



Case No.: 14-0134-EL-EEC

Mercantile Customer: Key Center Properties LLC - Public Square North

Electric Utility: The Cleveland Electric Illuminating Company

Program Title or Description: Key Tower Lighting Upgrades/Replacements

Rule 4901:1-39-05(F), Ohio Administrative Code (O.A.C.), permits a mercantile customer to file, either individually or jointly with an electric utility, an application to commit the customer's existing demand reduction, demand response, and energy efficiency programs for integration with the electric utility's programs. The following application form is to be used by mercantile customers, either individually or jointly with their electric utility, to apply for commitment of such programs in accordance with the Commission's pilot program established in Case No. [10-834-EL-POR](#)

Completed applications requesting the cash rebate reasonable arrangement option (Option 1) in lieu of an exemption from the electric utility's energy efficiency and demand reduction (EEDR) rider will be automatically approved on the sixty-first calendar day after filing, unless the Commission, or an attorney examiner, suspends or denies the application prior to that time. Completed applications requesting the exemption from the EEDR rider (Option 2) will also qualify for the 60-day automatic approval so long as the exemption period does not exceed 24 months. Rider exemptions for periods of more than 24 months will be reviewed by the Commission Staff and are only approved up the issuance of a Commission order.

Complete a separate application for each customer program. Projects undertaken by a customer as a single program at a single location or at various locations within the same service territory should be submitted together as a single program filing, when possible. Check all boxes that are applicable to your program. For each box checked, be sure to complete all subparts of the question, and provide all requested additional information. Submittal of incomplete applications may result in a suspension of the automatic approval process or denial of the application.

Any confidential or trade secret information may be submitted to Staff on disc or via email at ee-pdr@puc.state.oh.us.

Section 1: Mercantile Customer Information

Name:Key Center Properties LLC - Public Square North

Principal address:127 Public Square Suite 2727 Cleveland, OH 44114

Address of facility for which this energy efficiency program applies:127 Public Square
Cleveland, OH 44114

Name and telephone number for responses to questions:Curt Sonntag 216-687-0500 ext.
202

Electricity use by the customer (check the box(es) that apply):

- ☒ The customer uses more than seven hundred thousand kilowatt hours per year at the above facility. (Please attach documentation.)
- ☐ The customer is part of a national account involving multiple facilities in one or more states. (Please attach documentation.)

Section 2: Application Information

A) The customer is filing this application (choose which applies):

- ☐ Individually, without electric utility participation.
- ☒ Jointly with the electric utility.

B) The electric utility is: The Cleveland Electric Illuminating Company

C) The customer is offering to commit (check any that apply):

- ☐ Energy savings from the customer's energy efficiency program.
(Complete Sections 3, 5, 6, and 7.)
- ☐ Capacity savings from the customer's demand response/demand
reduction program. (Complete Sections 4, 5, 6, and 7.)
- ☒ Both the energy savings and the capacity savings from the customer's
energy efficiency program. (Complete all sections of the Application.)

Section 3: Energy Efficiency Programs

A) The customer's energy efficiency program involves (check those that apply):

- ☒ Early replacement of fully functioning equipment with new equipment. (Provide the date on which the customer replaced fully functioning equipment, and the date on which the customer would have replaced such equipment if it had not been replaced early. Please include a brief explanation for how the customer determined this future replacement date (or, if not known, please explain why this is not known)). **If Checked, Please see Exhibit 1 and Exhibit 2**
- ☐ Installation of new equipment to replace equipment that needed to be replaced. The customer installed new equipment on the following date(s): ____.
- ☐ Installation of new equipment for new construction or facility expansion. The customer installed new equipment on the following date(s): ____.
- ☐ Behavioral or operational improvement.

B) Energy savings achieved/to be achieved by the energy efficiency program:

- 1) If you checked the box indicating that the project involves the early replacement of fully functioning equipment replaced with new equipment, then calculate the annual savings [(kWh used by the original equipment) - (kWh used by new equipment) = (kWh per year saved)]. Please attach your calculations and record the results below:

Annual savings: 330,110 kWh

- 2) If you checked the box indicating that the customer installed new equipment to replace equipment that needed to be replaced, then calculate the annual savings [(kWh used by less efficient new equipment) - (kWh used by the higher efficiency new equipment) = (kWh per year saved)]. Please attach your calculations and record the results below:

Annual savings: _____ kWh

Please describe any less efficient new equipment that was rejected in favor of the more efficient new equipment. **Please see Exhibit 1 if applicable**

- 3) If you checked the box indicating that the project involves equipment for new construction or facility expansion, then calculate the annual savings [(kWh used by less efficient new equipment) - (kWh used by higher efficiency new equipment) = (kWh per year saved)]. Please attach your calculations and record the results below:

Annual savings: _____ kWh

Please describe the less efficient new equipment that was rejected in favor of the more efficient new equipment. **Please see Exhibit 1 if applicable**

- 4) If you checked the box indicating that the project involves behavioral or operational improvements, provide a description of how the annual savings were determined.

Section 4: Demand Reduction/Demand Response Programs

A) The customer's program involves (check the one that applies):

- ☒ Coincident peak-demand savings from the customer's energy efficiency program.
- ☐ Actual peak-demand reduction. (Attach a description and documentation of the peak-demand reduction.)
- ☐ Potential peak-demand reduction (check the one that applies):
 - ☐ The customer's peak-demand reduction program meets the requirements to be counted as a capacity resource under a tariff of a regional transmission organization (RTO) approved by the Federal Energy Regulatory Commission.
 - ☐ The customer's peak-demand reduction program meets the requirements to be counted as a capacity resource under a program that is equivalent to an RTO program, which has been approved by the Public Utilities Commission of Ohio.

B) On what date did the customer initiate its demand reduction program?

2/1/12

C) What is the peak demand reduction achieved or capable of being achieved (show calculations through which this was determined):

58 kW

Section 5: Request for Cash Rebate Reasonable Arrangement (Option 1) or Exemption from Rider (Option 2)

Under this section, check the box that applies and fill in all blanks relating to that choice.

Note: If Option 2 is selected, the application will not qualify for the 60-day automatic approval. All applications, however, will be considered on a timely basis by the Commission.

A) The customer is applying for:

☒ Option 1: A cash rebate reasonable arrangement.

OR

☐ Option 2: An exemption from the energy efficiency cost recovery mechanism implemented by the electric utility.

OR

☐ Commitment payment

B) The value of the option that the customer is seeking is:

Option 1: A cash rebate reasonable arrangement, which is the lesser of (show both amounts):

☒ A cash rebate of \$12,079. (Rebate shall not exceed 50% project cost. Attach documentation showing the methodology used to determine the cash rebate value and calculations showing how this payment amount was determined.)

Option 2: An exemption from payment of the electric utility's energy efficiency/peak demand reduction rider.

☐ An exemption from payment of the electric utility's energy efficiency/peak demand reduction rider for _____ months (not to exceed 24 months). (Attach calculations showing how this time period was determined.)

OR

☐ A commitment payment valued at no more than \$_____. (Attach documentation and calculations showing how this payment amount was determined.)

OR

- ☐ Ongoing exemption from payment of the electric utility's energy efficiency/peak demand reduction rider for an initial period of 24 months because this program is part of the customer's ongoing efficiency program. (Attach documentation that establishes the ongoing nature of the program.) In order to continue the exemption beyond the initial 24 month period, the customer will need to provide a future application establishing additional energy savings and the continuance of the organization's energy efficiency program.)

Section 6: Cost Effectiveness

The program is cost effective because it has a benefit/cost ratio greater than 1 using the (choose which applies):

- ☐ Total Resource Cost (TRC) Test. The calculated TRC value is: _____(Continue to Subsection 1, then skip Subsection 2)
- ☒ Utility Cost Test (UCT) . The calculated UCT value is: **See Exhibit 3** (Skip to Subsection 2.)

Subsection 1: TRC Test Used (please fill in all blanks).

The TRC value of the program is calculated by dividing the value of our avoided supply costs (generation capacity, energy, and any transmission or distribution) by the sum of our program overhead and installation costs and any incremental measure costs paid by either the customer or the electric utility.

The electric utility's avoided supply costs were _____.

Our program costs were _____.

The incremental measure costs were _____.

Subsection 2: UCT Used (please fill in all blanks).

We calculated the UCT value of our program by dividing the value of our avoided supply costs (capacity and energy) by the costs to our electric utility (including administrative costs and incentives paid or rider exemption costs) to obtain our commitment.

Our avoided supply costs were **See Exhibit 3**

The utility's program costs were **See Exhibit 3**

The utility's incentive costs/rebate costs were **See Exhibit 3**

Section 7: Additional Information

Please attach the following supporting documentation to this application:

- Narrative description of the program including, but not limited to, make, model, and year of any installed and replaced equipment.
- A copy of the formal declaration or agreement that commits the program or measure to the electric utility, including:
 - 1) any confidentiality requirements associated with the agreement;
 - 2) a description of any consequences of noncompliance with the terms of the commitment;
 - 3) a description of coordination requirements between the customer and the electric utility with regard to peak demand reduction;
 - 4) permission by the customer to the electric utility and Commission staff and consultants to measure and verify energy savings and/or peak-demand reductions resulting from your program; and,
 - 5) a commitment by the customer to provide an annual report on your energy savings and electric utility peak-demand reductions achieved.
- A description of all methodologies, protocols, and practices used or proposed to be used in measuring and verifying program results. Additionally, identify and explain all deviations from any program measurement and verification guidelines that may be published by the Commission.



Public Utilities
Commission

Application to Commit
Energy Efficiency/Peak Demand
Reduction Programs
(Mercantile Customers Only)

Case No.: 14-0134-EL-EEC

State of Ohio :

Curtis Sonntag, Affiant, being duly sworn according to law, deposes and says that:

1. I am the duly authorized representative of:

Key Center Properties LLC - Public Square North

[insert customer or EDU company name and any applicable name(s) doing business as]

2. I have personally examined all the information contained in the foregoing application, including any exhibits and attachments. Based upon my examination and inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete.

Curt Sonntag Chief Engineer/Agent
Signature of Affiant & Title

Sworn and subscribed before me this 12th day of December, 2013 Month/Year

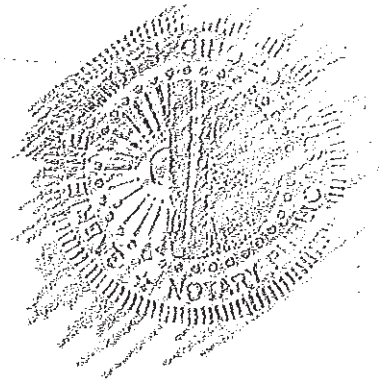
Gabrielle Smith
Signature of official administering oath

Gabrielle Smith
Print Name and Title

GABRIELLE SMITH

Notary Public, State of Ohio

My commission expires on 4y Commission Expires Oct. 24, 2015



Project No.	Project Name	Narrative description of your program including, but not limited to, make, model, and year of any installed and replaced equipment:	Description of methodologies, protocols and practices used in measuring and verifying project results	What date would you have replaced your equipment if you had not replaced it early? Also, please explain briefly how you determined this future replacement date.	Please describe the less efficient new equipment that you rejected in favor of the more efficient new equipment.
1	Stairwell Lights	Replacement of fully functional T12 linear fluorescent lighting (lamps and ballasts) with T8 linear fluorescent lamps and electronic ballasts in all the stairwell areas of Key Tower.	Internal auditing information was provided by the customer. Also, FirstEnergy provides the lighting calculator to calculate savings for the rebate. See Attachment	No planned date. Would have replaced as existing	N/A
2	Elevator Lights	Replaced 26 watt Compact Fluorescent lamps with 17 watt LED lamps in the public elevator cars in Key Tower.	Internal auditing information was provided by the customer. Also, FirstEnergy provides the lighting calculator to calculate savings for the rebate. See Attachment	No planned date. Would have replaced as existing lamp and fixtures failed or were no longer available.	N/A
3	Common Areas Lights	Replacement of fully functional T12 linear fluorescent lighting (lamps and ballasts) with T8 linear fluorescent lamps and electronic ballasts in all the common (non-tenant) areas of Key Tower.	Internal auditing information was provided by the customer. Also, FirstEnergy provides the lighting calculator to calculate savings for the rebate. See Attachment	No planned date. Would have replaced as existing lamps and ballasts failed or were no longer available.	N/A
4	Memorial Plaza Neon Lights	Replaced the existing neon lighting in Memorial Plaza of Key Tower with LED lighting.	Internal auditing information was provided by the customer. Also, FirstEnergy provides the lighting calculator to calculate savings for the rebate. See Attachment	There was no planned date. Would have replaced as existing neon lighting failed or replacement units were no longer available.	N/A
5	Historic Building Lights	Replaced 18 quartz accent light fixtures on the historic Society Bank Building and replaced them with 18 LED light fixtures.	Internal auditing information was provided by the customer. Also, FirstEnergy provides the lighting calculator to calculate savings for the rebate. See Attachment	No planned date. Would have replaced as existing lamps and ballasts failed or were no longer available.	N/A
6	Core Building Lights	Replace the existing 2 lamp 34 watt T12 fluorescents with new 2 lamp 32 watt T8 fluorescents.	Internal auditing information was provided by the customer. Also, FirstEnergy provides the lighting calculator to calculate savings for the rebate. See Attachment	No planned date. Would have replaced as existing lamps and ballasts failed or were no longer available.	N/A
7	Main Tower Lobby	Replace the existing 100 watt flood lamps with 18 watt LED flood lamps	Internal auditing information was provided by the customer. Also, FirstEnergy provides the lighting calculator to calculate savings for the rebate. See Attachment.	No planned date. Would have replaced as existing lamps and fixtures failed or were no longer available.	N/A

Exhibit 2

Customer Legal Entity Name: Key Center Properties LLC - Public Square North

Site Address: Key Tower

Principal Address: 127 Public Square

	Unadjusted Usage, kwh (A)	Weather Adjusted Usage, kwh (B)	Weather Adjusted Usage with Energy Efficiency Addbacks, kwh (c) <i>Note 1</i>
2012	40,764,735	40,764,735	40,991,547
2011	42,564,922	42,564,922	42,649,628
2010	42,892,283	42,892,283	42,892,283
Average	42,073,980	42,073,980	42,177,819

Project Number	Project Name	In-Service Date	Project Cost \$	50% of Project Cost \$	KWh Saved/Year (D) counting towards utility compliance	KWh Saved/Year (E) eligible for incentive	Utility Peak Demand Reduction Contribution, KW (F)	Prescriptive Rebate Amount (G) \$	Eligible Rebate Amount (H) \$ <i>Note 2</i>
1	Stairwell Lights	02/01/2012	\$45,617	\$22,809	28,570	28,570	3	\$1,428	\$1,071
2	Elevator Lights	10/29/2012	\$4,945	\$2,473	4,252	4,252	1	\$213	\$160
3	Common Areas Lights	12/08/2012	\$4,986	\$2,493	38,264	38,264	4	\$1,913	\$1,435
4	Memorial Plaza Neon Lights	11/01/2012	\$44,247	\$22,124	50,626	50,626	10	\$2,531	\$1,898
5	Historic Building Lights	04/04/2011	\$9,031	\$4,516	75,844	75,844	17	\$3,792	\$2,844
6	Core Building Lights	11/30/2012	\$8,776	\$4,388	20,726	20,726	12	\$1,036	\$777
7	Main Tower Lobby	10/01/2011	\$7,788	\$3,894	111,828	111,828	11	\$5,591	\$3,894
Total			\$125,390		330,110	330,110	58	\$16,504	\$12,079

Docket No. 14-0134

Site: 127 Public Square

Notes

(1) Customer's usage is adjusted to account for the effects of the energy efficiency programs included in this application. When applicable, such adjustments are prorated to the in-service date to account for partial year savings.

(2) The eligible rebate amount is based upon 75% of the rebates offered by the FirstEnergy Commercial and Industrial Energy Efficiency programs or 75% of \$0.08/kWh for custom programs for all energy savings eligible for a cash rebate as defined in the PUCO order in Case NO.10-834-EL-EEC dated 9/15/2010, not to exceed the lesser of 50% of the project cost or \$250,000 per project. The rebate also cannot exceed \$500,000 per customer per year, per utility service territory.

Exhibit 3 Utility Cost Test

UCT = Utility Avoided Costs / Utility Costs

Project	Total Annual Savings, MWh (A)	Utility Avoided Cost \$/MWh (B)	Utility Avoided Cost \$ (C)	Utility Cost \$ (D)	Cash Rebate \$ (E)	Administrator Variable Fee \$ (F)	Total Utility Cost \$ (G)	UCT (H)
1	29	\$ 308	\$ 8,808	\$ 579	\$1,071	\$286	\$ 1,935	4.6
2	4	\$ 308	\$ 1,311	\$ 579	\$160	\$43	\$ 781	1.68
3	38	\$ 308	\$ 11,796	\$ 579	\$1,435	\$383	\$ 2,396	4.92
4	51	\$ 308	\$ 15,607	\$ 579	\$1,898	\$506	\$ 2,983	5.23
5	76	\$ 308	\$ 23,381	\$ 579	\$2,844	\$758	\$ 4,181	5.59
6	21	\$ 308	\$ 6,389	\$ 579	\$777	\$207	\$ 1,563	4.09
7	112	\$ 308	\$ 34,474	\$ 579	\$3,894	\$1,118	\$ 5,591	6.17
Total	330	\$ 308	101,766	4,050	\$12,079	\$3,301	19,430	5.2

Notes

(A) From Exhibit 2, = kWh saved / 1000

(B) This value represents avoided energy costs (wholesale energy prices) from the Department of Energy, Energy Information Administration's 2009 Annual Energy Outlook (AEO) low oil prices case. The AEO represents a national average energy price, so for a better representation of the energy price that Ohio customers would see, a Cinergy Hub equivalent price was derived by applying a ratio based on three years of historic national average and Cinergy Hub prices. This value is consistent with avoided cost assumptions used in EE&PDR Program Portfolio and Initial Benchmark Report, filed Dec 15, 2009 (See Section 8.1, paragraph a).

(C) = (A) * (B)

(D) Represents the utility's costs incurred for self-directed mercantile applications for applications filed and applications in progress. Includes incremental costs of legal fees, fixed administrative expenses, etc.

(E) This is the amount of the cash rebate paid to the customer for this project.

(F) Based on approximate Administrator's variable compensation for purposes of calculating the UCT, actual compensation may be less.

(G) = (D) + (E) + (F)

(H) = (C) / (G)

Key Center Properties LLC - Public Square North ~ Key Tower
Docket No. 14-0134

Site: 127 Public Square

Project Estimated Annual Savings Summary

Lighting

Estimated Annual kWh Savings	28,570
Total Change in Connected Load	2.91

Annual Estimated Cost Savings	\$2,857.00
Annual Operating Hours	8,760

Interior Lighting Incentive @ \$0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	\$1,428.50
Exterior Lighting Incentive @ \$0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	\$0.00
Total retrofit CFL Incentive @ \$1/screw-in CFL lamp; \$15/hard-wired CFL lamp (includes all retrofit CFLs, both interior and exterior)	\$0.00
Total retrofit LED Exit Incentive @ \$10/exit sign	\$0.00
Total Lighting Controls Incentive @ \$25/occupancy sensor and \$25/daylight sensor (includes all Lighting Controls, both interior and exterior)	\$0.00

Total Calculated Incentive	\$1,428.50
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Total Fixture Quantity excluding retrofit CFLs and LED Exit Signs	224
Total Lamp Quantity for retrofit Screw-In CFLs	0

Project #1: Sturivell Lights

Total Lamp Quantity for retrofit Hard-Wired CFLs	0
Total Fixture Quantity for retrofit LED Exit Signs	0
Total Quantity for Occupancy Sensors	0
Total Quantity for Daylight Sensors	0

Please briefly describe how you estimated your coincidence factor (CF) and applicant equivalent full-load hours (EFLH) for facility type "Other" indicated on the Lighting Form tab

Demand Savings (For Internal Use Only)	3.32
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Project Estimated Annual Savings Summary

Lighting

Estimated Annual kWh Savings	4,252
Total Change in Connected Load	1.04

Annual Estimated Cost Savings	\$425.20
Annual Operating Hours	3,650

Interior Lighting Incentive @ \$0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	\$212.60
Exterior Lighting Incentive @ \$0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	\$0.00
Total retrofit CFL Incentive @ \$1/screw-in CFL lamp; \$15/hard-wired CFL lamp (includes all retrofit CFLs, both interior and exterior)	\$0.00
Total retrofit LED Exit Incentive @ \$10/exit sign	\$0.00
Total Lighting Controls Incentive @ \$25/occupancy sensor and \$25/daylight sensor (includes all Lighting Controls, both interior and exterior)	\$0.00

Total Calculated Incentive	\$212.60
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Total Fixture Quantity excluding retrofit CFLs and LED Exit Signs	104
Total Lamp Quantity for retrofit Screw-In CFLs	0

Project #2: Elevator Lights

Total Lamp Quantity for retrofit Hard-Wired CFLs	0
Total Fixture Quantity for retrofit LED Exit Signs	0
Total Quantity for Occupancy Sensors	0
Total Quantity for Daylight Sensors	0

Please briefly describe how you estimated your coincidence factor (CF) and applicant equivalent full-load hours (EFLH) for facility type "Other" indicated on the Lighting Form tab

Demand Savings (For Internal Use Only)

1.18

Project Estimated Annual Savings Summary

Lighting

Estimated Annual kWh Savings	38,264
Total Change in Connected Load	3.90

Annual Estimated Cost Savings	\$3,826.40
Annual Operating Hours	8,760

Interior Lighting Incentive @ \$0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	\$1,913.20
Exterior Lighting Incentive @ \$0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	\$0.00
Total retrofit CFL Incentive @ \$1/screw-in CFL lamp; \$15/hard-wired CFL lamp (includes all retrofit CFLs, both interior and exterior)	\$0.00
Total retrofit LED Exit Incentive @ \$10/exit sign	\$0.00
Total Lighting Controls Incentive @ \$25/occupancy sensor and \$25/daylight sensor (includes all Lighting Controls, both interior and exterior)	\$0.00

Total Calculated Incentive	\$1,913.20
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Total Fixture Quantity excluding retrofit CFLs and LED Exit Signs	300
Total Lamp Quantity for retrofit Screw-In CFLs	0

Total Lamp Quantity for retrofit Hard-Wired CFLs	0
Total Fixture Quantity for retrofit LED Exit Signs	0
Total Quantity for Occupancy Sensors	0
Total Quantity for Daylight Sensors	0

Please briefly describe how you estimated your coincidence factor (CF) and applicant equivalent full-load hours (EFLH) for facility type "Other" indicated on the Lighting Form tab

Demand Savings (For Internal Use Only)	4.44
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Project Estimated Annual Savings Summary

Lighting

Estimated Annual kWh Savings	50,626
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Total Change in Connected Load	10.32
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Annual Estimated Cost Savings	\$5,062.60
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Annual Operating Hours	4,380
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Interior Lighting Incentive @ \$0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	\$2,531.30
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Exterior Lighting Incentive @ \$0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	\$0.00
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Total retrofit CFL Incentive @ \$1/screw-in CFL lamp; \$15/hard-wired CFL lamp (includes all retrofit CFLs, both interior and exterior)	\$0.00
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Total retrofit LED Exit Incentive @ \$10/exit sign	\$0.00
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Total Lighting Controls Incentive @ \$25/occupancy sensor and \$25/daylight sensor (includes all Lighting Controls, both interior and exterior)	\$0.00
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Total Calculated Incentive	\$2,531.30
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Total Fixture Quantity excluding retrofit CFLs and LED Exit Signs	44
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Total Lamp Quantity for retrofit Screw-In CFLs	0
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Project #4: Memorial Plaza Neon Signs

Total Lamp Quantity for retrofit Hard-Wired CFLs	0
Total Fixture Quantity for retrofit LED Exit Signs	0
Total Quantity for Occupancy Sensors	0
Total Quantity for Daylight Sensors	0

Please briefly describe how you estimated your coincidence factor (CF) and applicant equivalent full-load hours (EFLH) for facility type "Other" indicated on the Lighting Form tab

Demand Savings (For Internal Use Only)	11.75
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Project Estimated Annual Savings Summary

Lighting

Estimated Annual kWh Savings	75,844
Total Change in Connected Load	17.32

Annual Estimated Cost Savings	\$7,584.40
Annual Operating Hours	4,380

Interior Lighting Incentive @ \$0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	\$0.00
Exterior Lighting Incentive @ \$0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	\$3,792.20
Total retrofit CFL Incentive @ \$1/screw-in CFL lamp; \$15/hard-wired CFL lamp (includes all retrofit CFLs, both interior and exterior)	\$0.00
Total retrofit LED Exit Incentive @ \$10/exit sign	\$0.00
Total Lighting Controls Incentive @ \$25/occupancy sensor and \$25/daylight sensor (includes all Lighting Controls, both interior and exterior)	\$0.00

Total Calculated Incentive	\$3,792.20
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Total Fixture Quantity excluding retrofit CFLs and LED Exit Signs	18
Total Lamp Quantity for retrofit Screw-In CFLs	0

Project #15: Historic Building Lights

Total Lamp Quantity for retrofit Hard-Wired CFLs	0
Total Fixture Quantity for retrofit LED Exit Signs	0
Total Quantity for Occupancy Sensors	0
Total Quantity for Daylight Sensors	0

Please briefly describe how you estimated your coincidence factor (CF) and applicant equivalent full-load hours (EFLH) for facility type "Other" indicated on the Lighting Form tab

Demand Savings (For Internal Use Only)	14.72
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Project 6: Core Building Lights ATTACHMENT B.6

Project Estimated Annual Savings Summary

Lighting

Estimated Annual kWh Savings	20,726
Total Change in Connected Load	5.07

Annual Estimated Cost Savings	\$2,072.60
Annual Operating Hours	3,650

Interior Lighting Incentive @ \$0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	\$1,036.30
Exterior Lighting Incentive @ \$0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	\$0.00
Total retrofit CFL Incentive @ \$1/screw-in CFL lamp; \$15/hard-wired CFL lamp (includes all retrofit CFLs, both interior and exterior)	\$0.00
Total retrofit LED Exit Incentive @ \$10/exit sign	\$0.00
Total Lighting Controls Incentive @ \$25/occupancy sensor and \$25/daylight sensor (includes all Lighting Controls, both interior and exterior)	\$0.00

Total Calculated Incentive	\$1,036.30
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Total Fixture Quantity excluding retrofit CFLs and LED Exit Signs	390
Total Lamp Quantity for retrofit Screw-In CFLs	0

Total Lamp Quantity for retrofit Hard-Wired CFLs	0
Total Fixture Quantity for retrofit LED Exit Signs	0
Total Quantity for Occupancy Sensors	0
Total Quantity for Daylight Sensors	0

Please briefly describe how you estimated your coincidence factor (CF) and applicant equivalent full-load hours (EFLH) for facility type "Other" indicated on the Lighting Form tab

Demand Savings (For Internal Use Only)	5.77
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Project Estimated Annual Savings Summary

Lighting

Estimated Annual kWh Savings	111,828
Total Change in Connected Load	11.40

Annual Estimated Cost Savings	\$11,182.80
Annual Operating Hours	8,760

Interior Lighting Incentive @ \$0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	\$5,591.40
Exterior Lighting Incentive @ \$0.05/kWh (excluding retrofit CFLs, sensors, or LED exit signs)	\$0.00
Total retrofit CFL Incentive @ \$1/screw-in CFL lamp; \$15/hard-wired CFL lamp (includes all retrofit CFLs, both interior and exterior)	\$0.00
Total retrofit LED Exit Incentive @ \$10/exit sign	\$0.00
Total Lighting Controls Incentive @ \$25/occupancy sensor and \$25/daylight sensor (includes all Lighting Controls, both interior and exterior)	\$0.00

Total Calculated Incentive	\$5,591.40
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Total Fixture Quantity excluding retrofit CFLs and LED Exit Signs	139
Total Lamp Quantity for retrofit Screw-In CFLs	0

Project # 7: Main Tower Lobby

Total Lamp Quantity for retrofit Hard-Wired CFLs	0
Total Fixture Quantity for retrofit LED Exit Signs	0
Total Quantity for Occupancy Sensors	0
Total Quantity for Daylight Sensors	0

Please briefly describe how you estimated your coincidence factor (CF) and applicant equivalent full-load hours (EFLH) for facility type "Other" indicated on the Lighting Form tab

Demand Savings (For Internal Use Only)	12.98
--	-------

Instructions: Please use one line for each fixture in a room or area.

For existing or proposed control, choose OCC for Occupancy Sensor, DAY for photosensor, HI-Lo for hi-lo level sensors or NONE for none. Controls in spaces where existing controls exist do not qualify for incentives.

The total of Column S, the quantities of CFLs and exit signs in Column M, and the quantities of sensors in Column R, will be used to calculate your incentive on the NonStandard Lighting form.

Applicant Name: _____

Facility Name: _____

Date: _____

Lighting Zone (enter color) _____ Lighting Zone 2 _____

3/24/2014

Lighting Form

[illegible]

Instructions: Please use one line for each fixture type in a room or area.

For existing or proposed controls, choose OCC for Occupancy Sensor, DAY for photosensor, H-L for hi-level sensors or NONE for none. Controls in spaces where existing controls exist do not qualify.

The total of Column S, the quantities of CFLs and exit signs in Column M, and the quantities of sensors in Column R, will be used to calculate your incentive on the NonStandard Lighting form.

Applicant Name: _____

Facility Name: _____

Date: _____

Lighting Zone (selecter only): _____ Lighting Zone 3

3/24/2014

Lighting Form

[illegible]

Instructions: Please use one line for each fixture type in a room or area.

For existing or proposed controls, choose OCC for Occupancy Sensor, DAY for photosensor, H-L for hi-level sensors or NONE for none. Controls in spaces where existing controls exist do not qualify.

The total of Column S, the quantities of CFLs and exit signs in Column M, and the quantities of sensors in Column R, will be used to calculate your incentive on the NonStandard Lighting form.

Applicant Name: _____

Facility Name: _____

Date: _____

Lighting Zone 1 (enter in col): _____ Lighting Zone 2 _____

3/24/2014

Lighting Form

[illegible]

Instructions: Please use one line for each fixture in a room or area.

For existing or proposed control, choose OCC for Occupancy Sensor, DAY for photosensor, H/Ls for hi-level sensors or NONE for none. Controls in spaces where existing controls exist do not qualify.

The total of Column S, the quantities of CFLs and exit signs in Column M, and the quantities of sensors in Column R, will be used to calculate your incentive on the NordStandard Lighting form.

Applicant Name: _____

Facility Name: _____

Date: _____

Lighting Zone 1 (enter in col): _____ Lighting Zone 2 _____

3/24/2014

Lighting Form

[illegible]

Instructions: Please use one line for each fixture type in a room or area.

For existing or proposed control, choose OCC for Occupancy Sensor, DAY for photosensor, HI-Lo for hi-lo-level sensors or NONE for none. Controls in spaces where existing controls exist do not qualify.

The total of Column S, the quantities of CFLs and exit signs in Column M, and the quantities of sensors in Column R, will be used to calculate your incentive on the NonStandard Lighting form.

Applicant Name: _____

Facility Name: _____

Date: _____

Lighting Zone (enter color) _____ Lighting Zone 2 _____

3/24/2014

Lighting Form

[illegible]

Instructions: Please use one line for each fixture type in a room or area.

For existing or proposed controls, choose OCC for Occupancy Sensor, DAY for photosensor, H-L for hi-level sensors or NONE for none. Controls in spaces where existing controls exist do not qualify.

The total of Column S, the quantities of CFLs and exit signs in Column M, and the quantities of sensors in Column R, will be used to calculate your incentive on the NonStandard Lighting form.

Applicant Name: _____

Facility Name: _____

Date: _____

Lighting Zone 1 (enter in col): _____ Lighting Zone 2 _____

3/24/2014

Lighting Form

[illegible]

Instructions: Please use one line for each fixture type in a room or area.

For existing or proposed control, choose OCC for Occupancy Sensor, DAY for photosensor, H-L for hi-lo level sensors or NONE for none. Controls in spaces where existing controls exist do not qualify.

The total of Column S, the quantities of CFLs and exit signs in Column M, and the quantities of sensors in Column R, will be used to calculate your incentive on the NonStandard Lighting form.

Applicant Name: _____

Facility Name: _____

Date: _____

Lighting Zone (interior only) _____ Lighting Zone 2 _____

3/24/2014

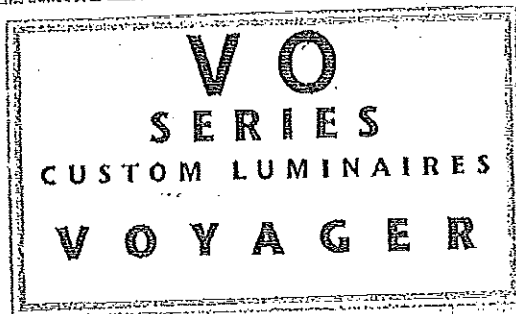
Lighting Form

[illegible]

Project 1: Cul Shed

ATTACHMENT A.1

32 Watt T8 LAMPS



Job Name	
Catalog Number	
Notes	Type



features

- A unique bi-level luminaire controlled by an integral ultra-sonic motion sensor, designed to provide safe, dependable illumination while conserving energy. Suitable for ceiling or wall mounting
- Bi-level fixtures operate at a low standby light level, offering safety and security with full light output instantly upon occupancy with areas fully lit only as needed
- Ideal for stairwells, restrooms, laundry rooms and other areas where maximum light levels are not required on a constant basis
- The ultra-sonic sensor features enhanced sensitivity and a lamp conditioning circuit (patented) that keeps new lamps on for 100 hours to assure long lamp life and proper operation
- For safety and compliance purposes in areas designated as emergency egress, we recommend choosing a standby light level that will provide minimum code compliant light levels while in the standby mode. In most municipalities, this is 1 FC average (2 FC in NYC). See back for options

construction

- Housings are die-formed of code gauge steel, with riveted socket supports
- Quality construction throughout for long-term dependable service
- New York City Department of Buildings calendar number #43525
- Ends are die formed for a clean, smooth look
- Ample knockouts are provided for convenient mounting with recessed or surface power feeds
- Meets ADA requirements for wall mounting
- All fixtures are U.L. listed and IBEW union made

diffuser

- One-piece extruded linear ribbed clear, light stabilized acrylic is standard, 100% DR acrylic available
- Features a linear refractive pattern for even illumination
- Grooved formation on the edges allow for a tight, no light leak attachment to the body
- Optional white powder coated perforated steel diffuser

electrical

- All electrical components are U.L. listed
- Ballasts are class P, thermally protected T8 Electronic
- Optional battery backup available for one or two light emergency operation at various output levels. Please consult factory for your specific emergency pack requirements

finish

- Prior to painting, all metal parts are treated with a multi-stage phosphate bonding process to ensure adhesion and inhibit rusting
- Painted with a lighting grade baked white enamel, having a reflectance factor exceeding 87% for premium quality and durability

sensor

- High frequency, extremely sensitive ultra-sonic, internally mounted
- LED status indicator light
- Exclusive lamp conditioning circuit (patented)
- Fail-safe feature switches light level to high (100%) if sensor is physically damaged
- 5 minute walk-test feature, easy-set time and sensitivity controls, compact design

LaMar
Lighting
Company, Inc.

Protected by one or more US Patents
Nos. 7,271,543 & 7,081,713

occu-smart
technology

All units are U.L. listed as emergency power and lighting equipment (UL-924) when equipped with optional battery back-up and meet requirements of the life safety code/NFPA101, NEC/OSHA and most state and local codes.

Occu-smart is a registered trademark of LaMar Lighting Co., Inc.

Project 1

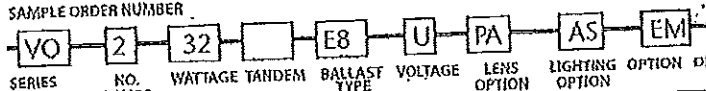
Cut Sheet 2

ATTACHMENT A.1

ordering guide

NOTE: SOME ORDERING OPTIONS APPEAR ON PRODUCT LINE.
FOR OTHER OPTIONS, SEE LIST AT RIGHT.

SAMPLE ORDER NUMBER



T-8 ORDERING GUIDE									
VO	1	31U		E8	1, 7, U	PA, PF	FO, AS	8" x 24"	F831T8
VO	1	17		E8	1, 7, U	PA, PF	FO, AS	8" x 24"	F17T8
VO	1	25		E8	1, 7, U	PA, PF	FO, AS	8" x 36"	F25T8
VO	1	25	T	E8	1, 7, U	PA, PF	2C, FO, AS	8" x 72"	F25T8
VO	1	32		E8	1, 7, U	PA, PF	FO, AS	8" x 48"	F32T8
VO	1	32	T	E8	1, 7, U	PA, PF	2C, FO, AS	8" x 96"	F32T8
VO	2	17		E8	1, 7, U	PA, PF	2C, FO, AS	8" x 24"	F17T8
VO	2	25		E8	1, 7, U	PA, PF	2C, FO, AS	8" x 36"	F25T8
VO	2	25	T	E8	1, 7, U	PA, PF	2C, FO, AS	8" x 72"	F25T8
VO	2	32		E8	1, 7, U	PA, PF	2C, FO, AS	8" x 48"	F32T8
VO	2	32	T	E8	1, 7, U	PA, PF	2C, FO, AS	8" x 96"	F32T8

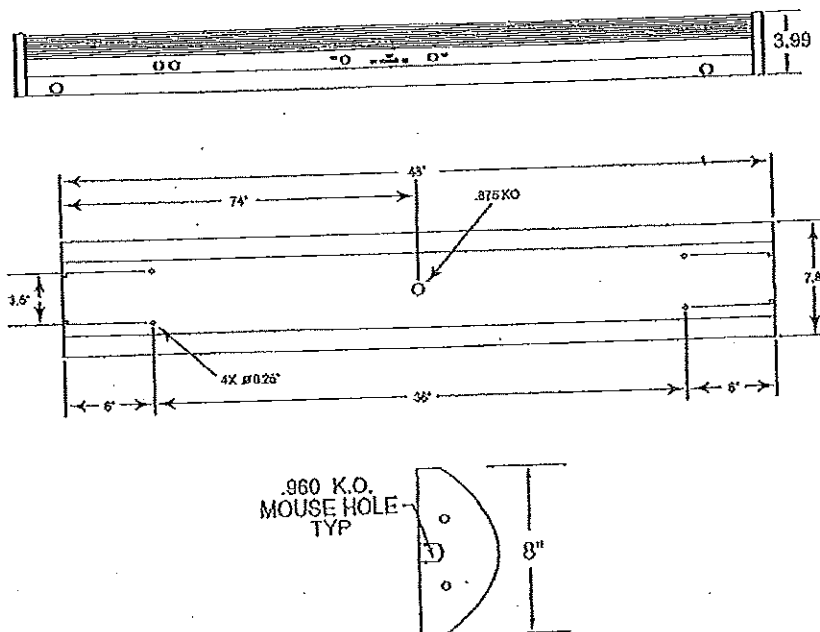
NOTE: TANDEM UNITS CONTAIN DOUBLE THE
AMOUNT OF LAMPS SHOWN

NOTE: STANDBY OPTION "AS" - UNIVERSAL VOLTAGE.
STANDARD

dimensional data

NOTE: SPECIFICATIONS AND DIMENSIONAL DATA ARE SUBJECT
TO CHANGE WITHOUT NOTICE.

cross sections



VO
SERIES

VOYAGER

options

OPTIONS: INSERT APPROPRIATE CODE FOR
CUSTOMIZED ORDERING

BALLAST

E8 Electronic T8
Program rapid start ballasts are used for
lamps that are cycled on/off or dimmed

VOLTAGE

1 120V
7 277V
U Universal 120-277V

DIFFUSER OPTIONS

PA Clear ribbed acrylic
DR 100% DR Acrylic (consult factory)
PF Perforated metal - white

LIGHTING OPTIONS

2C 1 lamp on constantly/1 lamp sensed
FO All lamps on/off, All lamps sensed on
AS User selectable standby options
5, 10, 20 & 30% Nominal Light Output

GENERAL OPTIONS

EM Emergency pack, 1 lamp
90 min. up to 500 lu.

Consult Factory for higher lumen battery
pack availability and additional options
not shown or listed

accessories

LAMP OPTIONS

12 T8 741K
15 T8 735K
10 T8 730K
13 T8 841K
16 T8 835K
11 T8 830K

BEFORE INSTALLATION, PLEASE CONSULT
YOUR LOCAL ORDINANCES AND BUILD-
ING CODES FOR COMPLIANCE

occu-smart
technology

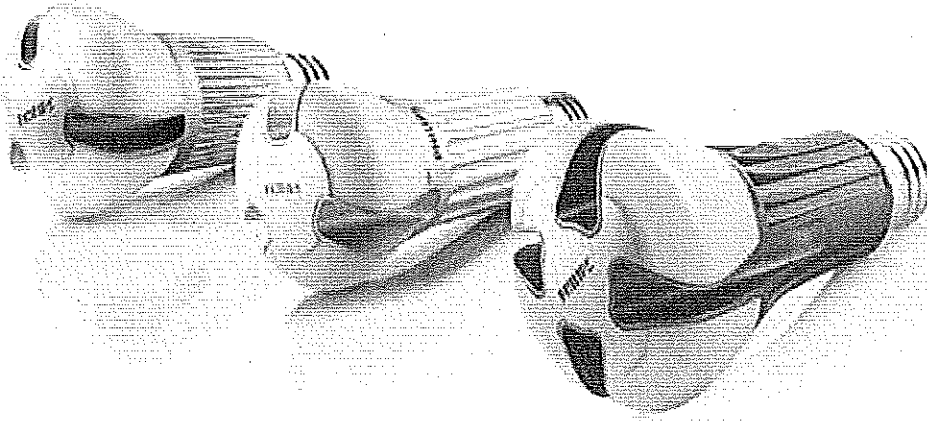
Protected by one or more US Patents
Nos. 7,271,543 & 7,081,715

Revised
5/09

LAMAR LIGHTING 485 Smith Street, Farmingdale, NY 11735 • Tel (631) 777-7700
Fax (631) 777-7705 • Outside NY (800) 724-7743 • www.lamarlighting.com

Lamar
Lighting
Company, Inc.

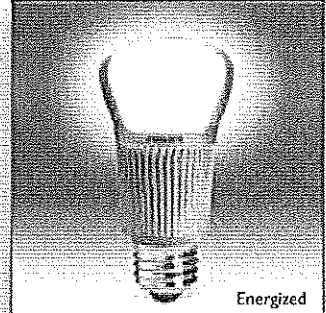
17 WATT LED BULB



Philips A-shape
Dimmable LED Lamp

Ideal for decorative and ambient lighting in retail outlets, hotels, restaurants, government buildings, and multi-unit residences

Philips LED



Attractive, dimmable LED alternative to popular incandescents

Philips A-shape Dimmable LED Lamps are the smart LED alternative to standard incandescent A-shape lamps. The unique lamp design provides omni-directional light with excellent dimming performance.

High efficacy LED accent light

- First 60W incandescent equivalent A19 LED bulb to be ENERGY STAR® Qualified
- New 8W design is ENERGY STAR® Qualified, and replaces a 40W incandescent equivalent A19 LED bulb¹
- 17W A21 ENERGY STAR® Qualified bulb replaces a 75W standard incandescent equivalent A21 bulb^{**}
- 22W A21 bulb replaces a 100W standard incandescent equivalent A21 bulb[†]
- Smooth dimming to 10% of full light levels*
- 25,000 hour rated average life²
- Emits virtually no UV/IR light in the beam
- Contains no mercury
- Remote phosphor (yellow) disappears when energized to create even, soft, white light

Easy to experience

- Long life properties—lowers maintenance costs by reducing re-lamp frequency
- Will not fade colors, avoids inventory spoilage
- 3-year or 5-year limited warranty depending upon operating hours

(1,2, *, **, † See back page for footnotes)

PHILIPS

Philips A-shape Dimmable LED Lamp

Ordering, Electrical and Technical Data (Subject to change without notice)

Product Number	Ordering Code	Nom. Watts	Volts	Lamps per SKU	Description	Bulb Type	Base	Rated Avg. Life (Hrs.) ¹	Approx. Lumens ²	CRI	Color Temp. (Kelvin)	MOL (In.)
41483-9	8A19/END/2700-470 DIM 6/I	8	120	1	120V Philips LED Dimmable 8W A19	A19	Med.	25,000	470	81	2700	4.3
40994-6	12A19/END/2700-800 DIM 6/I	12.5	120	1	120V Philips LED Dimmable 12W A19	A19	Med.	25,000	800	80	2700	4.2
41859-0	17A21/END/2700-1100 DIM 6/I	17	120	1	120V Philips LED Dimmable 17W A21	A21	Med.	25,000	1100	80	2700	4.8
42352-5	22A21/END/2700 DIM	22	120	1	120V Philips LED Dimmable 22W A21	A21	Med.	25,000	1780	80	2700	4.8

Shipping Data (Subject to change without notice)

Product Number	SKU UPC (0-46677)	Outer Bar Code (5-00-46677)	Case Qty.	Case Weight (lbs.)	Case Cube (cu. ft.)	Pallet Qty.	SKUs Per Layer	Layers High	SKU Dimensions (W x D x H) (In.)	Case Dimensions (W x D x H) (In.)	Pallet Dimensions (W x D x H) (In.)
41483-9	41483-2	41483-7	6	2.45	0.131	1224	204	6	2.72 x 2.72 x 4.80	8.40 x 5.60 x 4.80	47.20 x 39.40 x 34.90
40994-6	40994-4	40994-2	6	3.27	0.155	1224	204	6	2.72 x 2.72 x 4.80	5.83 x 8.62 x 5.31	39.40 x 47.20 x 35.00
41859-0	41859-5	41859-0	4	0.843	0.297	384	96	4	4.02 x 3.23 x 7.87	4.92 x 14.02 x 8.62	39.97 x 47.24 x 40.20
42352-5	42352-3	42352-8	4	0.843	0.297	384	96	4	4.02 x 3.23 x 7.87	4.92 x 14.02 x 8.62	39.97 x 47.24 x 40.20

- 1) When comparing this 8W LED A19 having 470 lumens to the standard 40W incandescent A19 having 400 lumens.
 2) Rated average life is based on engineering testing and probability analysis.
 3) Based on photometric testing consistent with IES LM-79.
 * Dimmable when using leading edge dimmers (see Philips Website: www.philips.com/ledtechguide for compatible leading edge dimmers).
 ** When comparing this 17W LED A21 having 1100 lumens to the standard 75W incandescent A21 having 1100 lumens.
 † When comparing this 22W Philips LED A21 having 1780 to the standard 100W incandescent A21 having 1440 lumens
 ‡ This lamp is ENERGY STAR® Qualified.

Energy Efficiency

Estimated Lighting Costs Using a Standard 100W Incandescent A21 Lamp			
Present Wattage	100	W	
x Annual Operating Hours	4,000	hrs	
	=	400,000	watt-hours
÷ 1,000	=	400	kWh per year
x kWh rate of \$0.11	=	\$44.00	per year
x 100 lamps per space	=	\$4,400	annual energy cost per space
Estimated Lighting Costs Using a Philips 22W Philips LED A21 Lamp			
Present Wattage	22	W	
x Annual Operating Hours	4,000	hrs	
	=	88,000	watt-hours
÷ 1,000	=	88	kWh per year
x kWh rate of \$0.11	=	\$9.68	per year
x 100 lamps per space	=	\$968	annual energy cost per space
Total Estimated Annual Savings [§]	=	\$3,432.00	

§ Based on 100 lamps per space operating at 4,000 hours per year.

This energy saving example shows an application of 100 lamps in a space currently using 100 incandescent 100W, 1780 lumen A21 lamps, operating 4,000 hours per year at a cost of \$0.11 per kWh.[†] Your actual savings may vary depending on the energy costs in your geographic location.

Replacing 100 standard incandescent 100W 1780 lumen A-lamps with Philips 22W Philips LED A21 lamps can provide significant energy cost savings of \$3,432.00 per year! Potential savings from the reduction in HVAC costs as a result of using a lower wattage lamp that emits less heat is an additional benefit not included in this example.

† Light output of the 22W Philips A21 1780 lumens compares to the 100W standard incandescent A21 at 1780 lumens

WARNINGS AND CAUTIONS

- Suitable for damp locations.
- Not for use in totally enclosed luminaires (fixtures).
- This device is not intended for use with emergency exit fixtures or emergency lights.
- Before replacing, turn off power and let lamp cool to avoid electrical shock or burn.

CAUTION: Risk of electric shock. Do not use where directly exposed to water.

NOTES: This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
 (1) This device may not cause harmful interference, and
 (2) This device must accept any interference that may cause undesired operation. This Class B digital apparatus complies with Canadian ICES-003.



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 P-6107-F
www.philips.com

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 281 Hillmount Road
 Markham, Ontario
 Canada L6C 2S3
 1-800-555-0050
 A Division of Philips Electronics Ltd.

Project 3 Cut Sheet

ATTACHMENT A.3

GE BALLASTS



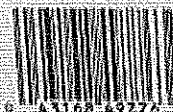
ULTRAMAX™

High-Efficiency Electronic Ballast

INSTANT START BALLASTS



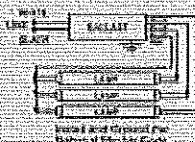
ULTRAMAX™
High-Efficiency Electronic Ballast



WARNING

RISK OF ELECTRIC SHOCK
Do not touch internal wiring.
Properly ground system
and fixture.

GE-332-MAX-HUHRa
Instant Start 120 V 60 Hz Ballast



Wide Range 120 V 60 Hz Instant Electronic Ballast
Open Circuit Voltage 500 Vrms
Max Short Circuit 0.7 A 18 VA
Inherent Thermal Protection
Class P, Outdoor Type 1
Type CC and Type 1B
FCC Part 18 Class A
High Power Factor
Sound Rated A
Assembled in China
Designed & Distributed by General Electric Co.
Transforming the Power of Light™
GE Consumer & Industrial Lighting - Cleveland, OH 44112



Ballast	Line Current	Power Factor
1 P2228 and U	0.33 - 0.30	0.95 - 0.98
1 P2228 and U	0.30 - 0.32	0.95 - 0.98
1 P2210	0.32 - 0.37	0.95 - 0.98
1 P2210	0.28 - 0.35	0.95 - 0.98
1 P2224 and U	0.30 - 0.31	0.95 - 0.98
1 P2210 and U	0.31 - 0.34	0.95 - 0.98
1 P2210	0.31 - 0.36	0.95 - 0.98
1 P2210	0.25 - 0.33	0.95 - 0.98

Maximum Allowed Load for 120 Vrms
For assistance call: 1-888-GE-8888

Product Code



GE Consumer & Industrial

TRANSFORMING
THE **POWER** OF
LIGHT™

BREAKTHROUGH TECHNOLOGY
THAT DRAMATICALLY IMPROVES
EFFICIENCY, SIMPLIFIES
INSTALLATION AND DELIVERS
OPTIMAL LAMP PERFORMANCE.

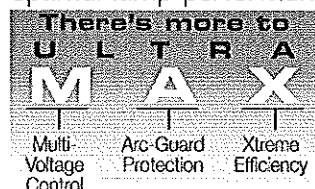
Take Energy
Savings to the
MAX with
High Efficiency
Electronic
Ballasts


ULTRAMAX
 High-Efficiency Electronic Ballast

The right ballast. The right performance. The right light.

GE revolutionizes lighting again with new, breakthrough technology.

In the GE labs, our engineers have developed a new breed of ballasts to make lighting systems that save more energy, are more adaptable, and deliver optimal lamp performance. The innovative, patented



technology in our new UltraMax™ electronic ballasts exceeds expectations, and is like nothing else available.

Multi-Voltage technology means a single UltraMax™ model handles voltage from 120 through 277.

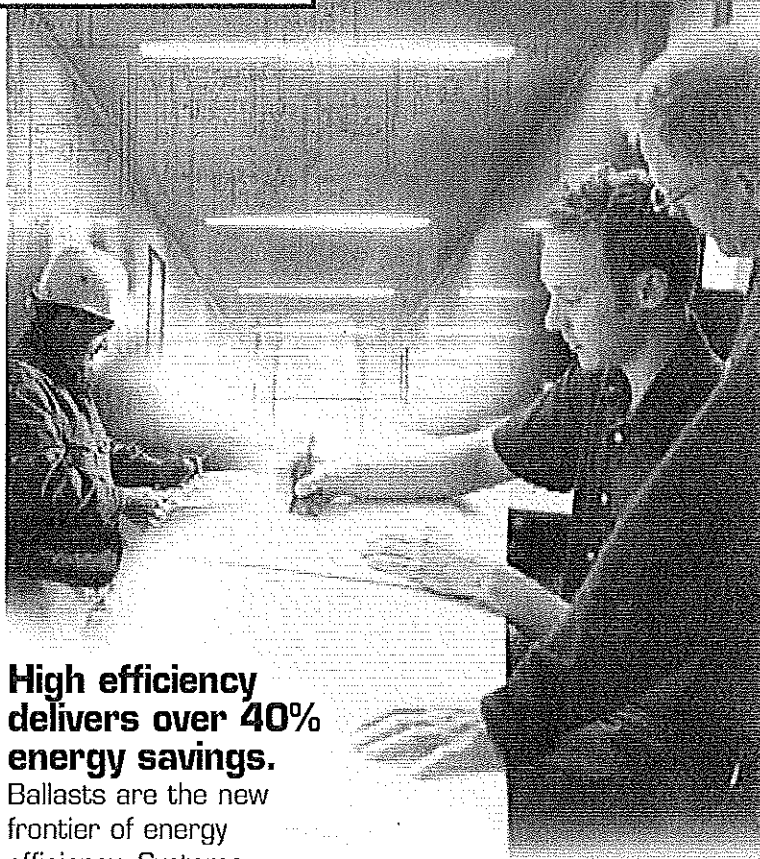
UltraMax™ Ballasts can virtually "read" the incoming voltage and adapt automatically to any voltage from 108V to 305V. The benefits of Multi-Voltage Control (MVC) are obvious:

- Fewer models handle more jobs, eliminating inventory hassles.
- MVC simplifies installation and eliminates guesswork at the job site.
- MVC compensates for incoming voltage fluctuations or variations from unreliable power.



UltraMax is the only full line of T8 ballasts with a UL Type CC Anti-Arc Rating.

UL Type CC Rating is a stringent designation of protection against arcing in electrical devices. GE's Arc-Guard design eliminates the damaging effects arcing can have on lamps, ballasts and sockets.



High efficiency delivers over 40% energy savings.

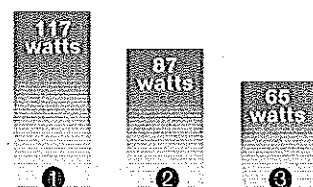
Ballasts are the new frontier of energy efficiency. Systems combining UltraMax™ electronic ballasts and T8/WM lamps can deliver over 40% energy savings over standard electromagnetically ballasted T12 systems. Since energy costs are typically 80% of the overall cost of light, a more efficient system can pay for itself in a very short time and provide an excellent return on investment.

UltraMax is ultra lamp friendly.

With an industry low lamp current crest factor (LCCF) of 1.4, UltraMax ensures optimal lamp operation and maximum lamp life, which can save on lamp and maintenance costs and ensures GE's Ultra System warranty.

COMPARE THE ENERGY USE OF A THREE LAMP FIXTURE

- ① STANDARD T12/WM SYSTEM
- ② STANDARD ELECTRONIC T8 SYSTEM
- ③ GE ULTRAMAX L SYSTEM WITH F28T8/UMX LAMPS



transforming the power of light™



Active Current Regulation (ACR) technology is a patented advantage.

UltraMax's patented ACR modular design means individual inverter modules regulate the output current to each lamp. So, unlike conventional ballasts, if one lamp fails, the remaining lamps are not forced to operate at a higher current. This ensures optimal lamp performance.

Anti-Striation Control for better light quality, with no striations.

UltraMax is the only line of T8 ballasts with Anti-Striation Control. This advanced technology eliminates the maintenance issues caused by striating lamps, often referred to as spiraling or swirling. This provides a flicker- and worry-free environment.

Fully parallel independent lamp operation makes system easier to maintain.

If one lamp fails, all the others in the system stay lit. That means system maintenance is easier to manage.

UltraMax is *Ultra Cool.* Electronic Ballast

UltraMax's high efficiency design results in ultra-cool operation that can provide additional AC energy savings, especially during peak demand periods. Combine GE's Ultra ballasts with cool running fixtures to achieve maximum system performance in hot temperatures. GE provides the UltraCool system certification with high grade fixture systems which means a 5 year 55°C max ambient warranty.

A big idea in a small package.

The UltraMax™ housing is smaller, lower-profile and lightweight. That can be a big help in retrofits. It also means future fixture designs can be more compact and streamlined.

Every unit is tested and proven before it's shipped.

GE does 100% burn-in on every UltraMax™ ballast using our extreme open/short test, which simulates undesirable and harsh-use situations, so you are assured of a system you can rely on right out of the box.

GE Six Sigma quality backed by a full 5-year ballast warranty.

UltraMax ballasts are designed by GE's expert engineers and custom-manufactured to our exacting Six Sigma specifications, all backed by a full 5-year warranty. And, when used with GE T8 lamps you get our Ultra System warranty, (see GE lighting.com system warranty page for details).



For more information, visit www.gelighting.com.

A FULL FAMILY OF HIGH EFFICIENCY MULTI-VOLTAGE BALLASTS FOR ALL T8 APPLICATIONS.

ULTRAMAX™
High-Efficiency Electronic Ballast

L

The Low watt option for Max energy savings. With a ballast factor of .77, the L line is the most energy efficient choice. It provides adequate illumination for most applications. For 1, 2, 3, and 4 T8 lamps in 2', 3', and 4' lengths.

ULTRAMAX™
High-Efficiency Electronic Ballast

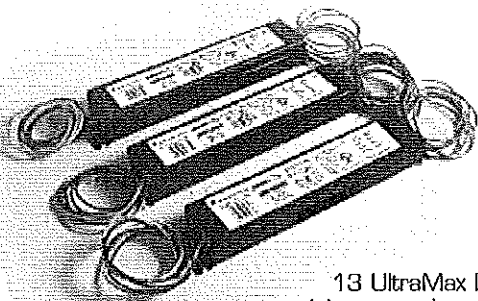
N

The Normal light option balances efficiency and illumination. The most-used type of ballast, the N line saves energy without sacrificing lumens. A ballast factor of .87 meets most application needs. For 1, 2, 3, and 4 T8 lamps in 2', 3', 4', and 8' lengths.

ULTRAMAX™
High-Efficiency Electronic Ballast

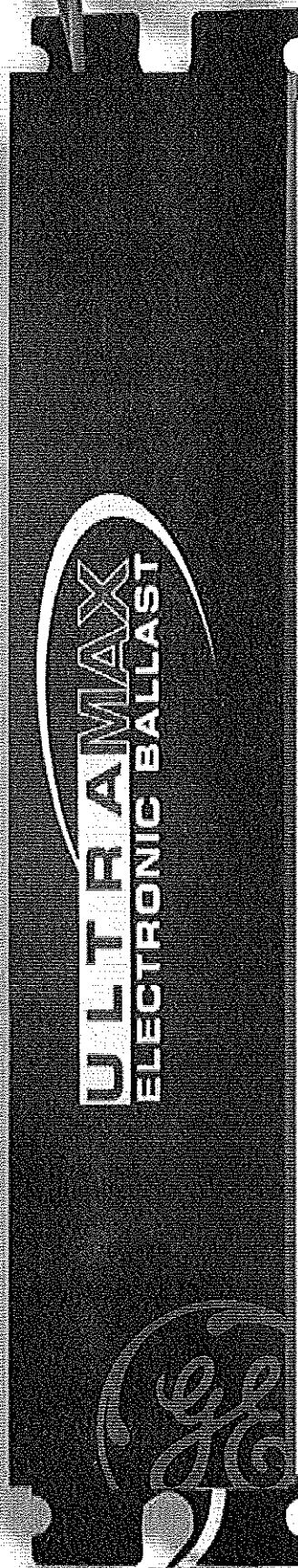
H

The choice for High light output. With a ballast factor of 1.15, UltraMax™ H delivers the most lumens for maximum light or when you want more savings using fewer lamps. This is the first high-efficiency high-light output line for 2, 3 and 4 T8 lamps.



13 UltraMax L, N and H models can replace more than 40 conventional electronic ballasts.

ACTUAL SIZE



See for yourself
how different
UltraMax™
ballasts perform.

	BALLAST FACTOR	*SYSTEM LUMENS (2500 Lumens/lamp)	INPUT WATTS	LUMENS PER WATT
L	.77	4389	48	91
N	.87	4959	53	94
H	1.15	6555	73	90

* For a 2-Lamp F32T8 System at 277V

Safety

- No PCBs
- UL Listed
 - Class P, Type 1
 - Type CC
 - Type HL (Hazardous Location)

Application Information

- Minimum Starting Temperature: 0°F, -18°C
- Maximum Ambient Temperature: 105°F, 40°C
- Sound Rated A
- Remote Mounting: 18' maximum lead length, 18 AWG
- High Frequency Lamp Operation: Above 60 kHz

Physical Parameters

(Except for the 4H model)

Length: 9.50 in.
Width: 1.70 in.
Height: 1.2 in.
Weight: 1.4 lbs.

4H Model Parameters

Length: 9.50 in.
Width: 2.30 in.
Height: 1.60 in.
Weight: 2.16 lbs.

Applications:

Offices	Plants
Retail	Hotels
Schools	Warehouses
Universities	Hospitals

transforming the power of light™

System Performance Comparison Matrix

Compare the overall performance of a GE UltraMax™ system to conventional lamp and ballast systems.

Lamps	Electromagnetic Ballasts			Electronic Ballasts			
2-Lamp System Performance 4' Fluorescent							
	Electromagnetic E.S.	Rapid Start	Low Power (L)	Normal	UltraMax L	UltraMax N	UltraMax H
Watt-Miser T12 (CW)	Watts: 74 BF: 0.90 Light: 100% RLPW: 100%	Watts: 64 BF: 0.86 Light: 96% RLPW: 110%	Not Available	Not Available	Not Available	Not Available	Not Available
F32T8 & F32T8/XL (SP)	Watts: 69 BF: 0.88 Light: 116% RLPW: 125%	Watts: 63 BF: 0.88 Light: 116% RLPW: 137%	Watts: 51 BF: 0.78 Light: 103% RLPW: 149%	Watts: 58 BF: 0.88 Light: 116% RLPW: 148%	Watts: 48 BF: 0.77 Light: 102% RLPW: 157%	Watts: 53 BF: 0.87 Light: 115% RLPW: 160%	Watts: 73 BF: 1.15 Light: 152% RLPW: 154%
F32T8/WM ULTRA & XL (SP)	Not Recommended	Not Recommended	Watts: 48 BF: 0.78 Light: 102% RLPW: 157%	Watts: 54 BF: 0.88 Light: 115% RLPW: 157%	Watts: 46 BF: 0.77 Light: 100% RLPW: 161%	Watts: 52 BF: 0.87 Light: 113% RLPW: 161%	Watts: 70 BF: 1.15 Light: 150% RLPW: 158%

3-Lamp System Performance 4' Fluorescent							
	Electromagnetic E.S.	Rapid Start	Low Power (L)	Normal	UltraMax L	UltraMax N	UltraMax H
Watt-Miser T12 (CW)	Watts: 117 BF: 0.91 Light: 100% RLPW: 100%	Watts: 93 BF: 0.86 Light: 95% RLPW: 119%	Not Available	Not Available	Not Available	Not Available	Not Available
F32T8 & F32T8/XL (SP)	Watts: 105 BF: 0.88 Light: 115% RLPW: 128%	Watts: 93 BF: 0.88 Light: 115% RLPW: 145%	Watts: 77 BF: 0.78 Light: 102% RLPW: 155%	Watts: 87 BF: 0.88 Light: 115% RLPW: 155%	Watts: 72 BF: 0.77 Light: 101% RLPW: 163%	Watts: 80 BF: 0.87 Light: 114% RLPW: 166%	Watts: 109 BF: 1.15 Light: 150% RLPW: 161%
F32T8/WM ULTRA & XL (SP)	Not Recommended	Not Recommended	Watts: 72 BF: 0.78 Light: 101% RLPW: 163%	Watts: 81 BF: 0.88 Light: 113% RLPW: 164%	Watts: 68 BF: 0.77 Light: 99% RLPW: 171%	Watts: 77 BF: 0.87 Light: 112% RLPW: 170%	Watts: 104 BF: 1.15 Light: 148% RLPW: 167%

4-Lamp System Performance 4' Fluorescent							
	Electromagnetic E.S.	Rapid Start	Low Power (L)	Normal	UltraMax L	UltraMax N	UltraMax H
Watt-Miser T12 (CW)	Watts: 148 BF: 0.90 Light: 100% RLPW: 100%	Watts: 128 BF: 0.86 Light: 96% RLPW: 110%	Not Available	Not Available	Not Available	Not Available	Not Available
F32T8 & F32T8/XL (SP)	Watts: 138 BF: 0.88 Light: 116% RLPW: 125%	Watts: 120 BF: 0.88 Light: 116% RLPW: 143%	Watts: 100 BF: 0.78 Light: 103% RLPW: 152%	Watts: 114 BF: 0.88 Light: 116% RLPW: 151%	Watts: 96 BF: 0.77 Light: 102% RLPW: 158%	Watts: 107 BF: 0.87 Light: 115% RLPW: 159%	Watts: 147 BF: 1.15 Light: 132% RLPW: 154%
F32T8/WM ULTRA & XL (SP)	Not Recommended	Not Recommended	Watts: 95 BF: 0.78 Light: 102% RLPW: 158%	Watts: 107 BF: 0.88 Light: 115% RLPW: 159%	Watts: 91 BF: 0.77 Light: 100% RLPW: 163%	Watts: 103 BF: 0.87 Light: 113% RLPW: 163%	Watts: 141 BF: 1.15 Light: 128% RLPW: 158%

Notes:

Light refers to "mean" lumen output relative to highlighted T12 Electromagnetic E.S. (energy saving) ballast systems.

RLPW is mean system Lumens/Watt relative to highlighted T12 Electromagnetic E.S. (energy saving) ballast systems.

Watts shown at 277 volts.

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Ordering Guide and System Wattage

There's a combination of GE UltraMax™ ballasts and T8 lamps that can make virtually any lighting system perform better. The chart below lets you see for yourself.

Starting	Ballast Factor	# Lamps	GE UltraMax Ballasts			F32T8 Input Watts			F32T8/WM Input Watts			F28T8/UMX Input Watts ¹	Units Per Case
			Product Code	Description	Input Voltage	Input Watts ¹	In Fixture ²		Input Watts ¹	In Fixture ²			
							Open	Enclosed		Open	Enclosed		
Instant Start	Low	1	49706	GE-132-MAX-L/Ultra	Multi-Volt 120	25	24	24	24	23	23	22	10
					277	25	24	24	24	23	23	22	
		2	49707	GE-232-MAX-L/Ultra	Multi-Volt 120	48	48	47	46	46	45	44	10
					277	48	48	47	46	46	45	44	
	3	49708	GE-332-MAX-L/Ultra	Multi-Volt 120	73	72	71	69	68	67	65	10	
				277	72	71	70	68	67	66	65		
	4	49709	GE-432-MAX-L/Ultra	Multi-Volt 120	97	95	93	92	90	88	87	10	
				277	96	93	92	91	89	87	86		
	Normal	1	49771	GE-132-MAX-N/Ultra	Multi-Volt 120	28	28	27	27	26	26	25	10
					277	28	28	27	27	26	26	25	
		2	49772	GE-232-MAX-N/Ultra	Multi-Volt 120	54	54	53	53	52	51	49	10
					277	53	53	52	52	51	50	48	
	3	49773	GE-332-MAX-N/Ultra	Multi-Volt 120	82	80	78	78	77	74	72	10	
				277	80	78	77	77	75	73	71		
	4	49774	GE-432-MAX-N/Ultra	Multi-Volt 120	109	105	103	105	101	98	98	10	
				277	107	103	101	103	99	97	96		
High	2	49775	GE-232-MAX-H/Ultra	Multi-Volt 120	74	71	69	71	69	67	66	10	
				277	73	70	68	70	68	66	65		
	3	49776	GE-332-MAX-H/Ultra	Multi-Volt 120	111	105	102	106	102	97	98	10	
				277	109	103	100	104	100	96	96		
4	49777	GE-432-MAX-H/Ultra	Multi-Volt 120	151	TBD	TBD	145	TBD	TBD	133	10		
			277	147	TBD	TBD	141	TBD	TBD	131			
Normal		GE UltraMax Ballasts			F96T8 Input Watts			F96T8/WM Input Watts			F96T8/WM Plus Input Watts	Units Per Case	
		Product Code	Description	Input Voltage	Input Watts ¹	In Fixture ²		Input Watts ¹	In Fixture ²				
	Open					Enclosed	Open		Enclosed				
	1	49766	GE-159-MAX-N/Ultra	Multi-Volt 120	54	TBD	TBD	51	TBD	TBD	53	10	
				277	53	TBD	TBD	51	TBD	TBD	52		
	2	49767	GE-259-MAX-N/Ultra	Multi-Volt 120	107	TBD	TBD	102	TBD	TBD	106	10	
				277	105	TBD	TBD	100	TBD	TBD	104		

¹ Denotes standard laboratory non-fixture open bench testing.

² In fixture watts represent typical field operating conditions with ballast and lamps in fixture/luminaire. Open fixture denotes non-lensed fixture/luminaire.

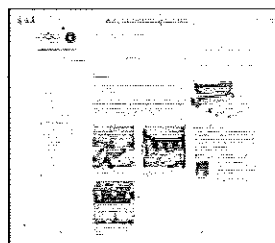
Enclosed fixture denotes lensed fixture/luminaire.

www.gelighting.com <Commercial Products> <Ballasts>



GE Lighting

TRANSFORMING
THE POWER OF
LIGHT™



GE Lighting Web Center

GE is taking the lead in developing innovative uses of e-business technology to provide to you product and application information that can help you achieve your business goals. From interactive catalogs that deliver lamp and system performance information to Design Wizards that help in lamp and ballast selection and application, GELighting.com is the lighting site you will want to visit frequently.

www.GELighting.com

5.28 TOTAL KW

V180

Revolutionary 180° LED module low profile lighting system

- Even illumination with less modules
- Versatile low profile modules
- Ingress Protection 68 rating (IP68)
- Constant Current Technology
- UL and cUL recognized, CE, CSA Certified
- RoHS and WEEE compliant

Specifications

Dimensions L x W x H	Large	1.76 in x 0.95 in x 0.38 in
	Standard	1.63 in x 0.80 in x 0.31 in
	Mini	1.24 in x 0.50 in x 0.34 in

Viewing angle 180°

LEDs per module 3

Modules per foot

Size	Natural spacing	Stretched spacing
Large	2	1.2
Standard	2.5	2
Mini	2.5	N/A

Maximum coverage per row

Size	Can depth	Row coverage
Large	7 in to <10 in	12 in
	10 in to <12 in	16 in
Standard	3 in to <4 in	5 in
	4 in to <7 in	10 in
Mini	2 in to <3 in	3 in
	3 in to <4 in	4 in

Operating temperature -40° C to +70° C

Protection class IP68

Special feature Wire stretch feature available on V180 Standard and Large

Power per module	Large	1.20 W
	Standard	0.55 W
	Mini	0.36 W

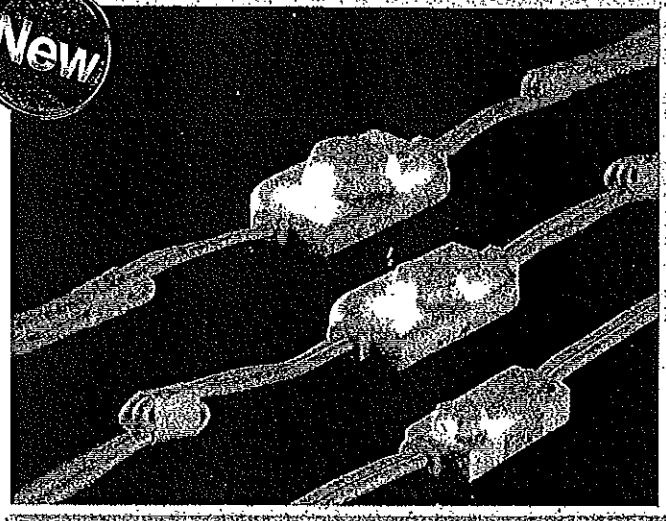
Power supply SloanLED 12 VDC

Efficacy	Large	108 lm/W
	Standard	90 lm/W
	Mini	90 lm/W

Fastening Peel-n-stick and mechanical

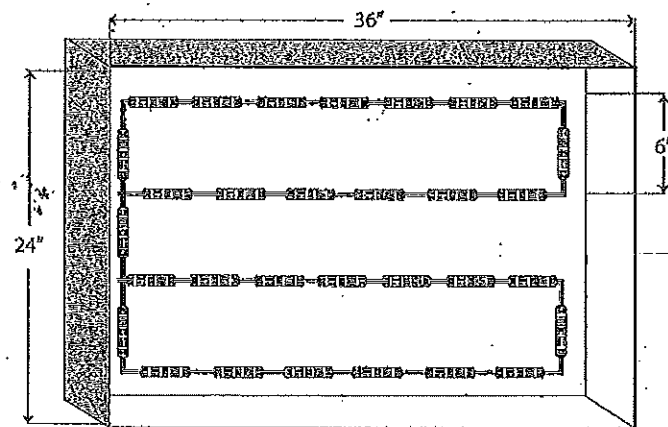
Packaging	5 trays per carton	
	Large	42 modules per tray
	Standard	62 modules per tray
	Mini	75 modules per tray

Item description	Part number	Lumens per module
Large (6500 K)	701269-6WLG1-MB	130
Standard (6500 K)	701269-6WSG1-MB	50
Mini (6500 K)	701269-WLP2-MB	32.5



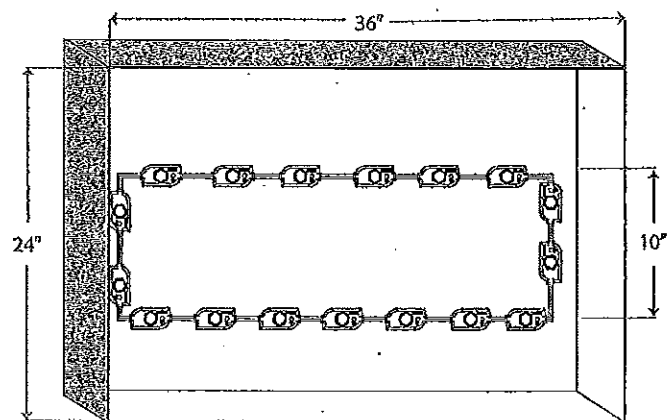
Channel Letter Lighting

Simple Solutions to achieve more with less



VL Plus Short
31 modules, 1240 lumens

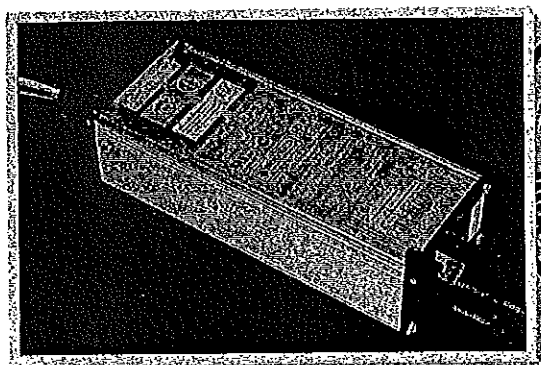
V180 achieves even illumination with 50% less modules



V180 Standard
17 modules, 850 lumens

12 VDC Power Supplies

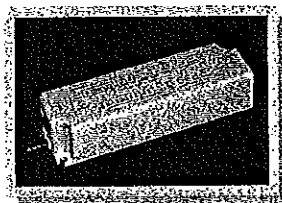
MODW 60 Watt IP68 Rated



*APOLLO = 56'
GREEN WHITE = 2.5'
V180 = 30'*

- Ingress Protection 68 Rated (IP68)
- Operating temperatures -40° C to 60° C
- Auto-resetting
 - No fuses to replace or circuit breaker to reset
 - Short circuit protection automatically resets when short condition is corrected
- Modular design
 - Cluster with standard J-boxes to create multiple 60 W legs
- UL, cUL, CSA, TUV, CE certification
 - UL classified for field retrofits
- RoHS and WEEE compliant

Self-Contained 20



- Small compact size
- Operating temperatures -30° C to 60° C
- UL-rated for dry and damp locations
- RoHS and WEEE compliant

Specifications for all SloanLED 12 VDC Power Supplies

Item description	Part number	Nominal input voltage	Max. input current	Power output	Enclosure spec			Overall dimensions L x W x H
					Dry	Damp	Wet	
Self-Contained 20	701680	100-240 V	0.55 A	20 W	X	X		4.65 in x 1.38 in x 1.03 in
MODW 60 W	701507-MODW	100-240 V	1.0 A	60 W	X	X	X	9 in x 2.5 in x 1.5 in
MOD277 60 W	701507-MOD277	277-347 V	0.5 A	60 W	X	X	X	10.5 in x 2.5 in x 1.5 in

SloanLED power supplies carry required UL, cUL, and CSA certification

Self-Contained 20, MODW, and MOD277 also carry CE certification

Dimmer Solutions

All SloanLED 12 VDC products can be dimmed using our dimming module (PN 701817) and either our manual Dim Control Box (PN 701843) or approved automatic controller.

Installation Cable

SloanLED offers 18 gauge (PN 400299-1200) and 14 gauge (PN 400301-100) cable to make your installation easier.

ATTACHMENT A.4

PROJECT 4

August 11, 2011 11:30am

MEMORIAL PLAZA COMPARISON

	TRANSFORMER/ POWER SUPPLY	FOOTAGE	AMPS	WATTS	TOTAL WATTS	KILOWATTS	KILOWATTS DOLLARS	12 HOURS PER DAY	COST PER YEAR
NEON	52 - 9/30	1175	2.5	300	15,600	16	\$0.075	\$14.04	\$5,124.60
LED	44 - 60W	1175	1	120	5,280	5.28	0.075	\$4.75	\$1,734.48

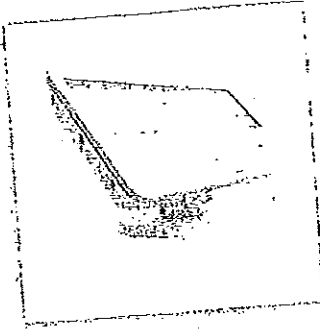
SAVINGS PER YEAR WHEN CONVERTED TO LED: **\$3,390.12**

HISTORIC SITE Lighting (18 fixtures)

Date: _____ Type: _____

Firm Name: _____

Project: _____



eW Blast Powercore

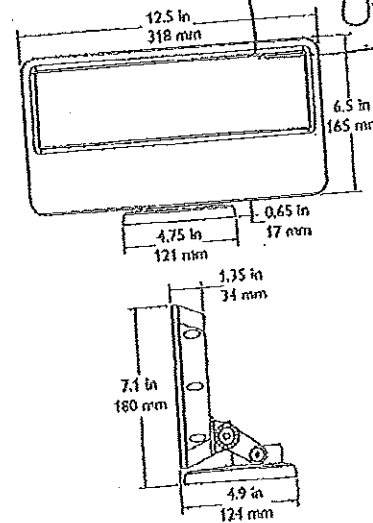
2700 K, 21° Frosted Lens

Energy-efficient, high-intensity white LED floodlight

Higher
Output

eW® Blast Powercore is an LED floodlight providing a high-intensity wash of white light while consuming less energy than comparable non-LED light fixtures. Rated for outdoor use, eW Blast Powercore offers the efficiency and cost-effectiveness of Powercore® technology in a rugged die-cast aluminum housing. eW Blast Powercore is ideal for applications as diverse as highlighting architectural features, general site illumination, and lighting signage and retail spaces.

- Integrates patented Powercore technology—Powercore technology rapidly, efficiently, and accurately controls power output to eW Blast Powercore fixtures directly from line voltage, supporting long fixture runs and eliminating the need for external power supplies. Contractor-friendly installation using standard mounting and wiring dramatically simplifies installation and helps lower total system cost.
- Supports new applications for white light—Long-life LEDs (up to 70,000 hours at 70% lumen maintenance) can significantly reduce or eliminate maintenance problems, allowing the use of white lighting in spaces where lamp maintenance may be impossible. For example, eW Blast Powercore can effectively illuminate building features from positions accessible only by crane.
- High-intensity, energy-efficient white light—With an output of up to 2390 lumens, eW Blast Powercore offers high-intensity illumination at a significantly lower power draw than comparable non-LED fixtures.
- Versatile lighting options—eW Blast Powercore is available in two color temperatures, a warm 2700 K and a cool 4000 K, and four solid colors (Red, Green, Blue, and Amber). A 21° frosted glass lens for a soft-edge beam and a 10° clear lens for extended light projection support a wide range of white lighting applications. Rugged die-cast aluminum housing is available in white or black.



- Flexible light positioning—Fixtures can be mounted to a junction box on a wall, ceiling, or floor for maximum flexibility. Locking base swivel offers friction-free rotation of up to 350°, and 110° fixture tilting provides quick fixture positioning without special tools.
- Support for multiple voltages—eW Blast Powercore accepts power input of 100, 120, 240, and 277 VAC, allowing installation and operation from line voltage in a variety of locations.
- Dimming capability—Patented DIMand® technology offers smooth dimming capability with many ELV-type dimmers.

For detailed product information, please refer to the eW Blast Powercore Product Guide at www.colorkinetics.com/essentialwhite/ewblast/

PHILIPS

Project #6: Core Building Light cut street ATTACHMENT A.6
32 WATT LAMP



Product Catalog

for professionals

Products > 26667

26667 – F32T8/SP35/ECO

GE Ecolux® Starcoat® T8

- Passes TCLP, which can lower disposal costs.



High Color Rendering

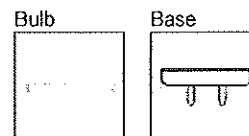
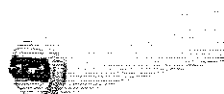
Meets Federal Minimum Efficiency Standards

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GENERAL CHARACTERISTICS

Lamp type	Linear Fluorescent - Straight Linear
Bulb	T8
Base	Medium Bi-Pin (G13)
Primary Application	Full Wattage
Rated Life	30000 hrs
Rated Life (instant start) @ Time	21000.0 h @ 3.0 h 30000.0 h @ 12.0 h
Rated Life (rapid start) @ Time	30000.0 h @ 3.0 h 36000.0 h @ 12.0 h
Bulb Material	Soda lime
Starting Temperature (MIN)	10 °C(50 °F)
LEED-EB MR Credit	36 picograms Hg per mean lumen hour
Additional Info	TCLP compliant



[View Larger](#)

ADDITIONAL RESOURCES

[MSDS \(Material Safety Data Sheets\)](#)

[Disposal Policies & Recycling Information](#)

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	2450
Mean Lumens	2300
Nominal Initial Lumens per Watt	77
Color Temperature	3500 K
Color Rendering Index (CRI)	78
S/P Ratio (Scotopic/Photopic Ratio)	1.4

ELECTRICAL CHARACTERISTICS

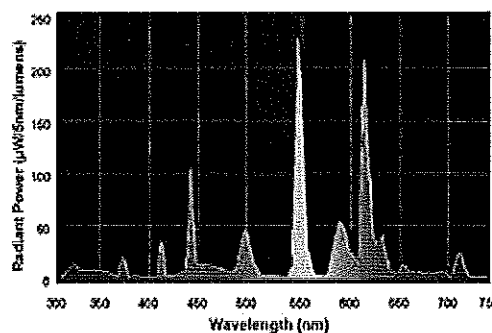
Wattage	32
Open Circuit Voltage (rapid start) Min @ Temperature	315.0 @ 10.0 V
Cathode Resistance Ratio - Rh/Rc (MIN)	4.25
Cathode Resistance Ratio - Rh/Rc (MAX)	6.5
Current Crest Factor (MAX)	1.7

DIMENSIONS

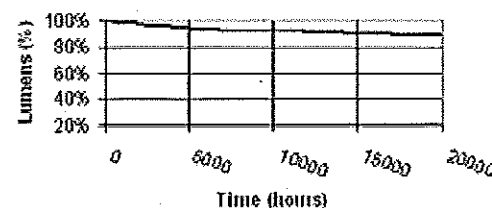
Maximum Overall Length (MOL)	47.7800 in (1213.6 mm)
Minimum Overall Length	47.6700 in (1210.8 mm)

GRAPHS & CHARTS

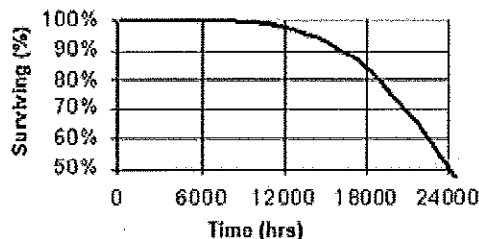
[Graphs_Spectral Power Distribution]



[Graphs_Lumen Maintenance]



Nominal Length	48.0000 in (1219.2 mm)	[Graphs_Lamp Mortality]
Bulb Diameter (DIA) (MIN)	0.9400 in (23.8 mm)	
Bulb Diameter (DIA) (MAX)	1.1000 in (27.9 mm)	
Bulb Diameter (DIA)	1.0000 in (25.4 mm)	
Max Base Face to Base Face (A)	47.2200 in (1199.3 mm)	
Face to End of Opposing Pin (B) (MIN)	47.4000 in (1203.9 mm)	
Face to End of Opposing Pin (B) (MAX)	47.5000 in (1206.5 mm)	
End of Base Pin to End of Opposite Pin End (C)	47.6700 in (1210.8 mm)	

**PRODUCT INFORMATION**

Product Code	26667
Description	F32T8/SP35/ECO
ANSI Code	1005-2
Standard Package	Case
Standard Package GTIN	10043168266670
Standard Package Quantity	36
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	36
UPC	043168266673

COMPATIBLE GE BALLASTS

Product Code	Description	# of Bulbs	Power Factor	Ballast Factor
23671	GE-232-120-N	2	0.99	0.87
23673	GE-332-120-N	3	0.99	0.87
23674	GE-332-277-N	3	0.99	0.88
23675	GE-432-120-N	4	0.87	0.87
23680	GE-132-120-N	1	0.99	0.87
23681	GE-132-277-N	1	0.99	0.87
24162	GE-132-277-N-84T	1	0.99	0.87
24163	GE-232-120-N-84T	2	0.99	0.86
24165	GE-332-120-N-84T	3	0.99	0.87
24166	GE-332-277-N-84T	3	0.99	0.88
24167	GE-432-120-N-84T	4	0.99	0.87
29625	GE-432-120-PS-N	4	0.99	0.89
29651	GE-232-MV-PS-H-T	2	0.94	1.15
29671	GE-232-MVPS-XL	2	0.9	0.6
29672	GE-332-MVPS-XL	3	0.93	0.6
29675	GE-232-MVPS-H	2	0.94	1.15
29676	GE-332-MVPS-H	3	0.96	1.15
47548	GE232MAX-H-42T	2	0.98	1.15
49773	GE332MAX-N	3	0.98	0.87
49774	GE432MAX-N	4	0.98	0.87
49775	GE232MAX-H/ULTRA	2	0.98	1.15
80353	B132R120V5	1	0.99	0.88
80356	B232SR277V5	2		0.88
80357	B332SR120V5	3	0.99	0.88
80358	B332SR277V5	3	0.99	0.88
97657	GE332MAX-N/CTR	3	0.98	0.87
87125	GEM232T8RS120	2	0.98	0.94
71832	GE432-MVPS-L	4	0.98	0.71



Product Catalog

for professionals

BALLAST

Products > 72266

72266 – GE232MAX-N/ULTRA

GE LFL UltraMax™ Electronic High Efficiency Multivolt Instant Start Ballast

[Print this Page](#)

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- Energy saving high efficiency instant start electronic ballast (> 90%)
- Multi-Voltage Technology handles voltage from 120 to 277V
- UL Type CC Rating provides protection against arcing in electrical devices.
- Active Current Regulation regulates the output to each lamp with individual lamp inverter modules.
- Anti-Striation Control for better light quality, with no striations.
- Cold temperature -20F Minimum Starting Temperature



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GENERAL CHARACTERISTICS

Application	2 or 1- F32T8 120 to 277 "N".87 BF
Category	Linear Fluorescent
Ballast Type	Electronic - High Efficiency Multivolt Instant Start
Starting Method	Instant start
Lamp Wiring	Parallel
Line Voltage Regulation (+/-)	10 %
Case Temperature (MAX)	70 °C(158 °F)
Ballast Factor	Normal
Power Factor Correction	Active
Sound Rating	A (20-24 decibels)
Additional Info	Anti-striation control, Auto-restart, Thermally protected

ELECTRICAL CHARACTERISTICS

Supply Current	50 Hz/60 Hz
Frequency	

PRODUCT INFORMATION

Product Code	72266
Description	GE232MAX-N/ULTRA
Standard Package	Case
Standard Package GTIN	10043168722664
Standard Package Quantity	10
Sales Unit	Standard Pack

DIMENSIONS

Case dimensions

Length (L)	9.5 in (241.30 mm)
Width (W)	1.3 in (33.02 mm)
Height (H)	1.2 in (29.97 mm)

Mounting dimensions

Mount Length (M)	8.9 in (226.06 mm)
Mount Width (X or F)	1.1 in (27.94 mm)
Mount Slots (MS)	0.3 in (7.62 mm)

Weight 1.4 lb

Exit Type Side

Remote mounting distance to lamp 18.0 ft

Remote Mounting Wire Gauge 18.0 AWG

Lead lengths	Qty	Exit	Length (± 1 in.)
Black	1	Left	25.0 in (635 mm)
Red	1	Left	37.0 in (940 mm)
White	1	Left	25.0 in (635 mm)
Blue	2	Right	31.0 in (787 mm)



Project 7 Cut Sheet

Attachment A.7

From: Leader Electric Supply

216 398 6674

10/26/2011 15:49

0078 P.001/001

Product Details

18 WATT FLOOD LAMP

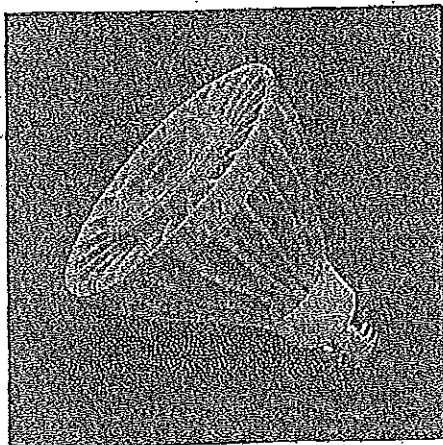
Page 1 of 1

100 Degree 5 CONSTANT

is

NOT

GOOD



Product Number: 78641

Order Abbreviation: LED18PAR38/DIM/830/FL40

General Description: LED18 PAR38 40 Degree DIM

Product Information	
Abbrev. With Packaging Info.	LED18PAR38DIM830FL40 6/CS 1/SKU
Average Rated Life (hr)	50000
Base	E26 Medium
Bulb	PAR38
Color Temperature/CCT (K)	3000
Color Rendering Index (CRI)	87
Lumens	900
Nominal Voltage (V)	120.00
Nominal Wattage (W)	18.00
Abbrev. With Packaging Info.	LED18PAR38DIM830FL40 6/CS 1/SKU
Language Strategy	ENGLISH/FRENCH/SPANISH
Ordering Abbreviation	LED18PAR38/DIM/830/FL40
UPC Code	UPC046135786419
Lamp Finish	White

Key Tower
LOBBY LED LAMP
REPLACEMENT.

100/11

100

Mercantile Customer Project Commitment Agreement
Cash Rebate Option

THIS MERCANTILE CUSTOMER PROJECT COMMITMENT AGREEMENT ("Agreement") is made and entered into by and between The Cleveland Electric Illuminating Company, its successors and assigns (hereinafter called the "Company") and Key Center Properties LLC, Taxpayer ID No. 20-3942248 its permitted successors and assigns (hereinafter called the "Customer") (collectively the "Parties" or individually the "Party") and is effective on the date last executed by the Parties as indicated below.

WITNESSETH

WHEREAS, the Company is an electric distribution utility and electric light company, as both of these terms are defined in R.C. § 4928.01(A); and

WHEREAS, Customer is a mercantile customer, as that term is defined in R.C. § 4928.01(A)(19), doing business within the Company's certified service territory; and

WHEREAS, R.C. § 4928.66 (the "Statute") requires the Company to meet certain energy efficiency and peak demand reduction ("EE&PDR") benchmarks; and

WHEREAS, when complying with certain EE&PDR benchmarks the Company may include the effects of mercantile customer-sited EE&PDR projects; and

WHEREAS, Customer has certain customer-sited demand reduction, demand response, or energy efficiency project(s) as set forth in attached Exhibit 1 (the "Customer Energy Project(s)") that it desires to commit to the Company for integration into the Company's Energy Efficiency & Peak Demand Reduction Program Portfolio Plan ("Company Plan") that the Company will implement in order to comply with the Statute; and

WHEREAS, the Customer, pursuant to the Public Utilities Commission of Ohio's ("Commission") September 15, 2010 Order in Case No. 10-834-EL-BEC, desires to pursue a cash rebate of some of the costs pertaining to its Customer Energy Project(s) ("Cash Rebate") and is committing the Customer Energy Project(s) as a result of such incentive.

WHEREAS, Customer's decision to commit its Customer Energy Project(s) to the Company for inclusion in the Company Plan has been reasonably encouraged by the possibility of a Cash Rebate.

WHEREAS, in consideration of, and upon receipt of, said cash rebate, Customer will commit the Customer Energy Project(s) to the Company and will comply with all other terms and conditions set forth herein.

NOW THEREFORE, in consideration of the mutual promises set forth herein, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties, intending to be legally bound, do hereby agree as follows:

1. **Customer Energy Projects.** Customer hereby commits to the Company and Company accepts for integration into the Company Plan the Customer Energy Project(s) set forth on attached Exhibit 1. Said commitment shall be for the life of the Customer Energy Project(s). Company will incorporate said project(s) into the Company Plan to the extent that such projects qualify. In so committing, and as evidenced by the affidavit attached hereto as Exhibit A, Customer acknowledges that the information provided to the Company about the Customer Energy Project(s) is true and accurate to the best of its knowledge.

- a. By committing the Customer Energy Project(s) to the Company, Customer acknowledges and agrees that the Company shall control the use of the kWh and/or kW reductions resulting from said projects for purposes of complying with the Statute. By committing the Customer Energy Project(s), Customer further acknowledges and agrees that the Company shall take ownership of the energy efficiency capacity rights associated with said Project(s) and shall, at its sole discretion, aggregate said capacity into the PJM market through an auction. Any proceeds from any such bids accepted by PJM will be used to offset the costs charged to the Customer and other of the Company's customers for compliance with state mandated energy efficiency and/or peak demand requirements
 - b. The Company acknowledges that some of Customer's Energy Projects contemplated in this paragraph may have been performed under certain other federal and/or state programs in which certain parameters are required to be maintained in order to retain preferential financing or other government benefits (individually and collectively, as appropriate, "Benefits"). In the event that the use of any such project by the Company in any way affects such Benefits, and upon written request from the Customer, Company will release said Customer's Energy Project(s) to the extent necessary for Customer to meet the prerequisites for such Benefits. Customer acknowledges that such release (i) may affect Customer's cash rebate discussed in Article 3 below; and (ii) will not affect any of Customer's other requirements or obligations.
 - c. Any future Customer Energy Project(s) committed by Customer shall be subject to a separate application and, upon approval by the Commission, said projects shall become part of this Agreement.
 - d. Customer will provide Company or Company's agent(s) with reasonable assistance in the preparation of the Commission's standard joint application for approval of this Agreement ("Joint Application") that will be filed with the Commission, with such Joint Application being consistent with then current Commission requirements.
 - e. Upon written request and reasonable advance notice, Customer will grant employees or authorized agents of either the Company or the Commission reasonable, pre-arranged access to the Customer Energy Project(s) for purposes of measuring and verifying energy savings and/or peak demand reductions resulting from the Customer Energy Project(s). It is expressly agreed that consultants of either the Company or the Commission are their respective authorized agents.
2. **Joint Application to the Commission.** The Parties will submit the Joint Application using the Commission's standard "Application to Commit Energy Efficiency/Peak Demand Reduction Programs" ("Joint Application") in which they will seek the Commission's approval of (i) this Agreement; (ii) the commitment of the Customer Energy Project(s) for inclusion in the Company Plan; and (iii) the Customer's Cash Rebate.

The Joint Application shall include all information as set forth in the Commission's standard form which, includes without limitation:

- i. A narrative description of the Customer Energy Project(s), including but not limited to, make, model and year of any installed and/or replaced equipment;
- ii. A copy of this Agreement; and
- iii. A description of all methodologies, protocols, and practices used or proposed to be used in measuring and verifying program results.

3. **Customer Cash Rebate.** Upon Commission approval of the Joint Application, Customer shall provide Company with a W-9 tax form, which shall at a minimum include Customer's tax identification number. Within the greater of 90 days of the Commission's approval of the Joint Application or the completion of the Customer Energy Project, the Company will issue to the Customer the Cash Rebate in the amount set forth in the Commission's Finding and Order approving the Joint Application.
- a. Customer acknowledges: i) that the Company will cap the Cash Rebate at the lesser of 50% of Customer Energy Project(s) costs or \$250,000; ii) the maximum rebate that the Customer may receive per year is \$500,000 per Taxpayer Identification Number per utility service territory; and iii) if the Customer Energy Project qualifies for a rebate program approved by the Commission and offered by the Company, Customer may still elect to file such project under the Company's mercantile customer self direct program, however the Cash Rebate that will be paid shall be discounted by 25%; and
 - b. Customer acknowledges that breaches of this Agreement, include, but are not limited to:
 - i. Customer's failure to comply with the terms and conditions set forth in the Agreement, or its equivalent, within a reasonable period of time after receipt of written notice of such non-compliance;
 - ii. Customer knowingly falsifying any documents provided to the Company or the Commission in connection with this Agreement or the Joint Application.
 - c. In the event of a breach of this Agreement by the Customer, Customer agrees and acknowledges that it will repay to the Company, within 90 days of receipt of written notice of said breach, the full amount of the Cash Rebate paid under this Agreement. This remedy is in addition to any and all other remedies available to the Company by law or equity.
4. **Termination of Agreement.** This Agreement shall automatically terminate:
- a. If the Commission fails to approve the Joint Agreement;
 - b. Upon order of the Commission; or
 - c. At the end of the life of the last Customer Energy Project subject to this Agreement.

Customer shall also have an option to terminate this Agreement should the Commission not approve the Customer's Cash Rebate, provided that Customer provides the Company with written notice of such termination within ten days of either the Commission issuing a final appealable order or the Ohio Supreme Court issuing its opinion should the matter be appealed.

5. **Confidentiality.** Each Party shall hold in confidence and not release or disclose to any person any document or information furnished by the other Party in connection with this Agreement that is designated as confidential and proprietary ("Confidential Information"), unless: (i) compelled to disclose such document or information by judicial, regulatory or administrative process or other provisions of law; (ii) such document or information is generally available to the public; or (iii) such document or information was available to the receiving Party on a non-confidential basis at the time of disclosure.
- a. Notwithstanding the above, a Party may disclose to its employees, directors, attorneys, consultants and agents all documents and information furnished by the other Party in connection with this Agreement, provided that such employees, directors, attorneys,

consultants and agents have been advised of the confidential nature of this information and through such disclosure are deemed to be bound by the terms set forth herein.

- b. A Party receiving such Confidential Information shall protect it with the same standard of care as its own confidential or proprietary information.
 - c. A Party receiving notice or otherwise concluding that Confidential Information furnished by the other Party in connection with this Agreement is being sought under any provision of law, to the extent it is permitted to do so under any applicable law, shall endeavor to: (i) promptly notify the other Party; and (ii) use reasonable efforts in cooperation with the other Party to seek confidential treatment of such Confidential Information, including without limitation, the filing of such information under a valid protective order.
 - d. By executing this Agreement, Customer hereby acknowledges and agrees that Company may disclose to the Commission or its Staff any and all Customer information, including Confidential Information, related to a Customer Energy Project, provided that Company uses reasonable efforts to seek confidential treatment of the same.
6. Taxes. Customer shall be responsible for all tax consequences (if any) arising from the payment of the Cash Rebate.
7. Notices. Unless otherwise stated herein, all notices, demands or requests required or permitted under this Agreement must be in writing and must be delivered or sent by overnight express mail, courier service, electronic mail or facsimile transmission addressed as follows:

If to the Company:

FirstEnergy Service Company
76 South Main Street
Akron, OH 44308
Attn: Victoria Nofziger
Telephone: 330-384-4684
Fax: 330-761-4281
Email: ymnofziger@firstenergycorp.com

If to the Customer:

Key Center Properties LLC
127 Public Square Suite 2727
Cleveland, Ohio 44114
Attn: Curt Sonntag
Telephone: 216-687-0500 x202
Fax: 216-687-1227
Email: CSonntag@JRESGroup.com

or to such other person at such other address as a Party may designate by like notice to the other Party. Notice received after the close of the business day will be deemed received on the next business day; provided that notice by facsimile transmission will be deemed to have been received by the recipient if the recipient confirms receipt telephonically or in writing.

8. **Authority to Act.** The Parties represent and warrant that they are represented by counsel in connection with this Agreement, have been fully advised in connection with the execution thereof, have taken all legal and corporate steps necessary to enter into this Agreement, and that the undersigned has the authority to enter into this Agreement, to bind the Parties to all provisions herein and to take the actions required to be performed in fulfillment of the undertakings contained herein.
9. **Non-Waiver.** The delay or failure of either party to assert or enforce in any instance strict performance of any of the terms of this Agreement or to exercise any rights hereunder conferred, shall not be construed as a waiver or relinquishment to any extent of its rights to assert or rely upon such terms or rights at any later time or on any future occasion.
10. **Entire Agreement.** This Agreement, along with related exhibits, and the Company's Rider DSE, or its equivalent, as amended from time to time by the Commission, contains the Parties' entire understanding with respect to the matters addressed herein and there are no verbal or collateral representations, undertakings, or agreements not expressly set forth herein. No change in, addition to, or waiver of the terms of this Agreement shall be binding upon any of the Parties unless the same is set forth in writing and signed by an authorized representative of each of the Parties. In the event of any conflict between Rider DSE or its equivalent and this document, the latter shall prevail.
11. **Assignment.** Customer may not assign any of its rights or obligations under this Agreement without obtaining the prior written consent of the Company, which consent will not be unreasonably withheld. No assignment of this Agreement will relieve the assigning Party of any of its obligations under this Agreement until such obligations have been assumed by the assignee and all necessary consents have been obtained.
12. **Severability.** If any portion of this Agreement is held invalid, the Parties agree that such invalidity shall not affect the validity of the remaining portions of this Agreement, and the Parties further agree to substitute for the invalid portion a valid provision that most closely approximates the economic effect and intent of the invalid provision.
13. **Governing Law.** This Agreement shall be governed by the laws and regulations of the State of Ohio, without regard to its conflict of law provisions.
14. **Execution and Counterparts.** This Agreement may be executed in multiple counterparts, which taken together shall constitute an original without the necessity of all parties signing the same page or the same documents, and may be executed by signatures to electronically or telephonically transmitted counterparts in lieu of original printed or photocopied documents. Signatures transmitted by facsimile shall be considered original signatures.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed by their duly authorized officers or representatives as of the day and year set forth below.

The Cleveland Electric Illuminating Company_
(Company)

By:

John C. Lurgu

Title: V.P. Of Energy Efficiency

Date:

2-3-14

Curt Sonntag_
(Customer)

By:

Curt Sonntag Agent

Title: Chief Engineer

Date:

11-19-13

GABRIELLE SMITH

Notary Public, State of Ohio

My Commission Expires Oct. 24, 2015

Gabrielle Smith 11/19/13

Affidavit of Key Center Properties LLC -- Exhibit A

STATE OF OHIO)
) SS:
COUNTY OF CUYAHOGA)

I, Curt Sonntag, being first duly sworn in accordance with law, deposes and states as follows:

1. I am the Chief Engineer, as Agent of Key Center Properties LLC ("Customer") As part of my duties, I oversee energy related matters for the Customer.
2. The Customer has agreed to commit certain energy efficiency projects to The Cleveland Electric Illuminating Company ("Company"), which are the subject of the agreement to which this affidavit is attached ("Project(s)").
3. In exchange for making such a commitment, the Company has agreed to provide Customer with Cash ("Incentive"). This Incentive was a critical factor in the Customer's decision to go forward with the Project(s) and to commit the Project(s) to the Company.
4. All information related to said Project(s) that has been submitted to the Company is true and accurate to the best of my knowledge.

FURTHER AFFIANT SAYETH NAUGHT.

Curt Sonntag 11-19-17
Agent

Sworn to before me and subscribed in my presence this 19th day of 11, 2013.

Gabrielle Smith
Notary

GABRIELLE SMITH
Notary Public, State of Ohio
My Commission Expires Oct. 24, 2015

This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

4/9/2014 2:14:56 PM

in

Case No(s). 14-0134-EL-EEC

Summary: Application to Commit Energy Efficiency/Peak Demand Reduction Programs of The Cleveland Electric Illuminating Company and Key Center Properties LLC - Public Square North electronically filed by Ms. Jennifer M. Sybyl on behalf of The Cleveland Electric Illuminating Company and Key Center Properties LLC - Public Square North