected to 1,145 hrs.

Description: Manual On/Auto Off Occupancy Sensor. Wall and ceiling mounted units are eligible.

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times W_{CTRL} \times N_{OS} \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times W_{CTRL} \times N_{OS} \times ISR$

ΔkW = Gross customer connected load kW savings for the measure
ΔkW_S = Gross customer connected load peak kW savings per watts controlled, found in table below
W_{CTRL} = Watts controlled by HIF control
N_{OS} = Number of occupancy sensors being installed
ISR = In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh = Gross customer annual kWh savings for the measure
kWh_S = Gross customer connected load kWh savings per watts controlled, found in table below

[illegible]	[illegible]	[illegible]
Office	0.0002025	0.66
School (K-12)	0.0001033	0.43
College/University	0.0001659	0.79
Retail/Service	0.0002094	0.93
Restaurant	0.0001714	1.21
Hotel/Motel	0.0001528	1.13
Medical	0.0001865	1.53
Grocery	0.0002025	1.32
Warehouse	0.0004578	2.20
Light Industry	0.0005346	2.23
Heavy Industry	0.0005346	2.23
Average = Miscellaneous	0.0002656	1.33

*** Per Watt Controlled**

Baseline
A new installation, and/or one or more high-intensity discharge (HID), fluorescent, compact fluorescent, or other type of lighting fixtures.

High Efficiency
This is an upgrade that adds wall- and/or ceiling-mounted occupancy sensors to a current or new lighting system. Each sensor must control more than 125 watts each. The sensors must operate on a manual on/automatic off basis.

Operating Hours
Operating hours will be based on the facility type.

Loadshape
Loadshape #1.

Persistence
The persistence factor is assumed to be one.

Lifetimes
8 years

Electronic PSMH/CMH

Measure Code: BPL75

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: The incremental costs are from the GDS Model Ameren IL Lighting dated 6-9-08. Light Calcs – FINAL ComEd.xls.

Description: Replace 400 watt HID with new 250 watt or 320 watt electronic ballast and PSMH or CMH lamps.

Algorithms

Demand Savings $\Delta kW = ((W_{BASE} - W_{EE}) /1000) \times N_F \times ISR$

Energy Savings $\Delta kWh = \Delta kW \times h$

ΔkW	= Gross customer connected load kW savings for the measure
W_{BASE}	= Baseline connected kW from current fixture
W_{EE}	= Energy efficient connected kW from proposed fixture
N_F	= Number of fixtures being replaced
ISR	= In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh	= Gross customer annual kWh savings for the measure
h	= Annual operating hours

Baseline
One or more existing 400 watt high-intensity discharge (HID) lighting fixtures.

High Efficiency
A new 320 watt or 350 watt pulse-start or ceramic metal halide lamp with an electronic ballast.

Operating Hours
Operating hours will be based on the facility type.

Loadshape
Loadshape #1.

Persistence
The persistence factor is assumed to be one.

Lifetimes
16 years

Controls for H.I.D. Systems

Measure Code: BPL77

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: The incremental costs are from the GDS Model Ameren IL Lighting dated 6-9-08. For high-occupancy buildings (offices, retails,etc) the Time Off is 20% (source: DEER). For low-occupancy buildings (warehouses, etc) the Time Off is 50%. The Annual Operating Hours are taken from DEER's non-CFL Table, except for Guest Rooms operating hours, which have been corrected to 1,145 hrs.

Description: Occupancy controlled High-Low (Hi/Lo-HIF) or Daylight Dimming Systems (DDS-HIF).

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times W_{CTRL} \times N_C \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times W_{CTRL} \times N_C \times ISR$

ΔkW	= Gross customer connected load kW savings for the measure
ΔkW_S	= Gross customer connected load peak kW savings per watts controlled, found in table below
W_{CTRL}	= Watts controlled by HIF control
N_C	= Number of controls being installed
ISR	= In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh	= Gross customer annual kWh savings for the measure
kWh_S	= Gross customer connected load kWh savings per watts controlled, found in table below

[illegible]	[illegible]	[illegible]
Office	0.0002025	0.66
School (K-12)	0.0001033	0.43
College/University	0.0001659	0.79
Retail/Service	0.0002094	0.93
Restaurant	0.0001714	1.21
Hotel/Motel	0.0001528	1.13
Medical	0.0001865	1.53
Grocery	0.0002025	1.32
Warehouse	0.0004578	2.20
Light Industry	0.0005346	2.23
Heavy Industry	0.0005346	2.23
Average = Miscellaneous	0.0002656	1.33

*** Per Watt Controlled**

Baseline
A new installation, and/or one or more high-intensity discharge (HID) lighting fixtures.

High Efficiency
This is an upgrade that adds occupancy-based high-low control or daylight dimming capability to a current or new HID system. The new controls must direct the ballasts based on occupancy levels or daylight levels. In directing the ballasts when dimming the HIDs in the presence of sunlight, the controls must be able to provide continuous dimming or stepped dimming of at least 50%. Additionally, if capable of both occupancy control and day light dimming, the new controls must have an integrated HID control module and passive infrared radiation (PIR) occupancy sensor.

Incentives for this measure may not be combined with other control incentives.

The controls must have guaranteed lamp warm-up intelligence, continuous lamp monitoring, and zero arc-point switching.

Operating Hours
Operating hours will be based on the participant

Loadshape
Loadshape #1.

Persistence
The persistence factor is assumed to be one.

Lifetimes
8 years

LED Exit Signs

Measure Code: BPL78

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: The incremental costs are from the GDS Model Ameren IL Lighting dated 6-9-08. Coincident Diversity Factors, Demand Interactive Effects and Energy Interactive Effects are taken from DEER database.

Description: LED, T-1 or electroluminescent exit signs. Retrofit of existing incandescent or fluorescent fixture only. Signs may be one or two-sided.

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times N_F \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times N_F \times ISR$

ΔkW = Gross customer connected load kW savings for the measure
ΔkW_S = Gross customer connected load kW savings, found in table below
N_F = Number of fixtures being replaced
ISR = In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh = Gross customer annual kWh savings for the measure
ΔkWh_S = Gross customer connected load kWh savings, found in table below

Building Type	[illegible]	[illegible]
Office	0.041	342
School (K-12)	0.041	342
College/University	0.041	342
Retail/Service	0.041	342
Restaurant	0.041	342
Hotel/Motel	0.041	342
Medical	0.041	342
Grocery	0.041	342
Warehouse	0.041	342
Light Industry	0.041	342
Heavy Industry	0.041	342
Average = Miscellaneous	0.041	**342**

Baseline
One or more existing incandescent or fluorescent exit signs.

High Efficiency
This is an upgrade of an existing incandescent or fluorescent exit fixture with an LED, T1, or electroluminescent light source. The new signs may be one- or two-sided. Exit signs can also be purchased through the Online Store.

Operating Hours
See Appendix D.

Loadshape
Loadshape #1.

Persistence
The persistence factor is assumed to be one.

Lifetimes
16 years

LED Lamps

Measure Code: BPL81

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: The incremental costs are from the GDS Model Ameren IL Lighting dated 6-9-08. Light Calcs – FINAL ComEd.xls.

Description: A cold-cathode is an element used within some Nixie tubes, gas discharge lamps, gas filled tubes, and vacuum tubes. The term 'cold cathode' refers to the fact that the cathode is not independently heated. In spite of this, the cathode itself may still operate at temperatures as high as if the cathode was heated. An LED lamp is a type of solid state lighting that uses light-emitting diodes as the source of light, rather than electrical filaments plasma or gas. Replace 100 watts or less incandescent.

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times N_L \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times N_L \times ISR$

ΔkW = Gross customer connected load kW savings for the measure
ΔkW_S = Gross customer connected load kW savings, found in table below
N_L = Number of lamps being replaced
ISR = In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh = Gross customer annual kWh savings for the measure
ΔkWh_S = Gross customer connected load kWh savings, found in table below

BPL81	LED Lamps	25	6

[illegible]	[illegible]	[illegible]
Office	0.023	68
School (K-12)	0.012	48
College/University	0.019	88
Retail/Service	0.023	102
Restaurant	0.019	124
Hotel/Motel	0.017	126
Medical	0.021	171
Grocery	0.023	147
Warehouse	0.020	98
Light Industry	0.024	100
Heavy Industry	0.024	100
Average = Miscellaneous	0.020	106

Baseline
One or more incandescent fixtures that use 100 watts or less power.

High Efficiency
A new LED lamp with a medium base (Edison or candelabra base only). The lamp must have a minimum efficacy of 35 lumens per watt, have a minimum rated-life of 18,000 hours, and must be ENERGY STAR®-rated.

Operating Hours
See Appendix D.

Loadshape
Loadshape #1.

Persistence
The persistence factor is assumed to be one.

Lifetimes
8 years

Calculations
Per Lamp Demand Savings = Non-coincident Demand Savings X Demand Interactive Effects X Coincident Diversity Factor

Per Lamp Energy Savings = Non-coincident Demand Savings X Energy Interactive Effects X Hours of Operation

Where the Reference Tables below and the Hours of Operation in Appendix D are used to calculate the demand and energy savings per lamp by building type.

Reference Table

[illegible]	[illegible]	[illegible]	[illegible]
Office	1.25	0.81	1.17
School (K-12)	1.23	0.42	1.15
College/University	1.22	0.68	1.15
Retail/Service	1.19	0.88	1.11
Restaurant	1.26	0.68	1.15
Hotel/Motel	1.14	0.67	1.14
Medical	1.26	0.74	1.18
Grocery	1.25	0.81	1.13
Warehouse	1.09	0.84	1.06
Light Industry	1.08	0.99	1.04
Heavy Industry	1.08	0.99	1.04
Average = Miscellaneous	1.19	0.77	1.12

LED Recessed Down Lamps

Measure Code: BPL84

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: The incremental costs are from the GDS Model Ameren IL Lighting dated 6-9-08. Light Calcs – FINAL ComEd.xls.

Description: Replace 60-100 watts incandescent.

Algorithms

Demand Savings $\Delta kW = ((W_{BASE} - W_{EE}) / 1000) \times N_L \times ISR$

Energy Savings $\Delta kWh = \Delta kW \times h$

ΔkW = Gross customer connected load kW savings for the measure
W_{BASE} = Watts removed by replacing current lamp, found in table below
W_{EE} = Watts installed by putting in new lamp, found in table below
N_L = Number of lamps being replaced
ISR = In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh = Gross customer annual kWh savings for the measure
h = Annual operating hours

[illegible]	[illegible]	[illegible]	[illegible]
BPL84	LED Recessed Down Lamps	75	12

Baseline

One or more existing incandescent lamps that use between 60 watts and 100 watts of power.

High Efficiency
A recessed LED downlight using 18 watts or less power, with a minimum luminaire efficiency of 35 lumens per watt. Documentation must be provided that demonstrates that the product meets ENERGY STAR® criteria.

Operating Hours
See Appendix D.

Loadshape
Loadshape #1.

Persistence
The persistence factor is assumed to be one.

Lifetimes
16 years

Calculations
Per Lamp Demand Savings = Non-coincident Demand Savings X Demand Interactive Effects X Coincident Diversity Factor

Per Lamp Energy Savings = Non-coincident Demand Savings X Energy Interactive Effects X Hours of Operation

Where the Reference Tables below and the Hours of Operation in Appendix D are used to calculate the demand and energy savings per lamp by building type.

Reference Table

[illegible]	[illegible]	[illegible]	[illegible]
Office	1.25	0.81	1.17
School (K-12)	1.23	0.42	1.15
College/University	1.22	0.68	1.15
Retail/Service	1.19	0.88	1.11
Restaurant	1.26	0.68	1.15
Hotel/Motel	1.14	0.67	1.14
Medical	1.26	0.74	1.18
Grocery	1.25	0.81	1.13
Warehouse	1.09	0.84	1.06
Light Industry	1.08	0.99	1.04
Heavy Industry	1.08	0.99	1.04
Average = Miscellaneous	1.19	0.77	1.12

CMH Fixtures

Measure Code: BPL85

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: The incremental costs are from the GDS Model Ameren IL Lighting dated 6-9-08. Light Calcs – FINAL ComEd.xls.

Description: Replace incandescent fixtures. Permanently-wired new fixtures. Containing UL and cUL listed CMH lamps and ballasts.

Algorithms

Demand Savings $\Delta kW = ((W_{BASE} - W_{EE}) / 1000) \times N_F \times ISR$

Energy Savings $\Delta kWh = \Delta kW \times h$

ΔkW	= Gross customer connected load kW savings for the measure
W_{BASE}	= Baseline connected kW from current fixture
W_{EE}	= Energy efficient connected kW from proposed fixture
N_F	= Number of fixtures being replaced
ISR	= In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh	= Gross customer annual kWh savings for the measure
h	= Annual operating hours

Baseline
One or more existing incandescent lighting fixtures.

High Efficiency
A new, permanently-wired CMH fixture that uses between 20 watts and 350 watts of power. The lamp and ballast must be listed with both Underwriters Laboratory (UL) and Underwriters Laboratories of Canada (cUL).

Operating Hours
See Appendix D.

Loadshape
Loadshape #1.

Persistence
The persistence factor is assumed to be one.

Lifetimes
12 years

CMH Integral Ballast Lamps

Measure Code: BPL86

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: The incremental costs are from the GDS Model Ameren IL Lighting dated 6-9-08. Light Calcs – FINAL ComEd.xls.

Description: Replace existing 70-100 watts incandescent or flood lamps. CMH lamps must be UL and cUL listed.

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times N_L \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times N_L \times ISR$

ΔkW = Gross customer connected load kW savings for the measure
ΔkW_S = Gross customer connected load kW savings, found in table below
N_L = Number of lamps being replaced
ISR = In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh = Gross customer annual kWh savings for the measure
ΔkWh_S = Gross customer connected load kWh savings, found in table below

[illegible]	[illegible]	[illegible]	[illegible]
BPL86	CMH Integral Ballast Lamps	70	25

[illegible]	[illegible]	[illegible]
Office	0.045	126
School (K-12)	0.045	84
College/University	0.045	154
Retail/Service	0.045	189
Restaurant	0.045	238
Hotel/Motel	0.045	222
Medical	0.045	291
Grocery	0.045	262
Warehouse	0.045	187
Light Industry	0.045	193
Heavy Industry	0.045	193
Average = Miscellaneous	0.045	**195**

Baseline
One or more existing incandescent or flood lamps that use between 70 watts and 100 watts of power.

High Efficiency
A new CMH lamp using 25 watts or less power. The unit must have a reflector lamp and an integrated ballast, and have a minimum rated life of 10,500 hours. The lamp and ballast must be listed with both Underwriters Laboratory (UL) and Underwriters Laboratories of Canada (cUL).

Operating Hours
See Appendix D.

Loadshape
Loadshape #1.

Persistence
The persistence factor is assumed to be one.

Lifetimes
5 years

Calculations
Per Lamp Demand Savings = Non-coincident Demand Savings X Demand Interactive Effects X Coincident Diversity Factor

Per Lamp Energy Savings = Non-coincident Demand Savings X Energy Interactive Effects X Hours of Operation

Where the Reference Tables below and the Hours of Operation in Appendix D are used to calculate the demand and energy savings per lamp by building type

Reference Table

[illegible]	[illegible]	[illegible]	[illegible]
Office	1.00	1.00	1.00
School (K-12)	1.00	1.00	1.00
College/University	1.00	1.00	1.00
Retail/Service	1.00	1.00	1.00
Restaurant	1.00	1.00	1.00
Hotel/Motel	1.00	1.00	1.00
Medical	1.00	1.00	1.00
Grocery	1.00	1.00	1.00
Warehouse	1.00	1.00	1.00
Light Industry	1.00	1.00	1.00
Heavy Industry	1.00	1.00	1.00
Average = Miscellaneous	1.00	1.00	1.00

Hard-wired CFL fixtures ≤ 30 Watts

Measure Code: BPL87

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: The incremental costs are from the GDS Model Ameren IL Lighting dated 6-9-08. Light Calcs – FINAL ComEd.xls.

Description: Replace incandescent with permanently-wired CFL. Permanently-wired NEW fixtures with Electronic Ballast

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times N_F \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times N_F \times ISR$

ΔkW = Gross customer connected load kW savings for the measure
ΔkW_S = Gross customer connected load kW savings, found in table below
N_F = Number of fixtures being replaced
ISR = In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh = Gross customer annual kWh savings for the measure
ΔkWh_S = Gross customer connected load kWh savings, found in table below

[illegible]	[illegible]	[illegible]	[illegible]
BPL87	Hard-wired CFL Fixtures <30 watts	75	27

[illegible]	[illegible]	[illegible]
Office	0.058	175
School (K-12)	0.030	123
College/University	0.047	225
Retail/Service	0.060	261
Restaurant	0.049	316
Hotel/Motel	0.044	404
Medical	0.053	436
Grocery	0.058	376
Warehouse	0.052	252
Light Industry	0.061	255
Heavy Industry	0.061	255
Average = Miscellaneous	0.052	280

Baseline
One or more existing incandescent fixtures.

High Efficiency
A new, permanently-wired fixture with an electronic ballast using 30 watts or less power.

Operating Hours
See Appendix D.

Loadshape
Loadshape #1.

Persistence
The persistence factor is assumed to be one.

Lifetimes
12 years

Calculations
Per Lamp Demand Savings = Non-coincident Demand Savings X Demand Interactive Effects X Coincident Diversity Factor

Per Lamp Energy Savings = Non-coincident Demand Savings X Energy Interactive Effects X Hours of Operation

Where the Reference Tables below and the Hours of Operation in Appendix D are used to calculate the demand and energy savings per lamp by building type.

Reference Table

[illegible]	[illegible]	[illegible]	[illegible]
Office	1.25	0.81	1.17
School (K-12)	1.23	0.42	1.15
College/University	1.22	0.68	1.15
Retail/Service	1.19	0.88	1.11
Restaurant	1.26	0.68	1.15
Hotel/Motel	1.14	0.67	1.14
Medical	1.26	0.74	1.18
Grocery	1.25	0.81	1.13
Warehouse	1.09	0.84	1.06
Light Industry	1.08	0.99	1.04
Heavy Industry	1.08	0.99	1.04
Average = Miscellaneous	1.19	0.77	1.12

Hard-wired CFL fixtures > 30 Watts

Measure Code: BPL88

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: The incremental costs are from the GDS Model Ameren IL Lighting dated 6-9-08. Light Calcs – FINAL ComEd.xls.

Description: Replace incandescent with permanently-wired CFL. Permanently-wired NEW fixtures with Electronic Ballast

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times N_F \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times N_F \times ISR$

ΔkW = Gross customer connected load kW savings for the measure
ΔkW_S = Gross customer connected load kW savings, found in table below
N_F = Number of fixtures being replaced
ISR = In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh = Gross customer annual kWh savings for the measure
ΔkWh_S = Gross customer connected load kWh savings, found in table below

[illegible]	[illegible]	[illegible]	[illegible]
BPL88	Hard-wired CFL Fixtures >30 watts	100	39

[illegible]	[illegible]	[illegible]
Office	0.114	344
School (K-12)	0.058	242
College/University	0.093	444
Retail/Service	0.118	514
Restaurant	0.096	623
Hotel/Motel	0.086	796
Medical	0.105	859
Grocery	0.114	740
Warehouse	0.103	496
Light Industry	0.120	502
Heavy Industry	0.120	502
Average = Miscellaneous	0.103	551

Baseline
One or more existing incandescent fixtures.

High Efficiency
A new, permanently-wired fixture with an electronic ballast using more than 30 watts of power.

Operating Hours
See Appendix D.

Loadshape
Loadshape #1.

Persistence
The persistence factor is assumed to be one.

Lifetimes
12 years

Calculations
Per Lamp Demand Savings = Non-coincident Demand Savings X Demand Interactive Effects X Coincident Diversity Factor

Per Lamp Energy Savings = Non-coincident Demand Savings X Energy Interactive Effects X Hours of Operation

Where the Reference Tables below and the Hours of Operation in Appendix D are used to calculate the demand and energy savings per lamp by building type.

Reference Table

[illegible]	[illegible]	[illegible]	[illegible]
Office	1.25	0.81	1.17
School (K-12)	1.23	0.42	1.15
College/University	1.22	0.68	1.15
Retail/Service	1.19	0.88	1.11
Restaurant	1.26	0.68	1.15
Hotel/Motel	1.14	0.67	1.14
Medical	1.26	0.74	1.18
Grocery	1.25	0.81	1.13
Warehouse	1.09	0.84	1.06
Light Industry	1.08	0.99	1.04
Heavy Industry	1.08	0.99	1.04
Average = Miscellaneous	1.19	0.77	1.12

Highbay Fixture Replacement Option

Measure Code: BPL91

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: The incremental costs are from the GDS Model Ameren IL Lighting dated 6-9-08. Light Calcs – FINAL ComEd.xls.

Description: T8/T5 New fluorescent fixtures with Electronic ballasts.

Algorithms

Demand Savings $\Delta kW = ((W_{BASE} - W_{EE}) / 1000) \times N_F \times ISR$

Energy Savings $\Delta kWh = \Delta kW \times h$

ΔkW = Gross customer connected load kW savings for the measure
W_{BASE} = Baseline connected kW from current fixture
W_{EE} = Energy efficient connected kW from proposed fixture
N_F = Number of fixtures being replaced
ISR = In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh = Gross customer annual kWh savings for the measure
h = Annual operating hours

Baseline
One or more existing high-intensity discharge (HID) fixtures, lamps, and ballasts.

High Efficiency
A new T5 or T8 fluorescent fixture with electronic ballasts that must draw more than 125 watts. The new fixture must be installed in areas with ceiling heights of 16 feet or greater, and the overall fixture efficiency

must exceed 80%. There are no requirements regarding the new T5 lamps and ballasts. The new T8 high-performance or low-wattage lamps and ballasts must be listed on the Consortium for Energy Efficiency's (CEE) "Qualifying lamps, 120- and 277-volt ballasts" (high-performance) or "Reduced-wattage qualifying lamps, ballasts" (low-wattage) spreadsheets, located at http://www.cee1.org/com/com-lt/com-lt-main.php3.

Operating Hours
Operating hours will be based on facility type.

Loadshape
Loadshape #1.

Persistence
The persistence factor is assumed to be one.

Lifetimes
12 years

LED Lighting System in Medium/Low Temperature Refrigerated Display Cases

Measure Code: BPL93

Version Date & Revision History
Draft date: October 10, 2009
Effective date: October 26, 2009
End date: TBD

Referenced Documents: The incremental costs are from the GDS Model Ameren IL Lighting dated 9-10-09 Light Calcs – FINAL ETO Reach Lighting Report.

EVALUATION OF FLUORESCENT, LED, AND FIBER OPTIC LIGHTING SYSTEMS IN LOW TEMPERATURE REACH-IN FREEZER DISPLAY CASES, Refrigeration & Thermal Test Center Design & Engineering Services, Southern California Edison, December 4, 2007

Description: Replace F58T8/8**/CT 58 watt-T8 Cold Temperature Lamp.

Algorithms

Demand Savings $\Delta kW = ((W_{BASE} - W_{EE}) / 1000) \times N_D \times ISR$

Energy Savings $\Delta kWh = \Delta kW \times h$

ΔkW = Gross customer connected load kW savings for the measure
W_{BASE} = Watts removed by replacing current fixture, found in table below
W_{EE} = Watts installed by putting in new fixture, found in table below
N_D = Number of doors with associated fixtures being replaced
ISR = In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh = Gross customer annual kWh savings for the measure
h = Annual operating hours

[illegible]	[illegible]	[illegible]	[illegible]
BPL93	LED Refrigerated Display Case Lighting	73.3	42

*Values are "per door"

Baseline
One or more existing refrigerated display cases with one or more T12, T8, or other type of linear fluorescent fixtures, lamps, and ballasts.

High Efficiency
A new, permanently installed LED fixture replacing T-8, T-10, and/or T-12 fluorescent lamps in a refrigerated case. Qualifying LED lighting must replace existing five-foot equivalent fluorescent lighting in existing low-temperature or medium-temperature display cases. The minimum wattage requirement for these sources is 18 watts. The product must be tested to IES LM79 and IES LM80 by a third party, US DOE-accredited lab and carry a warranty on the light source and power supplies for three or more years. The LED luminaires must have a minimum efficacy of 35 lumens per watt and have a CRI of 75 or above.

Operating Hours
Operating hours for a Grocery application are 5,824 hours per year.

Loadshape
Loadshape #1.

Persistence
The persistence factor is assumed to be one.

LED Lighting Control Systems in Medium/Low Temperature Refrigerated Display Cases

Measure Code: BPL94

Version Date & Revision History
Draft date: October 26, 2009
Effective date: October 26, 2009
End date: TBD

Referenced Documents:
EVALUATION OF FLUORESCENT, LED, AND FIBER OPTIC LIGHTING SYSTEMS IN LOW TEMPERATURE REACH-IN FREEZER DISPLAY CASES, Refrigeration & Thermal Test Center Design & Engineering Services, Southern California Edison, December 4, 2007

Waiting on report from SCE Refrigeration Technology Center. Will keep checking with them to get report once its complete.

Description: Add controls and/or sensors to LED lighting systems mounted in coolers and freezers.

Algorithms

Demand Savings $\Delta kW = (W_{CTRL} / 1000) \times N_C \times ISR$

Energy Savings $\Delta kWh = \Delta kW \times h$

ΔkW	= Gross customer connected load kW savings for the measure
W_{CTRL}	= Watts controlled by installing control unit, found in table below
N_C	= Number of controls being installed
ISR	= In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh	= Gross customer annual kWh savings for the measure
h	= Annual operating hours

[illegible]	[illegible]	[illegible]
BPL94	LED Refrigerated Display Case Lighting Controls	42

*Values are "per door"

Baseline
One or more existing refrigerated display cases with one or more T12, T8, or other type of linear fluorescent fixtures, lamps, and ballasts, and/or one or more existing refrigerated display cases with one or more permanently installed LED fixtures.

High Efficiency
A new, permanently installed LED fixture with an associated control system. These controls can be wall or ceiling mounted, controlling the aisle that approaches the display cases, and must control at least 80 watts. Low temperature (-10 degrees Fahrenheit through 10 degrees Fahrenheit) and medium temperature (33 degrees Fahrenheit through 41 degrees Fahrenheit) freezers and coolers are eligible.

Operating Hours
Operating hours for a Grocery application are 5,824 hours per year

Loadshape
Loadshape #1.

Persistence
The persistence factor is assumed to be one.

Lifetimes
11 years

HVAC Systems

Unitary and Split Air Conditioning Systems and Air Source Heat Pumps

Measure Codes: BPC1, BPC2, BPC3, BPC4, BPC5, BPC6. BPC7, BPC8

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Reference Documents: HVAC Standard Measures v3.xls

Description: One or more existing unitary air conditioning systems and/or one or more air source heat pumps. Unitary refers to the fact that all of the components necessary to heat, cool, dehumidify, filter, and move air are included in one or more factory-made assemblies. Unitary equipment is available as single package or as split systems. Single package units include all of the necessary functions and components in one package that is installed outside the building. Split systems are made up of an indoor unit (fan and cooling/heating coils) and an outdoor unit (condenser and compressor). An air source heat pump is a type of heat pump which uses the outside air as a heat source or heat sink to heat or cool an interior space.

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times N_U \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times N_U \times ISR$

ΔkW	= Gross customer connected load kW savings for the measure
ΔkW_S	= Gross customer connected load kW savings, found in table below
N_U	= Number of units (tons capacity) being replaced
ISR	= In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh	= Gross customer annual kWh savings for the measure
ΔkWh_S	= Gross customer connected load kWh savings, found in table below

Note: Table below is based on DEER 2005 information for Sacramento/Zone 12 then adjusted to Ameren service territory based on Cooling Degree Days difference.

Description	Office	Medical	Restaurant	Grocery	School/College	Warehouse	Retail/Service	Mfg.Industrial	Hotel/Motel	Other
<65,000 Btuh Minimum SEER 14	766.14	1236.81	1031.19	942.58	749.31	489.56	749.31	787.24	1449.90	911.34
<65,000 Btuh Minimum SEER 15	908.14	1491.06	1171.37	1092.68	864.44	596.80	864.44	911.43	1707.83	1064.83
>=65,000 Btuh and <240,000 Btuh Min. 11.5 EER	833.59	1409.60	1162.35	972.41	865.89	552.75	972.41	866.37	1606.73	1026.90
>=65,000 Btuh and <240,000 Btuh Min. 12 EER	894.81	1517.25	1247.78	1060.22	925.56	608.40	1060.22	927.71	1729.24	1107.91
>=240,000 Btuh and <760,000 Btuh Min. 10.5 EER	618.09	886.22	485.76	524.27	553.63	106.63	524.27	495.54	1205.26	599.97
>=240,000 Btuh and <760,000 Btuh Min. 10.8 EER	808.21	919.19	516.06	556.19	575.14	118.09	556.19	517.59	1122.45	632.13
>=760,000 Btuh min. 9.7 EER	712.55	200.95	412.63	457.45	499.47	87.73	457.45	448.37	1124.73	489.04
>=760,000 Btuh min. 10.2 EER	769.29	878.40	470.50	518.41	540.56	109.61	518.41	490.50	1080.15	597.32

Description	Office	Medical	Restaurant	Grocery	School/College	Warehouse	Retail/Service	Mfg.Industrial	Hotel/Motel	Other
<65,000 Btuh Minimum SEER 14	0.30831	0.27797	0.42035	0.35884	0.37191	0.26084	0.37191	0.36222	0.32121	0.33928
<65,000 Btuh Minimum SEER 15	0.36545	0.33511	0.47749	0.41598	0.42905	0.31799	0.42905	0.41937	0.37835	0.39643
>=65,000 Btuh and <240,000 Btuh Min. 11.5 EER	0.33143	0.30546	0.44875	0.37691	0.39704	0.29032	0.37691	0.38984	0.34725	0.36266
>=65,000 Btuh and <240,000 Btuh Min. 12 EER	0.36941	0.33546	0.49040	0.43094	0.43537	0.32572	0.43094	0.43430	0.38652	0.40434
>=240,000 Btuh and <760,000 Btuh Min. 10.5 EER	0.33106	0.25409	0.40870	0.34249	0.32250	0.24780	0.34249	0.35207	0.27358	0.31942
>=240,000 Btuh and <760,000 Btuh Min. 10.8 EER	0.27388	0.27925	0.44415	0.37583	0.35157	0.27458	0.37583	0.38471	0.27134	0.33679
>=760,000 Btuh min. 9.7 EER	0.19654	0.20095	0.32325	0.27359	0.25193	0.20371	0.27359	0.28233	0.21853	0.24716
>=760,000 Btuh min. 10.2 EER	0.24424	0.24907	0.39096	0.33727	0.30746	0.23028	0.33727	0.34469	0.24357	0.29831

Baseline
One or more existing unitary air conditioning systems and/or one or more air source heat pumps, sized according to the table on the next page.

High Efficiency
New unitary and split air conditioning units or air-source heat pumps (replacement basis only) that meet or exceed the qualifying cooling efficiency shown in the table on the next page are eligible for an incentive. They can be either split systems or single package units. The efficiency of split systems is based on an Air Conditioning and Refrigeration Institute (ARI) reference number. Water-cooled systems, evaporative coolers, and water-source heat pumps do not qualify under this program, but may qualify under the Custom Incentive Program. Unitary and split system cooling equipment must meet ARI standards (210/240, 320 or 340/360), be UL listed, and use a minimum ozone-depleting refrigerant (e.g., HCFC or HFC). All required efficiencies are based on the Consortium for Energy Efficiency (CEE) high efficiency commercial air conditioning and heat pump specifications (www.cee1.org). A manufacturer's specification sheet indicating the system efficiency must accompany the application. Disposal of the existing unit must comply with local codes and ordinances.

Code	Eligible Installations	Eligibility criteria (Consistent w/ HVAC Incentives)
BPC1	<65,000 Btuh	Min. efficiency 14 SEER
BPC2	<65,000 Btuh	Min. efficiency 15 SEER
BPC3	>=65,000 Btuh and <240,000 Btuh	Min. efficiency 11.5 EER/11.9 IPLV
BPC4	>=65,000 Btuh and <240,000 Btuh	Min. efficiency 12 EER/12.4 IPLV
BPC5	>=240,000 Btuh and <760,000 Btuh	Min. efficiency 10.5 EER/10.9 IPLV
BPC6	>=240,000 Btuh and <760,000 Btuh	Min. efficiency 10.8 EER/12.0 IPLV
BPC7	>=760,000 Btuh	Min. efficiency 9.7 EER/11.0 IPLV
BPC8	>=760,000 Btuh	Min. efficiency 10.2 EER/11.0 IPLV

Loadshape
TBD

Persistence
The persistence factor is assumed to be one.

Lifetimes
15 years

Air-Cooled Chillers

Measure Codes: BPC12

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Reference Documents: HVAC Standard Measures v3.xls

Description: Air cooled chillers are directly cooled by ambient air being mechanically circulated directly through the machine's condenser coil to expel heat to the atmosphere. No remote cooling tower is typically required.

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times N_U \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times N_U \times ISR$

ΔkW = Gross customer connected load kW savings for the measure
ΔkW_S = Gross customer connected load kW savings, found in table below
N_U = Number of units (tons capacity) being replaced
ISR = In service rate, or the percentage of units rebated that actually get

used. For prescriptive measures, this is assumed to be 100%

ΔkWh = Gross customer annual kWh savings for the measure

ΔkWh_S = Gross customer connected load kWh savings, found in table below

Description	Office	Medical	Restaurant	Grocery	School/College	Warehouse	Retail/Service	Mfg.Industrial	Hotel/Motel	Other
All sizes	295.77	360.47	307.66	270.60	239.23	307.66	270.60	259.46	457.45	307.66

Description	Office	Medical	Restaurant	Grocery	School/College	Warehouse	Retail/Service	Mfg.Industrial	Hotel/Motel	Other
All sizes	0.26443	0.26300	0.26435	0.25666	0.26509	0.26435	0.25666	0.27742	0.26720	0.26435

Baseline
One or more existing air-cooled chillers, with or without a cooling tower.

High Efficiency
Air-cooled chillers are eligible for an incentive if they have a rated kW/ton for the Integrated Part Load Value (IPLV) that is less than or equal to the qualifying efficiency shown of 1.04 kW/ton. The chiller efficiency rating must be based on ARI standard 550/590–2003 for IPLV conditions and not based on full-load conditions. The chillers must meet ARI standards 550/590–2003, be UL listed, and use a minimum ozone-depleting refrigerant (e.g., HCFC or HFC). The ARI net capacity value should be used to determine the chiller tons. A manufacturer specification sheet with the rated kW/ton-IPLV or COP-IPLV must accompany the application.

Loadshape
TBD

Persistence
The persistence factor is assumed to be one.

Lifetimes
20 years

Room Air Conditioners

Measure Codes: BPC13, BPC14

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Reference Documents: HVAC Standard Measures v3.xls

Description: An air conditioner is an appliance, system, or mechanism designed to stabilize the air temperature and humidity within an area (used for cooling as well as heating depending on the air properties at a given time), typically using a refrigeration cycle but sometimes using evaporation, most commonly for comfort cooling in buildings and motor-cars.

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times N_U \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times N_U \times ISR$

ΔkW	= Gross customer connected load kW savings for the measure
ΔkW_S	= Gross customer connected load kW savings, found in table below
N_U	= Number of units (tons capacity) being replaced
ISR	= In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh	= Gross customer annual kWh savings for the measure
ΔkWh_S	= Gross customer connected load kWh savings, found in table below

Description	Office	Medical	Restaurant	Grocery	School/College	Warehouse	Retail/Service	Mfg.Industrial	Hotel/Motel	Other
Tier 1-Room Air <8,000 btuh	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Tier 1-Room Air 8000 to 13,999 btuh	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Tier 1-Room Air 14,000 to 19,999 btuh	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Tier 1-Room Air >20,000 btuh	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
Tier 2-Room Air <8,000 btuh	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Tier 2-Room Air 8000 to 13,999 btuh	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Tier 2-Room Air 14,000 to 19,999 btuh	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Tier 2-Room Air >20,000 btuh	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28

Description	Office	Medical	Restaurant	Grocery	School/College	Warehouse	Retail/Service	Mfg.Industrial	Hotel/Motel	Other
Tier 1-Room Air <8,000 btuh	679.82	671.31	822.52	912.77	450.84	472.61	607.19	692.69	533.77	450.84
Tier 1-Room Air 8000 to 13,999 btuh	673.53	665.1	814.19	904.31	446.67	468.24	601.57	686.27	528.82	446.67
Tier 1-Room Air 14,000 to 19,999 btuh	679.82	671.31	822.52	912.77	450.84	472.61	607.19	692.69	533.77	450.84
Tier 1-Room Air >20,000 btuh	773.84	764.16	936.27	1,039	513.19	537.97	691.16	788.49	607.58	513.19
Tier 2-Room Air <8,000 btuh	851.8	841.14	1,030.6	1,143.67	564.89	592.17	760.8	867.92	668.8	564.89
Tier 2-Room Air 8000 to 13,999 btuh	842.41	831.86	1,019.23	1,131.06	558.66	585.64	752.4	858.35	661.42	558.66
Tier 2-Room Air 14,000 to 19,999 btuh	851.8	841.14	1,030.6	1,143.67	564.89	592.17	760.8	867.92	668.8	564.89
Tier 2-Room Air >20,000 btuh	952.83	940.9	1,152.82	1,279.31	631.89	662.4	851.03	970.86	748.11	631.89

Baseline
One or more existing room air conditioners sized according to the following table.

High Efficiency
Room air conditioning units are through-the-wall (or built-in) self-contained units that are two tons or less. There are two eligible efficiency levels as listed by the CEE. A unit can either qualify under ENERGY STAR® standards or under Super Efficient Home Appliance (SEHA) Tier 1 standards. The minimum requirements and eligible equipment that meet CEE high efficiency room air conditioning specifications can be found at www.cee1.org. These units are with and without louvered sides, without reverse cycle (i.e., heating), and casement. The qualifying efficiencies for both levels are shown in the following table. Disposal of the existing unit must comply with local codes and ordinances.

A new room air conditioner with meeting the minimum EER as detailed in the table below.

Size (Btuh)	Tier 1 2000 ENERGY STAR (EER)	Tier 2 SEHA Tier 1 (EER)
<8,000	10.7	11.2
8,000 - 13,999	10.8	11.3
14,000 - 19,999	10.7	11.2
>= 20,000	9.4	9.8

Loadshape
TBD

Persistence
The persistence factor is assumed to be one.

Lifetimes
9 years

PTAC/PTHP

Measure Codes: BPC15

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Reference Documents: HVAC Standard Measures v3.xls

Description: A PTAC is a packaged terminal air conditioner that cools and heats. A PTAC provides warm air through an electric resistance heater (heat strip). A PTHP is a packaged terminal heat pump. A PTHP uses its compressor year round to heat or cool. In warm weather, it efficiently captures heat from inside your home and pumps it outside for cooling. In cool weather, it captures heat from outdoor air and pumps it into your home, adding heat from electric heat strips as necessary to efficiently provide heat.

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times N_U \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times N_U \times ISR$

ΔkW	= Gross customer connected load kW savings for the measure
ΔkW_S	= Gross customer connected load kW savings, found in table below
N_U	= Number of units (tons capacity) being replaced
ISR	= In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh	= Gross customer annual kWh savings for the measure
ΔkWh_S	= Gross customer connected load kWh savings, found

kWh Savings/Ton (kWh)

Description	Office	Medical	Restaurant	Grocery	School/College	Warehouse	Retail/Service	Mfg.Industrial	Hotel/Motel	Other
All Sizes, Retrofit	180.84	212.51	212.51	244.18	102.37	180.84	244.18	212.51	212.51	212.51
All Sizes, New Construction	6.28	7.38	7.38	8.48	3.56	6.28	8.48	7.38	7.38	7.38

kW Savings/Ton (kW)

Description	Office	Medical	Restaurant	Grocery	School/College	Warehouse	Retail/Service	Mfg.Industrial	Hotel/Motel	Other
All Sizes, Retrofit	0.239	0.239	0.239	0.239	0.239	0.239	0.239	0.239	0.239	0.239
All Sizes, New Construction	0.0083	0.0083	0.0083	0.0083	0.0083	0.0083	0.0083	0.0083	0.0083	0.0083

Baseline
One or more existing PTACs or PTHPs.

High Efficiency
Package terminal air conditioners and heat pumps are through-the-wall self contained units that are two tons (24,000 Btuh) or less. Only units that have an EER greater than or equal to 13.08 – (0.2556 * capacity/1,000), where capacity is in Btuh, qualify for the incentive. All EER values must be rated at 95°F outdoor dry-bulb temperature.

Loadshape
TBD

Persistence
The persistence factor is assumed to be one.

Variable Frequency Drives on HVAC Motors

Measure Codes: BPC20

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Reference Documents: HVAC Standard Measures v3.xls

Description: A variable-frequency drive (VFD) is a system for controlling the rotational speed of an alternating current (AC) electric motor by controlling the frequency of the electrical power supplied to the motor. A variable frequency drive is a specific type of adjustable-speed drive.

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times N_{HP} \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times N_{HP} \times ISR$

ΔkW = Gross customer connected load kW savings for the measure
ΔkW_S = Gross customer connected load kW savings, found in table below
N_{HP} = Total Horse Power being controlled
ISR = In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh = Gross customer annual kWh savings for the measure
ΔkWh_S = Gross customer connected load kWh savings, found

[illegible]										
Description	Office	Medical	Restaurant	Grocery	School/College	Warehouse	Retail/Service	Mfg.Industrial	Hotel/Motel	Other
All Sizes of Motors	850	850	850	850	850	850	850	850	850	850

Description	Office	Medical	Restaurant	Grocery	School/College	Warehouse	Retail/Service	Mfg.Industrial	Hotel/Motel	Other
All Sizes of Motors	0	0	0	0	0	0	0	0	0	0

Baseline
One or more existing motors. A variable-frequency drive (VFD) is a system for controlling the rotational speed of an alternating current (AC) electric motor by controlling the frequency of the electrical power supplied to the motor. A variable frequency drive is a specific type of adjustable-speed drive.

High Efficiency
A new motor with VFD. Motors must meet or exceed the NEMA nominal efficiencies found in the following tables and be 500 hp or less. The VFD must be used on conjunction with pumping or air handling applications. The VFD must operate for a minimum of 2,000 hours annually. Redundant/backup units do not qualify for an incentive.

Loadshape
Loadshape #2.

Persistence
The persistence factor is assumed to be one.

Lifetimes
15 years

Air Conditioner Tune-up

Measure Codes: BPC21

Version Date & Revision History
Draft date: February 6, 2009
Effective date: February 6, 2009
End date: TBD

Reference Documents: ActOnEnergy Business Program Small Business HVAC Application

Description: Actions specific to an air conditioner tune-up include but are not limited to checking refrigerant charge; identifying and repairing leaks if refrigerant charge is low; measuring and recording refrigerant pressures; measuring and recording temperature drop at the indoor coil; cleaning the condensate drain line; cleaning the outdoor coil and straightening the fins; cleaning and straightening the indoor and outdoor fan blades; cleaning the indoor coil with spray-on cleaner and straightening the fins; repairing damaged insulation; changing the air filter, measuring and recording blower amp draw; measuring and recording compressor integrity; and measuring and recording condenser fan motor amperage draw.

For a cooling tune-up, the participant must have a delivery service rate of DS-2, DS-3, or DS-4 and be an electric customer of Ameren Illinois Utilities. To participate in the natural gas tune-up, the applicant must be a natural gas customer of Ameren Illinois Utilities and have a delivery service rate of GDS-2.

For installation of new heating equipment, the applicant must be an Ameren Illinois Utilities customer and have a delivery service rate of GDS-2. For installation of new cooling equipment, the applicant must be an Ameren Illinois Utilities customer and have a delivery service rate of DS-2, DS-3, or DS-4.

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times T \times N_T \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times T \times N_T \times ISR$

ΔkW	= Gross customer connected load kW savings for the measure
ΔkW_S	= Gross customer connected load kW savings, found in table below
T	= Tonnage of unit being tuned
N_T	= Number of units being tuned-up
ISR	= In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh	= Gross customer annual kWh savings for the measure
ΔkWh_S	= Gross customer connected load kWh savings, found

Description	Office	Medical	Restaurant	Grocery	School/College	Warehouse	Retail/Service	Mfg.Industrial	Hotel/Motel	Other
Per Ton	878	878	878	878	878	878	878	878	878	878

Description	Office	Medical	Restaurant	Grocery	School/College	Warehouse	Retail/Service	Mfg.Industrial	Hotel/Motel	Other
Per Ton	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39

Baseline
An existing air conditioner unit, with a cooling capacity of three tons or more.

High Efficiency
The same air conditioner unit, now fully tuned to specification. To qualify for an air conditioner tune-up incentive, the following work must be completed, as applicable:

- Check refrigerant charge
- Identify and repair leaks if refrigerant charge is low
- Measure and record refrigerant pressures
- Measure and record temperature drop at indoor coil
- Clean condensate drain line
- Clean outdoor coil and straighten fins
- Clean and straighten indoor and outdoor fan blades
- Clean indoor coil with spray-on cleaner and straighten fins
- Repair damaged insulation – suction line
- Change air filter
- Measure and record blower amp draw
- Measure and record compressor integrity (MOhm)
- Measure and record condenser fan motor amp draw

Loadshape
TBD

Persistence
The persistence factor is assumed to be one.

Lifetimes
The measure life is three years.

Gas Boiler Tune-up

Measure Codes: BPH1

Version Date & Revision History
Draft date: February 6, 2009
Effective date: February 6, 2009
End date: TBD

Reference Documents: ActOnEnergy Business Program Small Business HVAC Application

Description: Record pre-tune-up and post-tune-up measurements of boiler/furnace combustion efficiency, Adjust draft control, Maintain constant draft through the system to ensure complete combustion

accounting for temperature and barometric changes, Install flue restrictions in the flue stack to control flow, Check completeness of combustion with CO and O2 sensors (Results from this testing will affect the fuel input/air input measure), Clean fire side of heat exchanger, Scrub HX manually to remove buildup from combustion gases and more efficiently transfer heat from the source to the stream/water, Seal combustion chamber with a ceramic sealant to reduce heat loss from chamber, Optimize fuel input based on combustion completeness results

For a cooling tune-up, the participant must have a delivery service rate of DS-2, DS-3, or DS-4 and be an electric customer of Ameren Illinois Utilities. To participate in the natural gas tune-up, the applicant must be a natural gas customer of Ameren Illinois Utilities and have a delivery service rate of GDS-2.

For installation of new heating equipment, the applicant must be an Ameren Illinois Utilities customer and have a delivery service rate of GDS-2. For installation of new cooling equipment, the applicant must be an Ameren Illinois Utilities customer and have a delivery service rate of DS-2, DS-3, or DS-4.

Algorithms

Natural Gas Savings

$$\Delta NG = NG_I \times T_S$$

ΔNG = Gross customer annual natural gas savings for the measure, therms
NG_I = Boiler natural gas input, kbtu
T_S = Annual natural gas savings for the measure (0.572283737 therms for all gas boilers)

Baseline
An existing natural gas boiler with a maximum 1,000 kbtuh input.

High Efficiency
The same natural gas boiler, now fully tuned to specification. To qualify for a boiler/furnace tune-up incentive, the following work must be completed, as applicable:

- Record pre-tune-up and post-tune-up measurements of boiler/furnace combustion efficiency
- Adjust draft control
- Maintain constant draft through the system to ensure complete combustion accounting for temperature and barometric changes
- Install flue restrictions in the flue stack to control flow
- Check completeness of combustion with CO and O2 sensors (Results from this testing will affect the fuel input/air input measure)
- Clean fire side of heat exchanger
- Scrub HX manually to remove buildup from combustion gases and more efficiently transfer heat from the source to the stream/water
- Seal combustion chamber with a ceramic sealant to reduce heat loss from chamber
- Optimize fuel input based on combustion completeness results

Operating Hours
NA

Loadshape
NA

Persistence
The persistence factor is assumed to be one.

Lifetimes
The measure life is three years.

Gas Force-Air Furnace Tune-up

Measure Codes: BPH2

Version Date & Revision History
Draft date: February 6, 2009
Effective date: February 6, 2009
End date: TBD

Reference Documents: ActOnEnergy Business Program Small Business HVAC Application

Description: Record pre-tune-up and post-tune-up measurements of boiler/furnace combustion efficiency, Adjust draft control, Maintain constant draft through the system to ensure complete combustion accounting for temperature and barometric changes, Install flue restrictions in the flue stack to control flow, Check completeness of combustion with CO and O2 sensors (Results from this testing will affect the fuel input/air input measure), Clean fire side of heat exchanger, Scrub HX manually to remove buildup from combustion gases and more efficiently transfer heat from the source to the stream/water, Seal combustion chamber with a ceramic sealant to reduce heat loss from chamber, Optimize fuel input based on combustion completeness results

For a cooling tune-up, the participant must have a delivery service rate of DS-2, DS-3, or DS-4 and be an electric customer of Ameren Illinois Utilities. To participate in the natural gas tune-up, the applicant must be a natural gas customer of Ameren Illinois Utilities and have a delivery service rate of GDS-2.

For installation of new heating equipment, the applicant must be an Ameren Illinois Utilities customer and have a delivery service rate of GDS-2. For installation of new cooling equipment, the applicant must be an Ameren Illinois Utilities customer and have a delivery service rate of DS-2, DS-3, or DS-4.

Algorithms

Natural Gas Savings

$$\Delta NG = NG_I \times T_S$$

ΔNG = Gross customer annual natural gas savings for the measure, therms
NG_I = Force-air furnace natural gas input, kbtu
T_S = Annual natural gas savings for the measure (0.572283737 therms for all gas force-air furnaces)

Baseline
An existing natural gas force-air furnace with a maximum 300 kbtuh input.

High Efficiency
The same force-air furnace, now fully tuned to specification. To qualify for a boiler/furnace tune-up incentive, the following work must be completed, as applicable:

- Record pre-tune-up and post-tune-up measurements of boiler/furnace combustion efficiency
- Adjust draft control
- Maintain constant draft through the system to ensure complete combustion accounting for temperature and barometric changes
- Install flue restrictions in the flue stack to control flow

- Check completeness of combustion with CO and O2 sensors (Results from this testing will affect the fuel input/air input measure)
- Clean fire side of heat exchanger
- Scrub HX manually to remove buildup from combustion gases and more efficiently transfer heat from the source to the stream/water
- Seal combustion chamber with a ceramic sealant to reduce heat loss from chamber
- Optimize fuel input based on combustion completeness results

Operating Hours
NA

Loadshape
TBD

Persistence
The persistence factor is assumed to be one.

Lifetimes
The measure life is three years.

Gas Boiler Replacement

Measure Codes: BPH3

Version Date & Revision History
Draft date: February 6, 2009
Effective date: February 6, 2009
End date: TBD

Reference Documents: ActOnEnergy Business Program Small Business HVAC Application

Description: Replacing an existing gas-fueled boiler

For a cooling tune-up, the participant must have a delivery service rate of DS-2, DS-3, or DS-4 and be an electric customer of Ameren Illinois Utilities. To participate in the natural gas tune-up, the applicant must be a natural gas customer of Ameren Illinois Utilities and have a delivery service rate of GDS-2.

For installation of new heating equipment, the applicant must be an Ameren Illinois Utilities customer and have a delivery service rate of GDS-2. For installation of new cooling equipment, the applicant must be an Ameren Illinois Utilities customer and have a delivery service rate of DS-2, DS-3, or DS-4.

Algorithms

Natural Gas Savings

$$\Delta NG = NG_I \times T_S$$

ΔNG = Gross customer annual natural gas savings for the measure, therms
NG_I = Boiler natural gas input, kbtu
T_S = Annual natural gas savings for the measure (1.216102941 therms for all gas boilers)

Baseline
An existing natural gas boiler.

High Efficiency
A new natural gas boiler, using hot water only (no steam), with a maximum 300 kbtuh input, and a minimum AFUE of 85%.

Operating Hours
NA

Loadshape
NA

Persistence
The persistence factor is assumed to be one.

Lifetimes
The lifetime for this measure is 15 years.

Gas Boiler Replacement

Measure Codes: BPH4

Version Date & Revision History
Draft date: February 6, 2009
Effective date: February 6, 2009
End date: TBD

Reference Documents: ActOnEnergy Business Program Small Business HVAC Application

Description: Replacing an existing gas-fueled boiler

For a cooling tune-up, the participant must have a delivery service rate of DS-2, DS-3, or DS-4 and be an electric customer of Ameren Illinois Utilities. To participate in the natural gas tune-up, the applicant must be a natural gas customer of Ameren Illinois Utilities and have a delivery service rate of GDS-2.

For installation of new heating equipment, the applicant must be an Ameren Illinois Utilities customer and have a delivery service rate of GDS-2. For installation of new cooling equipment, the applicant must be an Ameren Illinois Utilities customer and have a delivery service rate of DS-2, DS-3, or DS-4.

Algorithms

Natural Gas Savings

$$\Delta NG = NG_I \times T_S$$

ΔNG = Gross customer annual natural gas savings for the measure, therms
NG_I = Boiler natural gas input, kbtu
T_S = Annual natural gas savings for the measure (2.432205882 therms for all gas boilers)

Baseline
An existing natural gas boiler.

High Efficiency
A new natural gas boiler, using hot water only (no steam), with a maximum 300 kbtuh input, and a minimum thermal efficiency of 90%.

Operating Hours
NA

Loadshape
NA

Persistence
The persistence factor is assumed to be one.

Lifetimes
The lifetime for this measure is 15 years.

Gas Furnace Replacement

Measure Codes: BPH5

Version Date & Revision History
Draft date: February 6, 2009
Effective date: February 6, 2009
End date: TBD

Reference Documents: ActOnEnergy Business Program Small Business HVAC Application

Description: Replacing an existing gas-fueled furnace

For a cooling tune-up, the participant must have a delivery service rate of DS-2, DS-3, or DS-4 and be an electric customer of Ameren Illinois Utilities. To participate in the natural gas tune-up, the applicant must be a natural gas customer of Ameren Illinois Utilities and have a delivery service rate of GDS-2.

For installation of new heating equipment, the applicant must be an Ameren Illinois Utilities customer and have a delivery service rate of GDS-2. For installation of new cooling equipment, the applicant must be an Ameren Illinois Utilities customer and have a delivery service rate of DS-2, DS-3, or DS-4.

Algorithms

Natural Gas Savings

$$\Delta NG = NG_I \times T_S$$

ΔNG = Gross customer annual natural gas savings for the measure, therms
NG_I = Gas furnace natural gas input, kbtu
T_S = Annual natural gas savings for the measure (2.432205882 therms for all gas furnaces)

Baseline
An existing natural gas furnace.

High Efficiency
A new Energy Star® furnace, with a maximum 300 kbtuh input, and a minimum AFUE of 90%.

Operating Hours
NA

Loadshape
NA

Persistence
The persistence factor is assumed to be one.

Lifetimes
The lifetime of this measure is 15 years.

Gas Furnace Replacement

Measure Codes: BPH6

Version Date & Revision History
Draft date: February 6, 2009
Effective date: February 6, 2009
End date: TBD

Reference Documents: ActOnEnergy Business Program Small Business HVAC Application

Description: Replacing an existing gas-fueled furnace

For a cooling tune-up, the participant must have a delivery service rate of DS-2, DS-3, or DS-4 and be an electric customer of Ameren Illinois Utilities. To participate in the natural gas tune-up, the applicant must be a natural gas customer of Ameren Illinois Utilities and have a delivery service rate of GDS-2.

For installation of new heating equipment, the applicant must be an Ameren Illinois Utilities customer and have a delivery service rate of GDS-2. For installation of new cooling equipment, the applicant must be an Ameren Illinois Utilities customer and have a delivery service rate of DS-2, DS-3, or DS-4.

Algorithms

Natural Gas Savings

$$\Delta NG = NG_I \times T_S$$

ΔNG = Gross customer annual natural gas savings for the measure, therms
NG_I = Gas furnace natural gas input, kbtu
T_S = Annual natural gas savings for the measure (2.918647059 therms for all gas furnaces)

Baseline
An existing natural gas furnace.

High Efficiency
A new gas furnace, with a maximum 300 kbtuh input, and a minimum AFUE of 92%.

Operating Hours
NA

Loadshape
NA

Persistence

The persistence factor is assumed to be one.

Lifetimes
The lifetime of this measure is 15 years.

Gas Furnace Replacement

Measure Codes: BPH7

Version Date & Revision History
Draft date: February 6, 2009
Effective date: February 6, 2009
End date: TBD

Reference Documents: ActOnEnergy Business Program Small Business HVAC Application

Description: Replacing an existing gas-fueled furnace

For a cooling tune-up, the participant must have a delivery service rate of DS-2, DS-3, or DS-4 and be an electric customer of Ameren Illinois Utilities. To participate in the natural gas tune-up, the applicant must be a natural gas customer of Ameren Illinois Utilities and have a delivery service rate of GDS-2.

For installation of new heating equipment, the applicant must be an Ameren Illinois Utilities customer and have a delivery service rate of GDS-2. For installation of new cooling equipment, the applicant must be an Ameren Illinois Utilities customer and have a delivery service rate of DS-2, DS-3, or DS-4.

Algorithms

Natural Gas Savings

$$\Delta NG = NG_I \times T_S$$

ΔNG = Gross customer annual natural gas savings for the measure, therms
NG_I = Gas furnace natural gas input, kbtu
T_S = Annual natural gas savings for the measure (3.405088235 therms for all gas furnaces)

Baseline
An existing natural gas furnace.

High Efficiency
A new gas furnace, with a maximum 300 kbtuh input, and a minimum AFUE of 94%.

Operating Hours
NA

Loadshape
NA

Persistence
The persistence factor is assumed to be one.

Lifetimes
The lifetime of this measure is 15 years.

Motors

Efficient Motors

Measure Code: N/A

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: Motors Standard Measures v1.xls

Description: High-efficiency motors must be three-phase ODP (Open Drip Proof) or TEFC (Totally Enclosed Fan Cooled) motors that have nominal speeds of 1200, 1800, or 3600 RPM.

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times N_M \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times N_M \times ISR$

ΔkW	= Gross customer connected load kW savings for the measure
ΔkW_S	= Gross customer connected load kW savings, based on the motor size, motor type, and customer type found in table below
N_U	= Number of units being replaced
ISR	= In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh	= Gross customer annual kWh savings for the measure
ΔkWh_S	= Gross customer connected load kW savings, based on the motor size, motor type, and customer type found in table below

ODP Motor Savings

1	Open Drip-Proof Motors (ODP)	2,076	7	15	$32	0.04	2,076	78.8	148.2
1.5	Open Drip-Proof Motors (ODP)	2,076	9	15	$33	0.04	2,076	97.1	182.4
2	Open Drip-Proof Motors (ODP)	2,076	11	15	$43	0.06	2,076	129.4	243.2
3	Open Drip-Proof Motors (ODP)	2,076	16	15	$44	0.08	2,076	165.8	311.7
5	Open Drip-Proof Motors (ODP)	2,076	20	15	$55	0.11	2,076	252.8	475.1
7.5	Open Drip-Proof Motors (ODP)	2,076	35	15	$158	0.25	2,076	631.7	1,093.0
10	Open Drip-Proof Motors (ODP)	2,076	45	15	$260	0.39	2,076	1,010.6	1,710.8
15	Open Drip-Proof Motors (ODP)	2,076	60	15	$298	0.53	2,076	1,380.3	2,336.7
20	Open Drip-Proof Motors (ODP)	2,076	75	15	$457	0.66	2,076	1,972.8	2,915.9
25	Open Drip-Proof Motors (ODP)	2,820	80	15	$678	0.98	2,820	3,149.9	4,846.0
30	Open Drip-Proof Motors (ODP)	2,820	90	15	$764	0.99	2,820	3,198.5	4,920.9
40	Open Drip-Proof Motors (ODP)	2,820	100	15	$1,019	1.33	2,820	3,578.5	5,555.4
50	Open Drip-Proof Motors (ODP)	2,820	125	15	$1,192	1.36	2,820	4,362.0	6,710.8
60	Open Drip-Proof Motors (ODP)	2,820	150	15	$1,509	1.57	2,820	5,531.2	8,676.2
75	Open Drip-Proof Motors (ODP)	2,820	175	15	$1,918	1.95	2,820	7,037.7	11,104.8
100	Open Drip-Proof Motors (ODP)	2,820	250	15	$2,644	2.54	2,820	9,713.5	15,498.9
125	Open Drip-Proof Motors (ODP)	2,820	275	15	$3,980	3.02	2,820	11,046.5	18,537.7
150	Open Drip-Proof Motors (ODP)	2,820	325	15	$5,315	3.49	2,820	12,379.5	21,576.5
200	Open Drip-Proof Motors (ODP)	2,215	450	15	$8,182	4.42	2,215	14,307.9	27,298.9

TEFC Motor Savings

1	Totally Enclosed Fan-Cooled Motors (TEFC)	2,076	7	15	$54	0.04	2,076	82.7	155.5
1.5	Totally Enclosed Fan-Cooled Motors (TEFC)	2,076	9	15	$53	0.05	2,076	101.3	190.5
2	Totally Enclosed Fan-Cooled Motors (TEFC)	2,076	11	15	$71	0.06	2,076	135.1	254.0
3	Totally Enclosed Fan-Cooled Motors (TEFC)	2,076	16	15	$69	0.08	2,076	172.4	323.9
5	Totally Enclosed Fan-Cooled Motors (TEFC)	2,076	20	15	$85	0.12	2,076	262.0	492.4
7.5	Totally Enclosed Fan-Cooled Motors (TEFC)	2,076	35	15	$209	0.26	2,076	661.1	1,143.6
10	Totally Enclosed Fan-Cooled Motors (TEFC)	2,076	45	15	$334	0.41	2,076	1,060.2	1,794.8
15	Totally Enclosed Fan-Cooled Motors (TEFC)	2,076	60	15	$508	0.56	2,076	1,446.9	2,449.5
20	Totally Enclosed Fan-Cooled Motors (TEFC)	2,820	75	15	$636	0.65	2,820	1,919.2	2,836.7
25	Totally Enclosed Fan-Cooled Motors (TEFC)	2,820	80	15	$1,113	0.90	2,820	2,890.5	4,447.0
30	Totally Enclosed Fan-Cooled Motors (TEFC)	2,820	90	15	$1,316	0.90	2,820	2,883.0	4,435.5
40	Totally Enclosed Fan-Cooled Motors (TEFC)	2,820	100	15	$1,755	1.19	2,820	3,844.0	5,914.0
50	Totally Enclosed Fan-Cooled Motors (TEFC)	2,820	125	15	$2,162	1.19	2,820	3,829.1	5,890.9
60	Totally Enclosed Fan-Cooled Motors (TEFC)	2,820	150	15	$3,088	1.43	2,820	5,045.8	7,919.9
75	Totally Enclosed Fan-Cooled Motors (TEFC)	2,820	175	15	$4,065	1.79	2,820	6,495.1	10,254.3
100	Totally Enclosed Fan-Cooled Motors (TEFC)	2,820	250	15	$5,969	2.39	2,820	9,161.2	14,617.7
125	Totally Enclosed Fan-Cooled Motors (TEFC)	2,820	275	15	$7,581	2.85	2,820	10,454.1	17,545.9
150	Totally Enclosed Fan-Cooled Motors (TEFC)	2,820	325	15	$9,194	3.31	2,820	11,747.0	20,474.2
200	Totally Enclosed Fan-Cooled Motors (TEFC)	2,215	450	15	$10,969	4.31	2,215	13,948.1	26,612.5

Baseline
An existing open drip-proof or totally enclosed fan-cooled motor 200 hp or less in size. Motors exceeding 200 hp can utilize the Custom Program.

High Efficiency:
The National Electrical Manufacturers Association (NEMA) has implemented a new NEMA Premium Energy Efficiency Motor Standard. Under this voluntary program, a motor may be marketed as a NEMA Premium motor if it meets or exceeds the set of NEMA minimum full-load efficiency levels. Motors so rated have been tested and the measured efficiency is printed on the nameplate as the "NEMA Nominal Efficiency." ActOnEnergy supports only NEMA Premium Efficiency motors. Customer-provided "NEMA Nominal Efficiency" is used for savings calculations. If this is not available, then minimum NEMA Premium efficiency is used. Refer to the table of Efficiency Specifications in the tables below.

Operating Hours
Refer to the ODP and TEFC Motor Savings Tables.

Loadshape
Loadshape #2.

Persistence
The persistence factor is assumed to be one.

Lifetimes
The lifetime of both ODP and TEFC motors is expected to be 15 years.

Refrigeration

Strip Curtains on Walk-in Coolers or Freezers

Measure Code: BPR1

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: Refrigeration Standard Measuresv1.xls

Description: New strip curtains or clear plastic swinging doors. Not eligible for display cases. Not eligible for replacing existing strip curtains.

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times N_D \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times N_D \times ISR$

ΔkW = Gross customer connected load kW savings for the measure
ΔkW_S = Gross customer connected load kW savings, found in table below
N_D = Number of doors having strip curtains installed
ISR = In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%

ΔkWh = Gross customer annual kWh savings for the measure
ΔkWh_S = Gross customer connected load kWh savings, found in table below

Description	Facility	Total kW Savings (kW)	Total kWh Savings (kWh)
Strip Curtains on Walk-in Coolers	Restaurant	0.010313	128
Strip Curtains on Walk-in Coolers	Grocery	0.0054965	99.5
Strip Curtains on Walk-in Coolers	Other	0.00790475	113.75
Strip Curtains on Walk-in Freezers	Restaurant	0.029774	366
Strip Curtains on Walk-in Freezers	Grocery	0.021831	330.5
Strip Curtains on Walk-in Freezers	Other	0.0258025	348.25

Baseline
A walk-in cooler or freezer.

High Efficiency
The same walk-in cooler or freezer, now with new strip curtains or clear plastic swinging doors installed. Display cases and replacement of existing strip curtains are not eligible for incentives under this measure.

Operating Hours
There are no operating hour values for this measure.

Loadshape
Loadshape #4.

Persistence
The persistence factor is assumed to be one.

Lifetimes
The lifetime of Strip Curtains on Walk-in Coolers or Freezers is expected to be 4 years.

Anti-Sweat Heater Control

Measure Code: BPR2, BPR3

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: Refrigeration Standard Measuresv1.xls

Description: For freezer case door and refrigerated case doors to prevent condensation on glass.

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times N_F \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times N_F \times ISR$

ΔkW = Gross customer connected load kW savings for the measure
ΔkW_S = Gross customer connected load kW savings, found in table below

N_F = Number of doors having anti-sweat heaters installed
ISR = In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh = Gross customer annual kWh savings for the measure
ΔkWh_S = Gross customer connected load kWh savings, found in table below

Measure	Description	Facility	Total KW Savings (kW)	Total KWH Savings (kWh)
BPR2	Anti-Sweat Heater for Freezer Case Door	Grocery	0.009634	409
BPR2	Anti-Sweat Heater for Freezer Case Door	Restaurant	0.009634	409
BPR2	Anti-Sweat Heater for Freezer Case Door	Other	0.009634	409
BPR3	Anti-Sweat Heater for Refrigerated Case Door	Grocery	0.007436	389
BPR3	Anti-Sweat Heater for Refrigerated Case Door	Restaurant	0.007436	389
BPR3	Anti-Sweat Heater for Refrigerated Case Door	Other	0.007436	389

Baseline
A refrigerator or freezer case with doors.

High Efficiency:
The same refrigerator or freezer case, now with anti-sweat heater controls. An anti-sweat heater control is a device that is installed that senses the relative humidity in the air outside of the display case and reduces or turns off the glass door (if applicable) and frame anti-sweat heaters at low humidity conditions. Technologies that can turn off anti-sweat heaters based on sensing condensation (on the inner glass pane) also qualify.

Operating Hours
There are no operating hour values for this measure.

Loadshape
Loadshape #5.

Persistence
The persistence factor is assumed to be one.

Lifetimes
The lifetime of an Anti-Sweat Heater Control is expected to be 12 years.

EC Motor for Walk-In Cooler or Freezer

Measure Code: BPR4

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: Refrigeration Standard Measuresv1.xls

Description: Replacement fan motor (electronically commutated motor) designed as a drop in replacement for shaded pole and PSC evaporator fan motors.

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times N_M \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times N_M \times ISR$

ΔkW = Gross customer connected load kW savings for the measure
ΔkW_S = Gross customer connected load kW savings, found in table below
N_M = Number of motors being replaced
ISR = In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh = Gross customer annual kWh savings for the measure
ΔkWh_S = Gross customer connected load kWh savings, found in table below

Description	Facility	Total KW Savings (kW)	Total KWH Savings (kWh)
EC Motor for Walk-In Cooler	Grocery	0.056556	398
EC Motor for Walk-In Cooler	Restaurant	0.033981	399
EC Motor for Walk-In Cooler	Other	0.0452685	398.5
EC Motor for Walk-In Freezer	Grocery	0.068665	631
EC Motor for Walk-In Freezer	Restaurant	0.038503	748
EC Motor for Walk-In Freezer	Other	0.053584	689.5

Baseline
A walk-in cooler or freezer with one or more standard efficiency shaded-pole motors.

High Efficiency
The same walk-in cooler or freezer with one or more electrically commutated motors. This measure is applicable for the replacement of an existing standard-efficiency shaded-pole evaporator fan motor in refrigerated display cases or fan coil in walk-ins. This measure cannot be used in conjunction with the Evaporator Fan Controller measure (BPR6).

Operating Hours
There are no operating hour values for this measure.

Loadshape
Loadshape #5.

Persistence
The persistence factor is assumed to be one.

Lifetimes
The lifetime of an EC Motor for Walk-In Cooler or Freezer is expected to be 15 years.

EC Motor for Reach-In Cooler or Freezer

Measure Code: BPR5

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: Refrigeration Standard Measuresv1.xls

Description: Replacement fan motor (electronically commutated motor) designed as a drop in replacement for shaded pole and PSC evaporator fan motors.

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times N_M \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times N_M \times ISR$

ΔkW = Gross customer connected load kW savings for the measure
ΔkW_S = Gross customer connected load kW savings, found in table below
N_M = Number of motors being replaced
ISR = In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh = Gross customer annual kWh savings for the measure
ΔkWh_S = Gross customer connected load kWh savings, found in table below

Description	Facility	Total kW Savings (kW)	Total kWh Savings (kWh)
EC Motor for Reach-In Freezer	Grocery, Restaurant, and Other	0.036276	462
EC Motor for Reach-In Cooler	Grocery, Restaurant, and Other	0.033771	350

Baseline
A reach-in cooler or freezer with one or more standard efficiency shaded-pole motors.

High Efficiency
The same reach-in cooler or freezer with one or more electrically commutated motors. This measure is applicable for the replacement of an existing standard-efficiency shaded-pole evaporator fan motor in refrigerated display cases or fan coil in walk-ins. This measure cannot be used in conjunction with the Evaporator Fan Controller measure (BPR6).

Operating Hours
There are no operating hour values for this measure.

Loadshape
Loadshape #5.

Persistence
The persistence factor is assumed to be one.

Lifetimes
The lifetime of an EC Motor for Reach-In Cooler or Freezer is expected to be 15 years.

Evaporator Fan Controls

Measure Code: BPR6

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: Refrigeration Standard Measuresv1.xls

Description: This measure is for the installation of controls in medium-temperature walk-in coolers. These controls help manage the evaporator fans in the coolers.

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times N_M \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times N_M \times ISR$

ΔkW = Gross customer connected load kW savings for the measure
ΔkW_S = Gross customer connected load kW savings, found in table below
N_M = Number of evaporator fan motors being controlled
ISR = In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh = Gross customer annual kWh savings for the measure
ΔkWh_S = Gross customer connected load kWh savings, found in table below

Description	Facility	Total kW Savings (kW)	Total kWh Savings (kWh)
Evaporator Fan Controls	Grocery, Restaurant, and Other	0.06963	523

Baseline
A medium-temperature walk-in cooler without evaporator fan controls.

High Efficiency:
The same medium-temperature walk-in cooler, now with evaporator fan controls installed. This control or controls must do the following:
- Must control at least 1/20th hp
- Must reduce fan power by at least 75% during the off-cycle
- Cannot be used if applying for an EC motor incentive (BPR4 and BPR5)
- This measure is not applicable if any of the following conditions apply:
  1) The compressor runs all the time with high duty cycle
  2) The evaporator fan already cycles
  3) The evaporator fan motor runs on poly-phase power
  4) The evaporator fan motor is not shaded-pole or permanent split capacitor (PSC)
  5) Evaporator does not use off-cycle or time-off defrost

Operating Hours
The operating hours will be based on facility type.

Loadshape
Loadshape #5.

Persistence
The persistence factor is assumed to be one.

Lifetimes
The lifetime of evaporator fan controls is expected to be 16 years.

Automatic Door Closers for Walk-In Freezers

Measure Code: BPR7

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: Refrigeration Standard Measuresv1.xls

Description: Automatic door closers are devices that firmly close all walk-in doors if they are within one inch of the closed position. This applies to the main opaque insulated door of a walk-in freezer.

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times N_D \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times N_D \times ISR$

ΔkW	= Gross customer connected load kW savings for the measure
ΔkW_S	= Gross customer connected load kW savings, found in table below
N_D	= Number of doors having automatic closers installed
ISR	= In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh	= Gross customer annual kWh savings for the measure
ΔkWh_S	= Gross customer connected load kWh savings, found in table below

Description	Facility	Total kW Savings (kW)	Total kWh Savings (kWh)
Automatic Door Closers for Walk-In Freezers	Grocery, Restaurant, and Other	0.814813	2,919

Baseline
A walk-in freezer without automatic door-closers installed.

High Efficiency:
The same walk-in freezer with automatic door-closers installed. The automatic door-closer must firmly close the door to within one inch of full closure.

Operating Hours
There are no operating hour values for this measure.

Loadshape
Loadshape #4.

Persistence
The persistence factor is assumed to be one.

Lifetimes
The lifetime of an automatic door closer for walk-in freezers is expected to be 8 years.

ENERGY STAR® Vending Machine

Measure Code: BPR8

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: Refrigeration Standard Measuresv1.xls

Description: ENERGY STAR qualified new and rebuilt refrigerated beverage vending machines that meet strict energy efficiency guidelines set by the US Environmental Protection Agency and the Department of Energy. New and rebuilt refrigerated beverage vending machines that have earned the ENERGY STAR are 50% more energy-efficient than standard machine models. ENERGY STAR qualified new and rebuilt vending machines incorporate more efficient compressors, fan motors, and lighting systems to keep beverages just as cold and the machine visible while using less energy. ENERGY STAR qualified new and rebuilt machines come with a low power mode option that allows the machine to be placed in low-energy lighting and/or low-energy refrigeration states during times of inactivity.

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times N_M \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times N_M \times ISR$

ΔkW = Gross customer connected load kW savings for the measure

ΔkW_S = Gross customer connected load kW savings, found in table below
N_M = Number of machines that are ENERGY STAR®-rated
ISR = In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh = Gross customer annual kWh savings for the measure
ΔkWh_S = Gross customer connected load kWh savings, found in table below

Description	Facility	Total kW Savings (kW)	Total kWh Savings (kWh)
ENERGY STAR® Vending Machine	All	0	1,576

Baseline
A vending machine without controls

High Efficiency:
The same vending machine, with ENERGY STAR® - rated and –listed controls.

Operating Hours
There are no operating hour values for this measure.

Loadshape
Loadshape #5.

Persistence
The persistence factor is assumed to be one.

Lifetimes
The lifetime of an ENERGY STAR vending machine is expected to be 14 years.

Beverage Machine Control

Measure Code: BPR9

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: Refrigeration Standard Measuresv1.xls

Description: For a refrigerated vending machine that contains only non-perishable bottled and canned beverages. Has a passive infrared sensor to turn off lights after periods of unoccupied time.

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times N_M \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times N_M \times ISR$

ΔkW = Gross customer connected load kW savings for the measure
ΔkW_S = Gross customer connected load kW savings, found in table below

N_M = Number of machines that have controls
ISR = In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh = Gross customer annual kWh savings for the measure
ΔkWh_S = Gross customer connected load kWh savings, found in table below

Description	Facility	Gross kW Savings (kW)	Gross kWh Savings (kWh)
Beverage Machine Control	All	0	1,612

Baseline
A refrigerated vending machine without controls.

High Efficiency:
The same refrigerated vending machine, with controls. The new installation must have a passive infrared sensor to turn off lights after 15 minutes of unoccupied time. The control logic should power up the machine at two-hour intervals to maintain product temperature and provide compressor protection.

Operating Hours
There are no operating hour values for this measure.

Loadshape
Loadshape #5.

Persistence
The persistence factor is assumed to be one.

Lifetimes
The lifetime of a beverage machine control is expected to be 8 years.

Snack Machine Control

Measure Code: BPR10

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: Refrigeration Standard Measuresv1.xls

Description: Has a passive infrared sensor to turn off lights after a period of unoccupied time.

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times N_M \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times N_M \times ISR$

ΔkW = Gross customer connected load kW savings for the measure
ΔkW_S = Gross customer connected load kW savings, found in table below

N_M = Number of machines that have controls
ISR = In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh = Gross customer annual kWh savings for the measure
ΔkWh_S = Gross customer connected load kWh savings, found in table below

Description	Facility	Total kW Savings (kW)	Total kWh Savings (kWh)
Snack Machine Control	All	0	387

Baseline
A snack machine without controls.

High Efficiency:
The same machine, now with controls. The new installation must have a passive infrared sensor to turn off lights after 15 minutes of unoccupied time.

Operating Hours
There are no operating hour values for this measure.

Loadshape
Loadshape #5.

Persistence
The persistence factor is assumed to be one.

Lifetimes
The lifetime of a snack machine control is expected to be 8 years.

High Efficiency Ice Makers

Measure Code: BPR20, BPR21, BRP22, BPR23, BPR24, BPR25, BPR26

Version Date & Revision History
Draft date: December 17, 2008
Effective date: December 17, 2008
End date: TBD

Referenced Documents: Refrigeration Standard Measuresv1.xls

Description: BPR20: 101-200 lbs/24hr capacity, BRP21: 201-300 lbs/24hr capacity, BPR22: 301-400 lbs/24hr capacity, BPR23: 401-500 lbs/24hr capacity, BPR24: 501-1000 lbs/24hr capacity, BPR25: 1001-1500 lbs/24hr capacity, BPR26: > 1500 lbs/24hr capacity

Algorithms

Demand Savings $\Delta kW = \Delta kW_S \times N_M \times ISR$

Energy Savings $\Delta kWh = \Delta kWh_S \times N_M \times ISR$

ΔkW = Gross customer connected load kW savings for the measure
ΔkW_S = Gross customer connected load kW savings, found in table below

N_M = Number of high-efficiency ice makers
ISR = In service rate, or the percentage of units rebated that actually get used. For prescriptive measures, this is assumed to be 100%
ΔkWh = Gross customer annual kWh savings for the measure
ΔkWh_S = Gross customer connected load kWh savings, found in table below

Measure	Description	Utility	Total kW Savings (kW)	Total kWh Savings (kWh)
BPR20	High Efficiency Ice Makers 101-200 lbs	All	0.41	3,614
BPR21	High Efficiency Ice Makers 201-300 lbs	All	0.26	2,281
BPR22	High Efficiency Ice Makers 301-400 lbs	All	0.19	1,661
BPR23	High Efficiency Ice Makers 401-500 lbs	All	0.28	2,464
BPR24	High Efficiency Ice Makers 501-1,000 lbs	All	0.34	3,011
BPR25	High Efficiency Ice Makers 1,001-1,500 lbs	All	0.47	4,106
BPR26	High Efficiency Ice Makers > 1,500 lbs	All	0.5	4,380

Baseline
A standard efficiency ice maker.

High Efficiency
A new high-efficiency ice maker, with energy usage as detailed in the table below.

Measure	Capacity	Maximum Energy Usage
BPR20	101-200 pounds/24 hr capacity	Maximum 8.5 kWh per 100 lbs ice
BPR21	201-300 pounds/24 hr capacity	Maximum 7.7 kWh per 100 lbs ice
BPR22	301-400 pounds/24 hr capacity	Maximum 6.5 kWh per 100 lbs ice
BPR23	401-500 pounds/24 hr capacity	Maximum 5.5 kWh per 100 lbs ice
BPR24	501-1,000 pounds/24 hr capacity	Maximum 5.2 kWh per 100 lbs ice
BPR25	1,001-1,500 pounds/24 hr capacity	Maximum 5.0 kWh per 100 lbs ice
BPR26	>1,500 pounds/24 hr capacity	Maximum 4.6 kWh per 100 lbs ice

Operating Hours
There are no operating hour values for this measure.

Loadshape
Loadshape #4.

Persistence
The persistence factor is assumed to be one.

Lifetimes
The lifetime of a High Efficiency Ice Maker is expected to be 12 years.

JLH 1.05 Attach 2 Ameren Illinois Fixed Values

PROGRAM	Total NTG Factor*		
	PY4	PY5	PY6
Residential Lighting (regular CFL bulbs)	0.80	0.60	0.40
Residential Lighting (other lighting)	0.80	0.80	0.80
Residential Energy Efficient Products	0.80	0.80	0.80
Residential HVAC	0.80	0.70	0.60
Residential Appliance Recycling	0.54	0.54	0.54
Residential Home Energy Performance	0.76	0.76	0.76
Residential ENERGY STAR New Homes	0.80	0.80	0.80
Residential Multifamily	0.80	0.80	0.80
Residential Behavior Modification	1.00	1.00	1.00
Residential Moderate Income	1.00	1.00	1.00
Residential DR	1.00	1.00	1.00
Business Standard Incentive	0.73	0.73	0.73
Business Custom Incentive	0.75	0.75	0.75
Business Retro-commissioning	0.80	0.80	0.80
Business New Construction	0.80	0.80	0.80

*Inclusive of free-ridership spillover and realization rate

DR Measure	**MW**
Volt/Var	
Fixed MW Savings per year	4.50

PROGRAMID	Category	MODEL_NUMBER	DESCRIPTION	KWH_GROSS
Appliance Recycling	Appliance Recycling	Air Conditioner2	Additional A/C Pickup	0.0
Appliance Recycling	Appliance Recycling	Freezer1	First Freezer Pickup	1662.0
Appliance Recycling	Appliance Recycling	Freezer194+	First Freezer Pickup 1994 to 2000	1274.0
Appliance Recycling	Appliance Recycling	Freezer2	Additional Freezer Pickup	1662.0
Appliance Recycling	Appliance Recycling	Freezer294+	Additional Freezer Pickup 1994 to 2000	1274.0
Appliance Recycling	Appliance Recycling	Refrigerator1	First Refrigerator Pickup	1900.0
Appliance Recycling	Appliance Recycling	Refrigerator194+	First Refrigerator Pickup 1994 to 2000	700.0
Appliance Recycling	Appliance Recycling	Refrigerator2	Additional Refrigerator Pickup	1900.0
Appliance Recycling	Appliance Recycling	Refrigerator294+	Additional Refrigerator Pickup 1994 to 2000	700.0
Home Energy Performance	HEP Direct Install Electric	014BULB	14 watt CFL	39.3
Home Energy Performance	HEP Direct Install Electric	015BULB	15 watt CFL	38.4
Home Energy Performance	HEP Direct Install Electric	020BULB	20 watt CFL	47.0
Home Energy Performance	HEP Direct Install Electric	023BULB	23 watt CFL	65.8
Home Energy Performance	HEP Direct Install Electric	AERATOREHP	Faucet Aerator - Electric- Heat Pump	30.0
Home Energy Performance	HEP Direct Install Electric	AERATORENHP	Faucet Aerator - Electric - Resistance	30.0
Home Energy Performance	HEP Direct Install Electric	PIPINSEHP	Pipe Insulation - Electric- Heat Pump	51.0
Home Energy Performance	HEP Direct Install Electric	PIPINSENHP	Pipe Insulation - Electric - Resistance	51.0
Home Energy Performance	HEP Direct Install Electric	SHW_20EHP	Showerhead 2.0 gpm - Electric- Heat Pump	240.0
Home Energy Performance	HEP Direct Install Electric	SHW_20ENHP	Showerhead 2.0 gpm - Electric - Resistance	240.0
Home Energy Performance	HEP Direct Install Gas	AERATORG	Faucet Aerator Gas	
Home Energy Performance	HEP Direct Install Gas	PIPINSG	Pipe Insulation Gas	
Home Energy Performance	HEP Direct Install Gas	SHW_20G	Showerhead 2.0 gpm Gas	
Home Energy Performance	HEP Electric Incentive	AS_MAINEHP	Air Sealing - Electric- Heat Pump	2.1
Home Energy Performance	HEP Electric Incentive	AS_MAINENHP	Air Sealing - Electric- Resistance	4.7
Home Energy Performance	HEP Electric Incentive	INS_ATTEHP	Attic Insulation - R-11 to R-38 - Heat Pump	0.7
Home Energy Performance	HEP Electric Incentive	INS_ATTENHP	Attic Insulation - R-11 to R-38 - Electric - Resistance	1.5
Home Energy Performance	HEP Electric Incentive	INS_WALEHP	Wall Insulation - R-0 to R-11 - Electric - Heat Pump	2.3
Home Energy Performance	HEP Electric Incentive	INS_WALENHP	Wall Insulation - R-0 to R-11 - Electric - Resistance	4.9
Home Energy Performance	HEP Gas Incentive	AS_MAING	Air Sealing - Gas	
Home Energy Performance	HEP Gas Incentive	HD_SEAL	Duct Sealing - Gas	
Home Energy Performance	HEP Gas Incentive	INS_ATTG	Attic Insulation - R-11 to R-38 - Gas	
Home Energy Performance	HEP Gas Incentive	INS_WALG	Wall Insulation - R-0 to R-11 - Gas	
Home Energy Performance	HEP Gas Incentive	TSTAT	Programmable Thermostat	
HVAC New	HVAC New Elec Equipment	ASHP_14	Air Heat Pump Replaces SEER Greater than 10	300.0
HVAC New	HVAC New Elec Equipment	ASHP_ER	Air Heat Pump Replaces SEER of 10 or less	2438.0
HVAC New	HVAC New Elec Equipment	ASHP_SIZE	Air Heat Pump Manual J Correct Sizing	1600.0
HVAC New	HVAC New Elec Equipment	CAC_14	Central AC Replaces SEER Greater than 10	300.0
HVAC New	HVAC New Elec Equipment	CAC_ER	Central AC Replaces SEER of 10 or less	2438.0
HVAC New	HVAC New Elec Equipment	CAC_SIZE	Central AC Manual J Correct Sizing	1600.0
HVAC New	HVAC New Elec Equipment	GEO_HP	Geothermal Heat Pump	9800.0
HVAC New	HVAC New Elec Equipment	GEO_SIZE	Geothermal Manual J Correct Sizing	1600.0
HVAC New	HVAC New Gas Equipment	92_AFUE	Greater than or equal 92% AFUE Furnace	
HVAC New	HVAC New Gas Equipment	95_AFUE	Greater than or equal 95% AFUE Furnace	
Lighting & Appliances	Appliance Rebates	AP_20	$20 Air Purifier	268.0
Lighting & Appliances	Appliance Rebates	CFF_20	$20.00 Ceiling Fan w/Light Kit	80.0
Lighting & Appliances	Appliance Rebates	CFK_20	$20.00 Ceiling Fan Light Kit	80.0

Lighting & Appliances	Appliance Rebates	DH_25	$25.00 Dehumidifier	270.0
Lighting & Appliances	Appliance Rebates	RAC_35	$35.00 Room Air Conditio	260.0
Lighting & Appliances	Markdown and Webstore	Multiple	7 Watt	15.4
Lighting & Appliances	Markdown and Webstore	Multiple	9 Watt < 450 Lumens - screw-in	21.3
Lighting & Appliances	Markdown and Webstore	Multiple	9 Watt >= 450 Lumens - screw-in	26.5
Lighting & Appliances	Markdown and Webstore	Multiple	10Watt	25.6
Lighting & Appliances	Markdown and Webstore	Multiple	11Watt	24.8
Lighting & Appliances	Markdown and Webstore	Multiple	13 Watt < 800 Lumens - screw-in	23.1
Lighting & Appliances	Markdown and Webstore	Multiple	13 Watt >=800 Lumens - screw-in	40.1
Lighting & Appliances	Markdown and Webstore	Multiple	14 Wat	39.3
Lighting & Appliances	Markdown and Webstore	Multiple	15 Watt	38.4
Lighting & Appliances	Markdown and Webstore	Multiple	16 Watt	37.6
Lighting & Appliances	Markdown and Webstore	Multiple	18 Watt < 1,100 Lumens - screw-in	35.9
Lighting & Appliances	Markdown and Webstore	Multiple	18 Watt >=1,100 Lumens - screw-in	48.7
Lighting & Appliances	Markdown and Webstore	Multiple	19 Watt >=1,100 Lumens - screw-in	47.8
Lighting & Appliances	Markdown and Webstore	Multiple	20 Watt	47.0
Lighting & Appliances	Markdown and Webstore	Multiple	23 Watt	65.8
Lighting & Appliances	Markdown and Webstore	Multiple	25 Watt <1,600 Lumens - screw-in	42.7
Lighting & Appliances	Markdown and Webstore	Multiple	25 Watt >=1,600 Lumens - screw-in	62.1
Lighting & Appliances	Markdown and Webstore	Multiple	26 Watt <1,600 Lumens - screw-in	41.9
Lighting & Appliances	Markdown and Webstore	Multiple	26 Watt >=1,600 Lumens - screw-in	63.2
Lighting & Appliances	Markdown and Webstore	Multiple	27 Watt <1,600 Lumens - screw-in	41.0
Lighting & Appliances	Markdown and Webstore	Multiple	27 Watt >=1,600 Lumens - screw-in	64.2
Lighting & Appliances	Markdown and Webstore	Multiple	28 Watt <1,600 Lumens - screw-in	40.1
Lighting & Appliances	Markdown and Webstore	Multiple	28 Watt >=1,600 Lumens - screw-in	61.5
Lighting & Appliances	Markdown and Webstore	Multiple	29 Watt >=1,600 Lumens - screw-in	60.6
Lighting & Appliances	Markdown and Webstore	Multiple	30 Watt <1,600 Lumens - screw-in	38.4
Lighting & Appliances	Markdown and Webstore	Multiple	30 Watt >=1,600 Lumens - screw-in	59.8
Lighting & Appliances	Markdown and Webstore	Multiple	33 Watt	57.2
Lighting & Appliances	Markdown and Webstore	Multiple	36 Watt	97.4
Lighting & Appliances	Markdown and Webstore	Multiple	39 Watt Integral CFL	94.8
Lighting & Appliances	Markdown and Webstore	Multiple	40 Watt - screw-in	94.0
Lighting & Appliances	Markdown and Webstore	Multiple	42 Watt - screw-in	92.2
MULTIFAMILY	Multi-Family In-Unit Electric Equipment	AERATOR	Faucet Aerator	37.0
MULTIFAMILY	Multi-Family In-Unit Electric Equipment	CFL14	14 watt CFL	39.3
MULTIFAMILY	Multi-Family In-Unit Electric Equipment	CFL15	15 watt CFL	38.4
MULTIFAMILY	Multi-Family In-Unit Electric Equipment	CFL20	20 watt CFL	47.0
MULTIFAMILY	Multi-Family In-Unit Electric Equipment	CFL23	23 watt CFL	65.8
MULTIFAMILY	Multi-Family In-Unit Electric Equipment	PIPEINS	Pipe Insulation	51.0
MULTIFAMILY	Multi-Family In-Unit Electric Equipment	SENSOR	Occupancy Sensor	210.0
MULTIFAMILY	Multi-Family In-Unit Electric Equipment	SHWHEAD	Showerhead 2.0 gpm	264.0
MULTIFAMILY	Multi-Family In-Unit Gas Equipment	AERATOR	Faucet Aerator	
MULTIFAMILY	Multi-Family In-Unit Gas Equipment	PIPEINS	Pipe Insulation	
MULTIFAMILY	Multi-Family In-Unit Gas Equipment	SHWHEAD	Showerhead 2.0 gpm	
New Construction	New Con Electric	Newcon_GE	New Construction Gas and Electric	590.0
New Construction	New Con Gas	Newcon_G	New Construction Gas only	
New Construction	New Con Gas	Newcon_GE	New Construction Gas and Electric	

Behavior Modification	Behavior Modification Gas Savings	1.0% per average home
Behavior Modification	Behavior Modification Electric Savings	1.74% per average home

THERMS_GROSS	Notes	NTG Y4	NTG Y5	NTG Y6
		0.54	0.54	0.54
		0.54	0.54	0.54
		0.54	0.54	0.54
		0.54	0.54	0.54
		0.54	0.54	0.54
		0.54	0.54	0.54
		0.54	0.54	0.54
		0.54	0.54	0.54
		0.54	0.54	0.54
		0.76	0.76	0.76
		0.76	0.76	0.76
		0.76	0.76	0.76
		0.76	0.76	0.76
		0.76	0.76	0.76
		0.76	0.76	0.76
		0.76	0.76	0.76
		0.76	0.76	0.76
		0.76	0.76	0.76
		0.76	0.76	0.76
1.2		0.76	0.76	0.76
2.3		0.76	0.76	0.76
10.6		0.76	0.76	0.76
	Per CFM Reduction	0.76	0.76	0.76
	Per CFM Reduction	0.76	0.76	0.76
	Per Sq Ft	0.76	0.76	0.76
	Per Sq Ft	0.76	0.76	0.76
	Per Sq Ft	0.76	0.76	0.76
	Per Sq Ft	0.76	0.76	0.76
0.3	Per CFM Reduction	0.76	0.76	0.76
0.5	Per Sq Ft	0.76	0.76	0.76
0.1	Per Sq Ft	0.76	0.76	0.76
0.4	Per Sq Ft	0.76	0.76	0.76
25.0		0.76	0.76	0.76
		0.80	0.70	0.60
		0.80	0.70	0.60
		0.80	0.70	0.60
		0.80	0.70	0.60
		0.80	0.70	0.60
		0.80	0.70	0.60
		0.80	0.70	0.60
		0.80	0.70	0.60
161.0		0.80	0.70	0.60
194.0		0.80	0.70	0.60
		0.80	0.80	0.80
		0.80	0.80	0.80
		0.80	0.80	0.80

		0.80	0.80	0.80
		0.80	0.80	0.80
		0.80	0.60	0.40
		0.80	0.60	0.40
		0.80	0.60	0.40
		0.80	0.60	0.40
		0.80	0.60	0.40
		0.80	0.60	0.40
		0.80	0.60	0.40
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		0.80	0.60	0.40
		0.80	0.60	0.40
		0.80	0.60	0.40
		0.80	0.60	0.40
		0.80	0.60	0.40
		0.80	0.60	0.40
		0.80	0.60	0.40
		0.80	0.60	0.40
		0.80	0.60	0.40
		0.80	0.60	0.40
		0.80	0.60	0.40
		0.80	0.60	0.40
		0.80	0.60	0.40
		0.80	0.60	0.40
		0.80	0.60	0.40
		0.80	0.60	0.40
		0.80	0.60	0.40
		0.80	0.60	0.40
		0.80	0.60	0.40
		0.80	0.60	0.40
		0.80	0.80	0.80
		0.80	0.80	0.80
		0.80	0.80	0.80
		0.80	0.80	0.80
		0.80	0.80	0.80
		0.80	0.80	0.80
		0.80	0.80	0.80
		0.80	0.80	0.80
	1.6	0.80	0.80	0.80
	2.3	0.80	0.80	0.80
	11.7	0.80	0.80	0.80
		0.80	0.80	0.80
130.0		0.80	0.80	0.80
130.0		0.80	0.80	0.80

PROGRAMID	DESCRIPTION	MODEL_NUMBER	KWH_GROSS	TYPE	NTG Y4	NTG Y5	NTG Y6
LIGHTING	PHILIPS 9W TWIST 406181	406181	26	Standard	0.80	0.60	0.40
LIGHTING	PHILIPS 9W TWIST 4PK 406199	406199	26	Standard	0.80	0.60	0.40
LIGHTING	TCP 9w (40w) 4-pack s/w	148-545	26	Standard	0.80	0.60	0.40
LIGHTING	TCP 9W SPIRAL BW 2PK 250-321	250-321	26	Standard	0.80	0.60	0.40
LIGHTING	TCP 9W SPIRAL DL 2PK 252-763	252-763	26	Standard	0.80	0.60	0.40
LIGHTING	TCP 9w (40w) single s/w	772-879	26	Standard	0.80	0.60	0.40
LIGHTING	GE 10w Spiral 3992161	3992161	25	Standard	0.80	0.60	0.40
LIGHTING	GE 10W T3 74196	74196	25	Standard	0.80	0.60	0.40
LIGHTING	GE 10W T3 2PK 74197	74197	25	Standard	0.80	0.60	0.40
LIGHTING	GE 10W DAYLIGHT 89082	89082	25	Standard	0.80	0.60	0.40
LIGHTING	FEIT 13W MINI BPESL13T/ECO	BPESL13TEC	40	Standard	0.80	0.60	0.40
LIGHTING	FEIT 13 ESL13T/CW/MP/12 12 PK	ESL13TCW	40	Standard	0.80	0.60	0.40
LIGHTING	FEIT 13W MINI-TWIST ESL13T/ECO	ESL13T/ECO	40	Standard	0.80	0.60	0.40
LIGHTING	FEIT 13W MINI ESL13T/3/ECO 3PK	ESL13T/3	40	Standard	0.80	0.60	0.40
LIGHTING	FEIT 13W MINI 4PK ESL13T/4	ESL13T/4	40	Standard	0.80	0.60	0.40
LIGHTING	GE 13W SUNSHINE 71763	71763	40	Standard	0.80	0.60	0.40
LIGHTING	GE 13W SPIRAL 74198	74198	40	Standard	0.80	0.60	0.40
LIGHTING	GE 13W T3 2PK 74199	74199	40	Standard	0.80	0.60	0.40
LIGHTING	GE 13W CFL 8PK	31064	40	Standard	0.80	0.60	0.40
LIGHTING	GE 13W CFL Spiral 3237096	3237096	40	Standard	0.80	0.60	0.40
LIGHTING	GE 13WATT CFL SPIRAL	383330	40	Standard	0.80	0.60	0.40
LIGHTING	GLOBE 13W LOW MERC NAT LITE	225827	40	Standard	0.80	0.60	0.40
LIGHTING	GLOBE 13W LOW MERC 251669	251669-	40	Standard	0.80	0.60	0.40
LIGHTING	GLOBE 13W LOW MERC DAY LITE	2672047	40	Standard	0.80	0.60	0.40
LIGHTING	GLOBE 23W LOW MERC SFT WH 4PK	314306-	40	Standard	0.80	0.60	0.40
LIGHTING	GOLBE 13W T2 LOW MERC 699441	699441	40	Standard	0.80	0.60	0.40
LIGHTING	GLOBE 13W T2 SOFT 4PK 487792	487792	40	Standard	0.80	0.60	0.40
LIGHTING	GLOBE 13W T3 SOFT 8870301	8870301	40	Standard	0.80	0.60	0.40
LIGHTING	GLOBE 13W T3 SOFT 8860001	8860001	40	Standard	0.80	0.60	0.40
LIGHTING	MAXLITE 13W SPIRAL HCS13WW	HCS13WW	40	Standard	0.80	0.60	0.40
LIGHTING	MEIJER 13W CFL 251669	251669	40	Standard	0.80	0.60	0.40
LIGHTING	MEIJER 13W CFL 6PK 314306	314306	40	Standard	0.80	0.60	0.40
LIGHTING	PHILIPS 13W TWISTER 227660	227660	40	Standard	0.80	0.60	0.40
LIGHTING	PHILIPS 13W TWISTER 4PK 227827	227827	40	Standard	0.80	0.60	0.40
LIGHTING	SYLVANIA 13W TWIST 2PK 29031	29031	40	Standard	0.80	0.60	0.40
LIGHTING	SYLVANIA 13W TWIST 3PK 29041	29041	40	Standard	0.80	0.60	0.40

LIGHTING	SYLVANIA 13W 2PK 29406	29406	40	Standard	0.80	0.60	0.40
LIGHTING	SYLVANIA 13W 29609	29609	40	Standard	0.80	0.60	0.40
LIGHTING	SYLVANIA 13W TWIST 29710	29710	40	Standard	0.80	0.60	0.40
LIGHTING	SYLVANIA 13W T2 SPRL 2PK 29727	29727	40	Standard	0.80	0.60	0.40
LIGHTING	SYLVANIA 13W DAYLIGHT 29781	29781	40	Standard	0.80	0.60	0.40
LIGHTING	SYLVANIA 13W LIVING 2PK 29972	29972	40	Standard	0.80	0.60	0.40
LIGHTING	GE 14W A-LINE 85384	85384	39	Standard	0.80	0.60	0.40
LIGHTING	LOA 14W T3 MINI TWST WARM 2814	2814	39	Standard	0.80	0.60	0.40
LIGHTING	LOA 14W T3 MINI TWST BRGT2814S	2814S	39	Standard	0.80	0.60	0.40
LIGHTING	TCP 14W Spiral 148-164	148-164	39	Standard	0.80	0.60	0.40
LIGHTING	TCP 14w (60w) single (bright)	150-127	39	Standard	0.80	0.60	0.40
LIGHTING	TCP 14w (60w) 4-pack b/w	160-678	39	Standard	0.80	0.60	0.40
LIGHTING	TCP 14w Daylight 4PK 161-167	161-167	39	Standard	0.80	0.60	0.40
LIGHTING	TCP 14w (60w) 4-pack s/w	423-599	39	Standard	0.80	0.60	0.40
LIGHTING	TCP 14w (60w) single s/w	772-869	39	Standard	0.80	0.60	0.40
LIGHTING	TCP 14W SPIRAL 12PK 785-800	785-800	39	Standard	0.80	0.60	0.40
LIGHTING	GE 15 W CFL Spiral 3230174	3230174	38	Standard	0.80	0.60	0.40
LIGHTING	GE 15W DAYLIGHT 89091	89091	38	Standard	0.80	0.60	0.40
LIGHTING	Harmony 15w Mini-Spiral H15MS	1100.866	38	Standard	0.80	0.60	0.40
LIGHTING	LITETRONICS E1552AK 15W SPIRAL	E1552AK	38	Standard	0.80	0.60	0.40
LIGHTING	LITETRONICS E1552AK4-WM 15W 4P	E1552AK4WM	38	Standard	0.80	0.60	0.40
LIGHTING	GLOBE 18W LOW MERC 195745	195745-	49	Standard	0.80	0.60	0.40
LIGHTING	GLOBE 18W LOW MERC DAY LITE	2672061	49	Standard	0.80	0.60	0.40
LIGHTING	GLOBE 18W LOW MERC NAT LITE	295678	49	Standard	0.80	0.60	0.40
LIGHTING	GLOBE 18W LOW MERC SFT WH 4PK	314301-	49	Standard	0.80	0.60	0.40
LIGHTING	MEIJER 18W CFL 195745	195745	49	Standard	0.80	0.60	0.40
LIGHTING	MEIJER 18W CFL 4PK 314301	314301	49	Standard	0.80	0.60	0.40
LIGHTING	PHILIPS 18W TWISTER 227678	227678	49	Standard	0.80	0.60	0.40
LIGHTING	PHILIPS 18W TWISTER 4PK 227850	227850	49	Standard	0.80	0.60	0.40
LIGHTING	LOA 19W T2 MINI TWST WARM 2819	2819	48	Standard	0.80	0.60	0.40
LIGHTING	SYLVANIA 19W TWIST 29639	29693	48	Standard	0.80	0.60	0.40
LIGHTING	TCP 19W BRGT WHITE 148-030	148-030	48	Standard	0.80	0.60	0.40
LIGHTING	TCP 19w (75w) 2-pack s/w	150-062	48	Standard	0.80	0.60	0.40
LIGHTING	TCP 19W SPIRAL 4PK 405-101	405-101	48	Standard	0.80	0.60	0.40
LIGHTING	TCP 19W SPIRAL DL 772-429	772-429	48	Standard	0.80	0.60	0.40
LIGHTING	TCP 19w (75w) single s/w	772-739	48	Standard	0.80	0.60	0.40
LIGHTING	GE 20 W Spiral 3166501	3166501	47	Standard	0.80	0.60	0.40