



Case No.: 10-1655-EL-EEC

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 implemented during the prior three calendar years.

Completed applications requesting the cash rebate reasonable arrangement option (Option 1) in lieu of an exemption from the 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 electric utilities' energy efficiency rider option (Option 2) will not qualify for the 60-day automatic approval.

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.

If you consider some of the items requested in the application to be confidential or trade secret information, please file a copy of the application under seal, along with a motion for protective order pertaining to the material you believe to be confidential. Please also file a copy of the application in the public docket, with the information you believe to be confidential redacted.

Section 1: Company Information

Name: KENYON COLLEGE

Principal address: 302 - B College Park Street, Gambier, Oh 43022

Address of facility for which this energy efficiency program applies: 100 College Park Dr, Gambier, Oh 43022

Name and telephone number for responses to questions:

Everett (Ed) E. Neal, Kenyon College, (740) 427-5868

Electricity use by our company (at least one must apply to your company – check the box or boxes that apply):

- ☒ We use more than seven hundred thousand kilowatt hours per year at our facility. (Please attach documentation.)

See Confidential and Proprietary Attachment 4 – Calculation of Rider Exemption and UCT which provides the facility consumption for the last three years, benchmark kWh, and the last 12 months usage.

- ☐ We are part of a national account involving multiple facilities in one or more states. (Please attach documentation.) When checked, see Attachment 6 – Supporting Documentation for a listing of the customer's name and service addresses of other accounts in the AEP Ohio service territory.

Section 2: Application Information

A) We are filing this application (choose which applies):

- ☐ Individually, on our own.
- ☒ Jointly with our electric utility.

B) Our electric utility is: Ohio Power Company

The application to participate in the electric utility energy efficiency program is
"Confidential and Proprietary Attachment 3 – Self Direct Program Project
Completed Application."

C) We are offering to commit (choose which applies):

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

Section 3: Energy Efficiency Programs

A) Our energy efficiency program involves (choose whichever applies):

- ☒ Early replacement of fully functioning equipment with new equipment. (Provide the date on which you replaced your fully functioning equipment, 6/22/2009 and the date on which you would have replaced your equipment if you had not replaced it early. Please include a brief explanation for how you determined this future replacement date (or, if not known, please explain why this is not known)).

The remaining life of the equipment varies and is not known with certainty. The future replacement date is unknown and has historically been at the end of equipment life. Replacement was completed early to achieve energy savings and to reduce future maintenance costs.

- ☐ Installation of new equipment to replace equipment that needed to be replaced. We installed our new equipment on the following date(s):

- ☐ Installation of new equipment for new construction or facility expansion. We installed our new equipment on the following date(s):

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

- a) If you checked the box indicating that your 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:

Unit Quantity (watts) = Existing (watts x units) - Installed (watts x units)

kWh Reduction (Annual Savings) = Unit Quantity x (Deemed kWh/Unit)

Annual savings: 2,173,664 kWh

See Confidential and Proprietary Attachment 5 - Self Direct Program Project Calculation for annual energy savings calculations and Attachment 8 - Prescriptive Protocols for the work papers that provide all methodologies, protocols, and practices used in this application for prescriptive measures, as needed.

- b) If you checked the box indicating that you 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 the less efficient new equipment that you rejected in favor of the more efficient new equipment.

- c) If you checked the box indicating that your 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 you rejected in favor of the more efficient new equipment.

Section 4: Demand Reduction/Demand Response Programs

A) Our program involves (choose which applies):

- ☒ Coincident peak-demand savings from our energy efficiency program.
- ☐ Actual peak-demand reduction. (Attach a description and documentation of the peak-demand reduction.)
- ☐ Potential peak-demand reduction (choose which applies):

➤ Choose one or more of the following that applies:

- ☐ Our 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.
- ☐ Our 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) What is the date your peak demand reduction program was initiated?

The coincident peak-demand savings are permanent installations that reduce demand through energy efficiency and were installed on the date specified in Section 3 A above.

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

Unit Quantity (watts) = Existing (watts x units) – Installed (watts x units)

KW Demand Reduction = Unit Quantity (watts) x (Deemed KW/Unit (watts))

405.1 kW

See Confidential and Proprietary Attachment 5 – Self Direct Program Project Calculation for peak demand reduction calculation, and Attachment 8 – Prescriptive Protocols for the work papers that provide all methodologies, protocols, and practices used in this application for prescriptive measures, as needed.

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) We are applying for:

☒ Option 1: A cash rebate reasonable arrangement.

OR

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

B) The value of the option that we are seeking is:

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

☐ A cash rebate, based on avoided generation cost, of \$_____. (Attach documentation showing the methodology used to determine the cash rebate value and calculations showing how this payment amount was determined.)

OR

☒ A cash rebate valued at no more than 50% of the total project cost, which is equal to \$ 12,687.00. (Attach documentation and calculations showing how this payment amount was determined.)

See Confidential and Proprietary Attachment 5 – Self Direct Program Project Calculation for incentive calculations for this mercantile program.

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

- ☐ 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 an ongoing efficiency program that is practiced by our organization. (Attach documentation that establishes your organization's ongoing efficiency program. In order to continue the exemption beyond the initial 24 month period your organization 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: 37.1 (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 (capacity and energy) by the sum of our program costs and our electric utility's administrative costs to implement the program.

Our avoided supply costs were _____.

Our program costs were _____.

The utility's administrative 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 \$ 955,819.52

The utility's administrative costs were \$ 13,041.98

The utility's incentive costs/rebate costs were \$ 12,687.00.

Section 7: Additional Information

Please attach the following supporting documentation to this application:

- Narrative description of your program including, but not limited to, make, model, and year of any installed and replaced equipment.

See Attachment 1 - Self Direct Project Overview and Commitment for a description of the project. See Attachment 6 - Supporting Documentation, for the specifications of the replacement equipment Attachment 8 - Prescriptive Protocols for the work papers that provide all methodologies, protocols, and practices used in this application for prescriptive measures, as needed. Due to the length of time since the equipment replacement, the make, model and year of the replaced equipment is not available.

- A copy of the formal declaration or agreement that commits your program to the electric utility, including:

- 1) any confidentiality requirements associated with the agreement;

See Attachment 2 - Self Direct Program Project Blank Application including Rules and Requirements. All confidentiality requirements are pursuant to the Retrospective Projects/Rules and Requirements that are part of the signed application which is provided as Confidential and Proprietary Attachment 3 - Self Direct Program Project Completed Application.)

- 2) a description of any consequences of noncompliance with the terms of the commitment;

See Attachment 2 - Self Direct Program Project Blank Application including Rules and Requirements. All consequences of noncompliance are pursuant to the Retrospective Projects/Rules and Requirements that are part of the signed application which is provided as Confidential and Proprietary Attachment 3 - Self Direct Program Project Completed Application.

- 3) a description of coordination requirements between you and the electric utility with regard to peak demand reduction;

None required because the resources committed are permanent installations that reduce demand through increased efficiency during the Company's peak summer demand period generally defined as May through September and do not require specific coordination and communication to provide demand reduction capabilities to the Company.

- 4) permission by you 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,

See Attachment 2 - Self Direct Program Blank Application including Rules and Requirements granting such permission pursuant to the Retrospective Projects/Rules and Requirements that are part of the signed application which is provided as Confidential and Proprietary Attachment 3 - Self Direct Program Project Completed Application.

- 5) a commitment by you to provide an annual report on your energy savings and electric utility peak-demand reductions achieved.

See Attachment 1 - Self Direct Project Overview and Commitment for the commitment to comply with any information and compliance reporting requirements imposed by rule or as part of the approval of this arrangement by the Public Utilities Commission of Ohio.

- 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.

The Company applies the same methodologies, protocols, and practices to Self Direct Program retrospective projects that are screened and submitted for approval as it does to prospective projects submitted through its Prescriptive and Custom Programs. The Commission has not published a technical reference manual for use by the Company so deviations can not be identified. The project submitted is a prescriptive project and energy savings are determined as described in Confidential and Proprietary Attachment 5 - Self Direct Program Project Calculation, and Attachment 8 - Prescriptive Protocols for the work papers that provide all methodologies, protocols, and practices used in this application for prescriptive measures, as needed.



Public Utilities Commission

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

Case No.: 10-1655-EL-EEC

State of OHIO :

JEFFREY ROE, Affiant, being duly sworn according to law, deposes and says that:

1. I am the duly authorized representative of:

KEMA Services, Inc agent of Ohio Power
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.
3. I am aware of fines and penalties which may be imposed under Ohio Revised Code Sections 2921.11, 2921.31, 4903.02, 4903.03, and 4903.99 for submitting false information.

Jeffrey Roe ENERGY EFFICIENCY ENGINEER
Signature of Affiant & Title

Sworn and subscribed before me this 7th day of DECEMBER, 2010 Month/Year

Angie Doan
Signature of official administering oath

Angie Doan, outreach manager
Print Name and Title

My commission expires on 01-03-11



ANGIE DOAN
Notary Public, State of Ohio
My Commission Expires 01-03-11



Self Direct Project Overview & Commitment

The Public Utility Commission of Ohio (PUCO) will soon review your application for participation in AEP Ohio's Energy Efficiency/Peak Demand Response program. Based on your submitted project, please select by initialing one of the two options below, sign and fax to 877-607-0740.

Customer Name	KENYON COLLEGE		
Project Number	AEP-09-00978		
Customer Premise Address	100 COLLEGE PARK DR, GAMBIER, OH 43022		
Customer Mailing Address	302 - B College Park Street, Gambier, OH 43022		
Date Received	12/28/2009		
Project Installation Date	6/22/2009		
Annual kWh Reduction	2,173,664		
Total Project Cost	\$34,184.66		
Unadjusted Energy Efficiency Credit (EEC) Calculation	\$16,916.00		
Simple Payback (yrs)	0.2		
Utility Cost Test (UCT)	37.1		
<i>Please Choose One Option Below and Initial</i>			
Option 1 - Self Direct EEC: 75%	\$12,687.00	<input checked="" type="checkbox"/>	Initial: <i>SA</i>
Option 2 - EE/PDR Rider Exemption	N/A Months (After PUCO Approval)	<input type="checkbox"/> N/A	Initial: _____

Note: This is a one time selection. By selecting Option 1, the customer will receive payment in the amount stated above. Selection of Option 2: EE/PDR rider exemption, will result in the customer not being eligible to participate in any other energy efficiency programs offered by AEP Ohio during the period of exemption. In addition, the term of Option 2: EE/PDR rider exemption is subject to ongoing review for compliance and could be changed by the PUCO.

If Option 1 has been selected, will the Energy Efficiency Funds selected help you move forward with other energy efficiency projects?

YES NO

Project Overview:

The Self Direct (Prescriptive) project that the above has completed and applied is as follows.

- Replaced (2044) incandescent lamps with screw in CF lamps between 5 and 15W
- Replaced (6342) incandescent lamps with screw in CF lamps between 16 and 26W
- Replaced (48) incandescent lamps with screw in CF lamps greater than 27W

The documentation that was included with the application proved that the energy measures applied for were purchased and installed.

By signing this document, the Mercantile customer affirms its intention to commit and integrate the above listed energy efficiency resources into the utility's peak demand reduction, demand response, and energy efficiency programs. By signing, the Mercantile customer also agrees to serve as a joint applicant in any filings necessary to secure approval of this arrangement by the Public Utilities Commission of Ohio, and comply with any information and compliance reporting requirements imposed by rule or as part of that approval.

Ohio Power Company

By: *Jan J. Will*
Title: Manager
Date: 12/02/10

KENYON COLLEGE

By: *Ernest K. Mah*
Title: Sustainability Director
Date: 12-1-10



Self-Direct Program Project Application

Application Instructions

- Complete the application form for each installation account number.
- Complete the Self-Direct Program spreadsheet, which is in Excel format, fully describing each measure replaced and installed along with project costs, existing and new equipment inventories/operation descriptions, baseline and new usage measurements or detailed calculations, total energy and demand savings, and other specified information. It shall be the customer's responsibility to provide all necessary documentation, calculations, and energy impact and summer peak demand saving verification in order to justify the project for incentives.
- Complete the Self-Direct Program project description and include all required documentation including detailed customer-approved invoices, proof of purchase, receipts, technical specifications, studies/proposals, etc.
- NOTE: Sending inadequate invoice documentation, incomplete/incorrect forms, or backup information, including detailed energy and summer peak demand calculations, will delay review of the application. Contact AEP Ohio if you require additional assistance in completing the application.
- Submit all information to AEP Ohio. All completed submissions become the property of AEP Ohio. Make a copy of all documents for your records.

FORM SUBMITTAL: Please note all Rules and Requirements.
Return the signed, completed form and all required detailed documentation to:

Mail: AEP Ohio
6031 East Main Street, Suite 190
Columbus, OH 43213
Fax: 877-607-0740
Email: gridsmartohio@kema.com
Questions: Call 877-607-0739

Visit **gridsmartohio.com** for more information on the Self-Direct Program and other energy efficiency incentive programs offered by AEP Ohio.



Self-Direct Program Project Application

Project ID provided by AEP Ohio
PROJECT ID: _____

THIS INCENTIVE APPLICATION FORM IS VALID THROUGH DECEMBER 31, 2009.

☐ Pre-approval Application

☐ Final Application

SECTION 1: SELF-DIRECT CUSTOMER INFORMATION

Company Name		Contract Date of Acceptance	
Mailing Address			
City	State	Zip Code	
Contact Name (print)	Phone	Fax	
Contact E-mail*			
Building Type: <input type="checkbox"/> Office <input type="checkbox"/> School/College <input type="checkbox"/> Retail/Service <input type="checkbox"/> Restaurant <input type="checkbox"/> Hotel/Motel <input type="checkbox"/> Medical <input type="checkbox"/> Grocery <input type="checkbox"/> Warehouse <input type="checkbox"/> Light industry <input type="checkbox"/> Heavy Industry <input type="checkbox"/> Government/Municipal <input type="checkbox"/> Other _____			

By signing here, I acknowledge the information on this application is accurate and complete. I confirm I have read, agree with and understand the Rules and Requirements of this application and I have the authority to execute on behalf of my company / corporation.

Customer Signature _____ Date _____

* By providing your e-mail address, you are granting AEP Ohio permission to send further e-mails regarding our programs and services

SECTION 2: COMPLETION AND PAYMENT INFORMATION

Attention to	Total Incentive Amount Requested \$ _____	
Taxpayer ID # of Recipient (if not a Corporation or Tax Exempt)	Total Project Cost \$ _____	Total Incremental Cost \$ _____
<input type="checkbox"/> Corporation (Inc, LLC, PC, etc.) <input type="checkbox"/> Tax Exempt <input type="checkbox"/> Other (Individual, Partnership – may receive 1099)	Total Annual kWh Claimed	kW Demand Reduction Claimed

SECTION 3: JOB SITE INFORMATION (where equipment was installed)

Job Site Name		Project Contact Name	
Job Site Address (physical location)		Project Contact Telephone	
City	State	Zip Code	Project Contact Email
Job Site AEP Ohio Account Number (primary account)		Job Site Premise Number	

SECTION 4: CONTRACTOR INFORMATION (equipment or service provider/ installer)

Contractor Name			
Contractor Street Address		City	State Zip Code
Contractor Contact Name	Contact Telephone	Contact Email	

SECTION 5: CUSTOMER ELECTION (CHOOSE ONE OPTION AND COMPLETE ASSOCIATED INFORMATION)

Option #1	<input type="checkbox"/> Incentive Payment	Incentive Calculation: \$ _____
Option #2	<input type="checkbox"/> Exemption From EE/PDR Rider	# of Months Exempted: _____ months (calculation provided by AEP Ohio)

Self-Direct Program Retrospective Projects / Rules and Requirements

Columbus Southern Power Company and Ohio Power Company are collectively known as AEP Ohio ("AEP Ohio"). AEP Ohio provides energy-efficiency incentives for the purchase and installation of qualifying cost-effective equipment in the customer's facility (the customer's "Commitment of Resources") under the Rules and Requirements provided in this incentive application and subject to regulatory approvals.

Customer Qualifications

The Self-Direct Program (the "Program") applies to customers served at AEP Ohio's retail electric rates who meet the minimum energy usage requirements of 700,000 kWh per year or who are part of a national account involving multiple facilities in one or more states. This application defines the Date of Acceptance.

Terms and Conditions

- THIS INCENTIVE APPLICATION FORM IS VALID FOR SUBMITTAL BY SELF-DIRECT CUSTOMERS UNTIL DECEMBER 31, 2009. AEP Ohio incentive programs may be changed or cancelled at any time without notice. The Customer and its contractor are solely responsible for contacting AEP Ohio to ask whether or not the program is still in effect and to verify program parameters.
- Customer agrees to commit all energy and demand resources identified in this application to AEP Ohio's energy and demand target / benchmarks as identified in Senate Bill 221.
- Incentive payments are available while program funding lasts.
- To ensure maximum program participation, AEP Ohio reserves the right to limit funding on a per project basis.
- Pre-approval by AEP Ohio is required.
- Incentive items must be installed on the AEP Ohio electric account listed on the application.
- The incentive payment shall be:
 - 75% of the calculated incentive under the Business Lighting or Custom Program, whichever is applicable to this project.
- In lieu of a one-time incentive payment, the customer may elect to seek an exemption from the Energy Efficiency / Peak Demand Reduction (EE/PDR) Rider for the associated electric account(s) for a defined period of time as stated on this Application. For this exemption, and as defined in the table below, the incentive payment amount is compared to the estimated net present value (NPV) of the customer's estimated EE/PDR rider obligation, as calculated by AEP Ohio. If exemption is elected, the customer is not eligible for other programs offered by AEP Ohio during the period of exemption. Unless additional resources are committed, the customer will, after the specified number of months on this Application, be subject to the EE/PDR Rider.
- If an incentive is elected, the customer remains in the EE/PDR rider for the period of time that an exemption would have been in effect and may also participate in other AEP Ohio programs.
- All equipment must be new; used or rebuilt equipment is not eligible for an incentive.
- Eligible measures must produce verifiable and persistent energy and/or demand reduction, for a period of no less than five (5) years from the date of installation, through an increase in efficiency or through the use of load-shifting technologies. Measurement and verification may be required.
- Ineligible measures:
 - Rely solely on changes in customer behavior and require no capital investment, or merely terminate existing processes, facilities and/or operations.
 - Are required by state or federal law, building or other codes, or are standard industry practices.
 - Involve fuel switching, plug loads, or generate electricity.
 - Are easily reverted / removed or are installed entirely for reasons other than improving energy efficiency.
 - Include other conditions to be determined by AEP Ohio.
- Projects submitted for retrospective claims must be installed and operating between January 1, 2006 and the Date of Acceptance into the Self-Direct Program. Incentive levels, as shown in the table below, are based on the calendar year of installation / operation. Customer shall provide proof of equipment installation / operation start-up.
- All applications are subject to AEP Ohio, its contractor(s) / agent(s), and the Public Utility Commission of Ohio (PUCO) review and approval prior to any incentives paid or exemption from the EE/PDR Rider under this program.

- Customer is allowed and encouraged to consider using all or a portion of the incentive payment, as received from AEP Ohio under this program, to help fund other customer-initiated energy efficiency and demand reduction projects in the future. Future projects can also qualify for incentives under the Business Lighting or Custom program.
- A signed final application with documentation verifying installation of the project including, but not limited to, equipment, invoices, approvals, and other related information must be submitted to AEP Ohio prior to application approval.
- The summer peak period is defined as weekday peak-demand hours (7:00 AM to 9:00 PM, May through September).
- Customers are encouraged to submit projects that warrant special treatment (i.e., non-typical projects) to be considered on a case-by-case basis by AEP Ohio.
- AEP Ohio reserves the right to randomly inspect customer facility(ies) for installation of materials listed on this incentive application and will need access to survey the installed project. Customer understands and agrees that Program installations may also be subject to inspections by the PUCO or their designee, and photographs of installation may be required. All documentation and verification is subject to strict confidentiality.
- If the inspection finds that customer did not comply with program rules and requirements, any incentive received under this Program must be returned to AEP Ohio including interest. Exemption from the rider will be voided as well. In addition, AEP Ohio reserves the right to withhold payment or exemption for projects that do not meet reasonable industry standards as determined by AEP Ohio.
- AEP Ohio reserves the right to refuse payment and participation if the customer or contractor violates program rules and procedures. AEP Ohio is not liable for incentives promised to customers as a result of program misrepresentation.
- The customer understands and agrees that all other terms and conditions, as specified in the application, including all attachments and exhibits attached to this application, which will serve as a contract for the customer's commitment of energy and demand resources to AEP Ohio, shall apply.
- AEP Ohio reserves the right to request additional backup information, supporting detail, calculations, manufacturer specification sheets or any other information prior to any incentive payment.
- Equipment could have been installed in retrofit, replacement, or new construction applications and must meet reasonable industry standards. All equipment / measures must meet minimum cost effectiveness requirements as defined or determined by AEP Ohio. Customer must also provide evidence of measure life.
- AEP Ohio will issue any approved incentives in the form of checks.
- Customer can not apply for incentives for future projects and elect after the fact to apply for exemption under this program.
- All documentation and verification is subject to strict confidentiality.
- All completed submissions become the property of AEP Ohio.

Disclaimers

AEP Ohio:

- Does not endorse any particular manufacturer, product or system design by offering these incentives.
- Will not be responsible for any tax liability imposed on the customer as a result of the payment of incentives. AEP Ohio will report incentives greater than \$45 income on IRS form 1099. Such incentives shall be taxable unless Customer 600 meets acceptable tax exemption criteria. Customers are encouraged to consult with their tax advisors about the taxability of any incentive payments.
- Does not expressly or implicitly warrant the performance of installed equipment (contact your contractor for detailed equipment warranties).
- Is not responsible for the proper disposal/recycling of any waste generated as a result of this project.
- Is not liable for any damage caused by the operation or malfunction of the installed equipment.
- Does not guarantee that a specific level of energy or cost savings will result from the implementation of energy conservation measures or the use of products funded under this program.

OPTION #1 - ONE-TIME INCENTIVE PAYMENT	
Incentive Levels (for retrospective projects completed since January 1, 2006)	75% of the calculated incentive payment under the current Business Lighting or Custom Programs, whichever is applicable.
Min / Max payback w/o incentive applied	1 year Min / 7 Year Max

OPTION #2 - EXEMPTION FROM EE / PDR RIDER
Exemption from the EE/PDR rider is determined by comparing the value of the one-time incentive payment with the estimated net present value (NPV) of the EE/PDR rider payments, as calculated by AEP Ohio, for the customer's associated electric account. This NPV is defined as the customer's financial contribution to AEP Ohio's efforts to reach EE/PDR targets. Exemption term will be rounded to the nearest month.

Self-Direct Program

Retrospective Project Description: Project _____ of _____

Project Descriptive Name	Project In-service Date
Affected Electric Account Number(s)	

Claimed Project Baseline (AEP Ohio will make the final determination of applicable baseline):

- ____ Retrofit (the project was an elective retrofit and the equipment was still operable)
- ____ Replacement (the project was a replacement of equipment at or near the end of its useful life)
- ____ New (the project was an addition of new equipment in an existing facility or new construction)

Describe the project including detail of energy savings equipment. Attach additional sheets if needed.

Describe the removed equipment and operating strategy. Attach additional sheets if needed.

Describe the installed equipment and operating strategy. Attach additional sheets if needed.

Describe your calculation method for energy savings. Attach additional sheets if needed.

In addition to electrical energy and/or demand reduction, other benefits of proposed project include:

- | | |
|---|--------------------------------------|
| ____ Conserves other utilities (gas, water, etc.) | ____ Meets environmental regulations |
| ____ Improves process flow | ____ Reduces labor |
| ____ Improves product quality | ____ Saves energy |
| ____ Increases production capacity | ____ Uses fewer raw materials |
| ____ Other _____ | |

Project Technical Specifications

(This sheet provides an example of required data collection. The Self-Direct spreadsheet provides additional guidance and streamlines the process for collecting, documenting and reporting this information to AEP Ohio, and it follows the format of this sheet. Please provide as much detail as possible on the Self-Direct spreadsheet to expedite review and processing of the requested incentive).

Please complete the Self-Direct spreadsheet for each measure installed and provide supporting documentation including engineering or equipment supplier studies, customer-approved invoices, purchase orders, detailed calculations of baseline and energy and peak summer demand savings. A detailed proposal and complete package will expedite review of application. This information is required by AEP Ohio and/or its consultants for project analysis.

	EQUIPMENT REMOVED OR LOWER EFFICIENCY OPTION	INSTALLED EQUIPMENT OR HIGHER EFFICIENCY OPTION
Equipment type		
Manufacturer of equipment		
Model number(s)		
Date of Removal / In-Service Date		
Age of equipment at removal		
Estimated remaining useful life at time of removal or installation		
Efficiency rating		
Nameplate data: kW, tons, HP, watts, etc.		
Quantity		
Annual operating hours		
Annual energy savings (kWh)		
Summer peak reduction (kW)*		
Annual electric bill savings (\$)		
COST BREAKOUT		
Equipment		
Engineering		
Installation		
Other (explain)		
TOTAL PROJECT COST		
Incremental Cost = Installed Option Total Cost – Removed Equipment or Lower Efficiency Option Total Cost		
<p>* Determination of peak demand reduction (kW) from non-HVAC equipment: For non-HVAC measures, calculate the average kW reduction over the period from 7 a.m. to 9 p.m., weekdays, from May 1 through September 30. The preferred calculation method will estimate hourly kW demands over the peak demand period, and average the results. However, if measures do not vary significantly during those hours, a less rigorous estimation process may be applied if approved in advance by the program.</p>		
<p>* Determination of peak demand reduction (kW) within HVAC systems: Calculate the maximum HVAC peak demand reduction that occurs between 7 a.m. to 9 p.m. on a weekday from May 1 through September 30.</p>		












































Compact Fluorescent Lamps

		Nominal Length Order			Case	Rated Life	Lumens	Temp.	Min. Start	Power						Warning	
Base	Watts	in.	Code	Description	Qty	Volt	Hours	Initial	Mean	K.	CRI	(°F)	Factor	THD	Additional Information	Notices	Footnotes
SELF-BALLASTED LAMPS																	
SPIRAL®																	
Q	Med	10	4.4	15829 FLE10HT3/2/827	10	120	8000	520	420	2700	82	5	0.6	120	T3 Spiral®, Boxed	153	1,7,8,9,10
				HLX/2/SW/CD	12	120	8000	520	420	2700	82	5	0.6	120	T3 Spiral®, Carded Single Pack	153	1,7,8,9,10
				HLX/2/SW/ 'K	3	120	8000	520	420	2700	82	5	0.6	120	T3 Spiral®, Carded Twin Pack	153	1,7,8,9,10
				HT3/2/841	10	120	8000	520	420	4100	82	5	0.6	120	T3 Spiral®, Boxed	153	1,7,8,9,10
				HT3/2/D/2PK	3	120	8000	500	400	6500	82	5	0.6	120	T3 Spiral®, Carded Twin Pack	153	1,7,8,9,10
C				80936 FLE10HT3/2/XL	10	120	12000	550	440	2700	82	5	0.6	120	T3 Spiral®, Boxed	153	1,7,8,9,10
				47430 FLE10HT3/2/XL/CD	12	120	12000	550	440	2700	82	5	0.6	120	T3 Spiral®, Carded Single Pack	153	1,7,8,9,10
				49671 FLE10HT3/2/XL2PK	3	120	12000	550	440	2700	82	5	0.6	120	T3 Spiral®, Carded Twin Pack	153	1,7,8,9,10
				86241 FLE10HT2/2/827	10	120	12000	580	464	2700	82	5	0.6	120	T2 Spiral®, Boxed	153	1,7,8,9,10
				85382 FLE10HT2/2/SW/CD	12	120	12000	580	464	2700	82	5	0.6	120	T2 Spiral®, Carded Single Pack	153	1,7,8,9,10
				85389 FLE10HT2/2/SW2PK	3	120	12000	580	464	2700	82	5	0.6	120	T2 Spiral®, Carded Twin Pack	153	1,7,8,9,10
				16460 FLE13HT3/2/SW/CD	12	120	8000	825	660	2700	82	5	0.6	120	T3 Spiral®, Carded Single Pack	153	1,7,8,9,10
				3HT3/2/SW/ PK	3	120	8000	825	660	2700	82	5	0.6	120	T3 Spiral®, Carded Twin Pack	153	1,7,8,9,10
				3HT3/2/10PK	10	120	8000	825	660	2700	82	5	0.6	120	T3 Spiral®, Consumer 10 Pack	153	1,7,8,9,10
				3HT2/2/827	10	120	8000	870	715	2700	82	5	0.6	120	T2 Spiral®, Boxed	153	1,7,8,9,10
E A				85383 FLE13HT2/2/SW/CD	12	120	8000	870	715	2700	82	5	0.6	120	T2 Spiral®, Carded Single Pack	153	1,7,8,9,10
				85390 FLE13HT2/2/SW2PK	3	120	8000	870	715	2700	82	5	0.6	120	T2 Spiral®, Carded Twin Pack	153	1,7,8,9,10
				40094 FLE10HT3/2/827	10	120	8000	950	765	2700	82	5	0.6	145	T3 Spiral®, Boxed	153	1,7,8,9,10
				HT3/2/SW/CD	12	120	8000	950	765	2700	82	5	0.6	145	T3 Spiral®, Carded Single Pack	153	1,7,8,9,10
				HT3/2/SW/2PK	3	120	8000	950	765	2700	82	5	0.6	145	T3 Spiral®, Carded Twin Pack	153	1,7,8,9,10
				16251 FLE15HT3/2/SW/3PK	3	120	8000	950	765	2700	82	5	0.6	145	T3 Spiral®, Carded 3 Pack	153	1,7,8,9,10
				16252 FLE15HT3/2/6H/4PK	3	120	6000	850	685	2700	82	5	0.6	145	6000 Hr Life, T3 Spiral®, Boxed Consumer 4 Pack	153	1,7,8,9,10
				25183 FLE15HT3/2/841	10	120	8000	950	765	4100	82	5	0.6	145	T3 Spiral®, Boxed	153	1,7,8,9,10
				85394 FLE15HT3/2/D/2PK	3	120	8000	900	738	6500	82	5	0.6	145	T3 Spiral®, Carded Twin Pack	153	1,7,8,9,10
				80937 FLE15HT3/2/XL	10	120	12000	950	760	2700	82	5	0.6	145	T3 Spiral®, Boxed	153	1,7,8,9,10
B				47435 FLE15HT3/2/XL/CD	12	120	12000	950	760	2700	82	5	0.6	145	T3 Spiral®, Carded Single Pack	153	1,7,8,9,10
				5HT3/2/XL2PK	3	120	12000	950	760	2700	82	5	0.6	145	T3 Spiral®, Carded Twin Pack	153	1,7,8,9,10
				5HT2/2/827	10	120	12000	950	780	2700	82	5	0.6	145	T2 Spiral®, Boxed	153	1,7,8,9,10
				5HT2/2/SW/CD	12	120	12000	950	780	2700	82	5	0.6	145	T2 Spiral®, Carded Single Pack	153	1,7,8,9,10
				5HT2/2/SW2PK	3	120	12000	950	780	2700	82	5	0.6	145	T2 Spiral®, Carded Twin Pack	153	1,7,8,9,10
T			4.7	15834 FLE20HT3/2/827	10	120	8000	1200	965	2700	82	5	0.6	135	T3 Spiral®, Boxed	153	1,7,8,9,10
				15516 FLE20HT3/2/SW/CD	12	120	8000	1200	965	2700	82	5	0.6	135	T3 Spiral®, Carded Single Pack	153	1,7,8,9,10
				15518 FLE20HT3/2/SW/2PK	3	120	8000	1200	965	2700	82	5	0.6	135	T3 Spiral®, Carded Twin Pack	153	1,7,8,9,10
				16253 FLE20HT3/2/6H/4PK	3	120	6000	1150	925	2700	82	5	0.6	135	6000 Hr Life, T3 Spiral®, Boxed Consumer 4 Pack	153	1,7,8,9,10
				25186 FLE20HT3/2/841	10	120	8000	1200	965	4100	82	5	0.6	135	T3 Spiral®, Boxed	153	1,7,8,9,103
				5396 FLE20HT3/2/D/2PK	3	120	8000	1150	945	6500	82	5	0.6	135	T3 Spiral®, Carded Twin Pack	153	1,7,8,9,10
				80888 FLE20HT3/2/XL	10	120	12000	1300	1040	2700	82	5	0.6	135	T3 Spiral®, Boxed	153	1,7,8,9,10
				47442 FLE20HT3/2/XL/CD	12	120	12000	1300	1040	2700	82	5	0.6	135	T3 Spiral®, Carded Single Pack	153	1,7,8,9,10
				49684 FLE20HT3/2/XL2PK	3	120	12000	1300	1040	2700	82	5	0.6	135	T3 Spiral®, Carded Twin Pack	153	1,7,8,9,10
				47466 FLE20HT3/2/XL/D	12	120	12000	1300	1040	6500	82	5	0.6	135	T3 Spiral®, Carded Single Pack, Daylight	153	1,7,8,9,10
				80889 FLE23HT3/2/XL	10	120	12000	1600	1280	2700	82	5	0.6		T3 Spiral®, Boxed	153	1,7,8,9,10
				47445 FLE23HT3/2/XL/CD	12	120	12000	1600	1280	2700	82	5	0.6		T3 Spiral®, Carded Single Pack	153	1,7,8,9,10
				15836 FLE26HT3/2/827	10	120	8000	1750	1400	2700	82	5	0.6	120	T3 Spiral®, Boxed	153	1,7,8,9,10
				15517 FLE26HT3/2/SW/CD	12	120	8000	1750	1400	2700	82	5	0.6	120	T3 Spiral®, Carded Single Pack	153	1,7,8,9,10
				15519 FLE26HT3/2/SW/2PK	3	120	8000	1750	1400	2700	82	5	0.6	120	T3 Spiral®, Carded Twin Pack	153	1,7,8,9,10



Compact Fluorescent Lamps

		Nominal Length Order		Case Qty	Description	Case Volt	Rated Life Hours	Lumens		Color Temp.		Min. Start Temp. Power		Additional Information	Warning Notices	Footnotes																	
Base	Watts	in.	Code					Initial	Mean	K	CRI	(°F)	Factor				THD																
SELF-BALLASTED LAMPS (CONTINUED)																																	
SPIRAL® (CONTINUED)																																	
	Med	26	5.2	00262	FLE26HT3/2/SW/3PK	3	120	8000	1750	1400	2700	82	5	0.6	120	 T3 Spiral®, Carded 3 Pack	153	1,7,8,9,10															
				16254	FLE26HT3/2/6H/4PK	3	120	6000	1750	1400	2700	82	5	0.6	120	 6000 Hr Life, T3 Spiral®, Boxed Consumer 4 Pack	153	1,7,8,9,10															
				21845	FLE26HT3/2/10PK	10	120	8000	1700	1365	2700	82	5	0.6	120	 T3 Spiral®, Consumer 10 Pack	153	1,7,8,9,10															
				25195	FLE26HT3/2/841	10	120	8000	1750	1400	4100	82	5	0.6	120	 T3 Spiral®, Boxed	153	1,7,8,9,10															
				85397	FLE26HT3/2/D/2PK	3	120	8000	1600	1315	6500	82	5	0.6	120	 T3 Spiral®, Carded Twin Pack	153	1,7,8,9,10															
				80890	FLE26HT3/2/XL	10	120	12000	1700	1360	2700	82	5	0.6	120	 T3 Spiral®, Boxed	153	1,7,8,9,10															
				47446	FLE26HT3/2/XL/CD	12	120	12000	1700	1360	2700	82	5	0.6	120	 T3 Spiral®, Carded Single Pack	153	1,7,8,9,10															
				49685	FLE26HT3/2/XL2PK	3	120	12000	1700	1360	2700	82	5	0.6	120	 T3 Spiral®, Carded Twin Pack	153	1,7,8,9,10															
	29	6.3	81514	FLE29HLX/2/XL/827	10	120	12000	2200	1760	2700	82	5	0.6		 T4 Spiral®, Boxed	153	1,7,8,9,10																
			47459	FLE29HLX/2/XL/CD	12	120	12000	2200	1760	2700	82	5	0.6		 T4 Spiral®, Carded Single Pack	153	1,7,8,9,10																
			81515	FLE29HLX/2D3/827	10	120	10000	600	480	2700	82	5	0.6		 T4 Spiral®, Boxed, 3-way	155	1,7,8,9,10																
								1600	1280																								
								2200	1760																								
	42	6.4	80891	FLE42HLX/2/XL	10	120	12000	2700	2160	2700	82	5	0.6	170	 T4 Spiral®, Boxed	153	1,7,8,9,10																
			47452	FLE42HLX/2/XL/CD	12	120	12000	2700	2160	2700	82	5	0.6	170	 T4 Spiral®, Carded Single Pack	153	1,7,8,9,10																
			16107	FLE42HLX/VT/827	10	120	10000	2650	2275	2700	82	14	0.6	170	 BASE DOWN OPERATION ONLY, T4 Spiral®, Boxed	154	1,7,10,15																
BIAX®																																	
	Med	12	4.4	20702	FLE12TT3/827	10	120	15000	600	480	2700	82	5	0.6	120	 T3 Triple Biax®, Boxed	153	1,7,8,9,10,12															
				14	5.9	49884	FLE14TBX/2/SW/CD	12	120	8000	850	685	2700	82	5	0.6	120	 Triple Biax®, Carded Single Pack	153	1,7,8,9,10													
				15	4.9	12004	FLE15TT3/827	10	120	15000	900	720	2700	82	5	0.6	145	 T3 Triple Biax®, Boxed	153	1,7,8,9,10,12													
						12005	FLE15TT3/SW/CD	3	120	15000	900	720	2700	82	5	0.6	145	 T3 Triple Biax®, Carded Single Pack	153	1,7,8,9,10,12													
				20	5.5	12008	FLE20TT3/827	10	120	15000	1200	960	2700	82	5	0.6	130	 T3 Triple Biax®, Boxed	153	1,7,8,9,10,12													
						12009	FLE20TT3/SW/CD	3	120	15000	1200	960	2700	82	5	0.6	130	 T3 Triple Biax®, Carded Single Pack	153	1,7,8,9,10,12													
				6.9	49885	FLE20TBX/2/SW/CD	12	120	8000	1200	965	2700	82	5	0.6	120	 Triple Biax®, Carded Single Pack	153	1,7,8,9,10														
				24	5.6	23669	FLE24QBX/A/827	6	120	12000	1520	1290	2700	82	-9	0.6	170	 New Quad Biax® design, even shorter MOL, boxed	153	1,7,8,9,10,12													
27	6.9	49887	FLE27QBX/2/SW/CD	12	120	6000	1700	1365	2700	82	5	0.6	130	 Quad Biax®, Carded Single Pack	153	1,7,8,9,10																	
28	5.9	40351	FLE28QBX/LL/CD	3	120	12000	1750	1485	2700	82	-9	0.6	170	 Soft White, Quad Biax®, Carded, Standard Shell Ballast	153	1,7,8,9,10,12																	
			46270	FLE28QBX/A/827	6	120	12000	1750	1485	2700	82	-9	0.6	170	 Shorter MOL	153	1,7,8,9,10,12																
29	6.3	41457	FLE29QBX/DV/827	6	120	10000	1750	1500	2700	82	-9	0.6	170	 Dimming, Standard Shell Ballast	156	1,7,8,9,12,14																	
			45599	FLE29QBX/DV/827/CD	3	120	10000	1750	1500	2700	82	-9	0.6	170	 Dimming, Carded, Standard Shell Ballast	156	1,7,8,9,12,14																
REFLECTORS																																	
	Med	11	4.7	20704	FLE11/R20	10	120	10000	370	296	2700	82	5	0.6	120	 Soft White, R20 Glass Reflector	157	1,8,9,10,12															
				80892	FLE11/2/R20XL	10	120	10000	400	320	2700	82	5	0.6	120	 Soft White, R20 Glass Reflector, Boxed	157	1,8,9,10,12															
				47477	FLE11/2/R20XL/CD	12	120	10000	400	320	2700	82	5	0.6	120	 Soft White, R20 Glass Reflector, Carded Single Pack	157	1,8,9,10,12															
	15	5.5	49917	FLE15/A2/R30	6	120	10000	550	445	2700	82	-22	0.6	170	 Soft White, R30 Glass Reflector	157	1,8,9,10,12																
																		5.4	20708	FLE15/2/R30/SWCD	3	120	8000	720	580	2700	82	5	0.6	120	 Soft White, R30 Glass Reflector, Carded Single Pack	158	1,8,9,10,12
5.5	80893	FLE15/2/R30XL	10	120	10000	750	600	2700	82	5	0.6	120	 Soft White, R30 Glass Reflector, Boxed	157	1,8,9,10,12																		
	47478	FLE15/2/R30XL/CD	12	120	10000	750	600	2700	82	5	0.6	120	 Soft White, R30 Glass Reflector, Carded Single Pack	157	1,8,9,10,12																		
5.6	21709	FLE15/2/DV/R30	6	120	6000	720	580	2700	82	5	0.6	110	 Dimming, Soft White, R30 Glass Reflector, Boxed	165	1,8,9,12,14																		



Compact Fluorescent Lamps















Nominal Length Order		Case Qty	Description	Rated Life Hours	Lumens		Color Temp. K	CRI	Min. Start Temp. (°F)	Power		Additional Information	Warning Notices	Footnotes
Base Watts	in.				Initial	Mean				Factor	THD			

SELF-BALLASTED LAMPS (CONTINUED)

REFLECTORS (CONTINUED)

Med

N

15	5.6	21710	FLE15/2/DV/R30/SW/CD	3	120	6000	720	580	2700	82	5	0.6	110		Dimming, Soft White, R30 Glass Reflector, 165	1,8,9,12,14	
															Carded Single Pack		
		82	FLE23/A4/R40	6	120	10000	950	760	2700	82	-13	0.6	170		Soft White, R40 Glass Reflector	157	1,8,9,10,12
		38	FLE26/2/R40/SW/CD	3	120	6000	1300	1040	2700	82	5	0.6	120		Soft White, R40 Glass Reflector, Carded Single Pack	158	1,8,9,10,12
		80894	FLE26/2/R40XL	6	120	10000	1300	1040	2700	82	5	0.6	120		Soft White, R40 Glass Reflector, Boxed	157	1,8,9,10,12
		47479	FLE26/2/R40XL/CD	3	120	10000	1300	1040	2700	82	5	0.6	120		Soft White, R40 Glass Reflector, Carded Single Pack	157	1,8,9,10,12
	6.9	21716	FLE26/2/DV/R40	6	120	6000	1300	1040	2700	82	5	0.6	110		Dimming, Soft White, R40 Glass Reflector, Boxed	165	1,8,9,12,14
		21718	FLE26/2/DV/R40/SW/CD	3	120	6000	1300	1040	2700	82	5	0.6	110		Dimming, Soft White, R40 Glass Reflector, Carded Single Pack	165	1,8,9,12,14
	5.5	21739	FLE26/2/PAR38/SW/CD	3	120	6000	1200	970	2700	82	5	0.6	120		Soft White, Par 38 Glass Reflector, Carded Single Pack		1,8,9,12,16
	5.6	80895	FLE26/2/PAR38/XL	6	120	10000	1300	1040	2700	82	5	0.6			Soft White, Par 38 Glass Reflector, Boxed, Wet rated	166	1,8,9,12,16
		47483	FLE26/2/PAR38/XL	3	120	10000	1300	1040	2700	82	5	0.6			Soft White, Par 38 Glass Reflector, Carded Single Pack, Wet rated	166	1,8,9,12,16

GENURA®

Med	23	4.9	25418	EL23/R25/SW	6	120	15000	1100	880	2700	82	32	0.6	130		Genura® Electrodeless Design, Soft White	160 1,8,9,10
			12273	EL23/R25/WW	6	120	15000	1100	880	3000	82	32	0.6	130		Genura® Electrodeless Design, RE 830 Phosphor, Warm White	160 1,8,9,10

DECORATIVE SHAPES

Cand	5	4.8	16098	FLE5/2/CAC/827	10	120	6000	200	160	2700	82	5	0.6	145		Candle Shape, Candelabra Base, Boxed	157 1,8,10,12
Med	5	4.8	16099	FLE5/2/CAM/827	10	120	6000	200	160	2700	82	5	0.6	145		Candle Shape, Medium Base, Boxed	157 1,8,10,12
Cand	7	5.2	16103	FLE7/2/CAC/827	10	120	6000	370	296	2700	82	5	0.6	130		Candle Shape, Candelabra Base, Boxed	157 1,8,10,12
Med	7	5.2	16104	FLE7/2/CAM/827	10	120	6000	370	296	2700	82	5	0.6	130		Candle Shape, Medium Base, Boxed	157 1,8,10,12
Cand	9	5.4	85388	FLE9/2/CAC/SW/CD	12	120	6000	430	344	2700	82	5	0.6	125		Candle Shape, Candelabra Base, Carded Single Pack	157 1,8,10,12
			16105	FLE9/2/CAC/827	10	120	6000	430	344	2700	82	5	0.6	125		Candle Shape, Candelabra Base, Boxed	157 1,8,10,12
Med	9	5.4	47488	FLE9/2/CAM/XL/CD	12	120	10000	430	344	2700	82	5	0.6	125		Candle Shape, Medium Base, Carded Single Pack	157 1,8,10,12
			16106	FLE9/2/CAM/827	10	120	6000	430	344	2700	82	5	0.6	125		Candle Shape, Medium Base, Boxed	157 1,8,10,12
	11	4.4	47486	FLE11/2/A17XL/CD	12	120	10000	550	440	2700	82	5	0.6			A-Line Shape, Carded Single Pack	157 1,8,10,12
	11	4.8	47484	FLE11/2/G25XL/CD	12	120	10000	550	440	2700	82	5	0.6			Globe Shape, Carded Single Pack	157 1,8,10,12
			5.2 49894	FLE11/2/TC14/SW/CD	12	120	6000	520	420	2700	82	5	0.6	120		Post Light, Carded Single Pack	157 1,8,10,12
			5.2 49895	FLE11/2/TC14/BUG/CD	12	120	6000	520	420	2700	82	5	0.6	120		Bug Yellow Post Light, Carded Single Pack	157 1,8,10,12
	12	4.8	20703	FLE12/A19/827	10	120	10000	550	440	2700	82	5	0.6	120		A-Line Shape, Reduced Size, Boxed	157 1,8,10,12
	14	5	47464	FLE14/2/TC16/BUG	12	120	10000	750	600	2700	82	5	0.6			Bug Yellow Post Light, Carded Single Pack	157 1,8,10,12
	15	4.8	47487	FLE15/2/A21XL/CD	12	120	10000	825	660	2700	82	5	0.6			A-Line Shape, Carded Single Pack	157 1,8,10,12
			47485	FLE15/2/G25XL/CD	12	120	10000	800	640	2700	82	5	0.6			Globe Shape, Carded Single Pack	157 1,8,10,12
			4.7 21733	FLE15/2/A21/SW/CD	12	120	8000	850	689	2700	82	5	0.6	120		A-Line Shape, Carded Single Pack	158 1,8,10,12
			5.4 12010	FLE15/A19/827	6	120	10000	825	660	2700	82	5	0.6	145		A-Line Shape, Reduced Size, Boxed	157 1,8,10,12
			12011	FLE15/A19/SW/CD	3	120	10000	825	660	2700	82	5	0.6	145		A-Line Shape, Reduced Size, Carded Single Pack	157 1,8,10,12
	15	5.3	41325	FLE15/6/T19/827	10	120	6000	800	640	2700	84	32	0.6	170		Bullet	158 1,8,10,12
			5.8 12501	FLE15TBX/L/G29	6	120	12000	750	600	2700	82	-9	0.6	170		Soft White, G30 Globe Slimshell Ballast	157 1,8,10,12
			5.4 41546	FLE15/A3/G30	6	120	10000	730	590	2700	82	-9	0.6	170		Soft White, G30 Globe, Reduced Overall Length	157 1,8,10,12
			6 41464	FLE15/L/TC16/827	6	120	12000	850	680	2700	82	-9	0.6	170		Post Light, Slimshell Ballast	157 1,8,10,12




Compact Fluorescent Lamps

Nominal Length Order	Base	Watts	in.	Code	Description	Case Qty	Volt	Rated Life Hours	Lumens Initial	Mean	Color Temp. K	CRI	Min. Start Temp. Power (°F) Factor THD	Additional Information	Warning Notices	Footnotes
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


SELF-BALLASTED LAMPS (CONTINUED)

DECORATIVE SHAPES (CONTINUED)

Med	20	6.1	41456	FLE20/A2/A24/827	6	120	6000	1125	950	2700	82	0	0.6	170	 	A-Line Shape, Slimshell Ballast	157	1,8,10,12
			41441	FLE20/A2/A24/SW/CD 3	120	6000	1125	950	2700	82	0	0.6	170		A-Line Shape, Carded, Slimshell Ballast	157	1,8,10,12	

LAMPS AND ADAPTERS

CIRCLITE®

	Med	21	3.4	11307 FCA21/CD	4	120	10000	1200	1020	3000	82	0.5	20		Circlite, Carded, FC8T9/KB Replacement Lamp	163	1,7,10,11	
				48222 FCA21/D CD TRAY	4	120	10000								Circlite, Carded Tray Pack, FC8T9/KB Replacement Lamp	163	1,7,10,11	
		30	3.5	27251 FEA30CIR/SW/CD	4	120	10000	1900	1520	2700	82	32	0.6	170		Electronic Circlite, Carded, Replacement Lamp FC8T9	164	1,7,10,11

2D®-ELECTRONIC

Med	39	4.3	27253	FEA38/2D/3WAY/CD	4	120	10000	2780	2365	2700	82	32	0.5	2	3-Way, Carded Uses F382D/827 Replacement Lamp	164	1,3,7,10,11,12
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BRIGHT STICK® LIGHTING UNITS

	33	25	12257	FBS25/WX/PP	6		7500	725		3450	59				Bright Stik, White Lamp-In-Holder Unit with Standard 2-Prong Plug, Integral Lamp(1)*		1,10
			12263	FBS25/GS/PP	6		7500	470		3050	90				Bright Stik, Gro & Sho, Lamp-In-Holder Unit with Standard 2-Prong Plug, Integral Lamp (1)*		1,10
			47912	FBS25/BLB/PP	6		7500								Bright Stik, Blacklight Blue Lamp-In-Holder Unit with Standard 2-Prong Plug, Integral Lamp (1)*		1,10

Bulb	Base	Nominal Length Watts in.	Order Code	Description	Case Qty	Rated Life Hours	Additional Information	Warning Notices	Footnotes
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GERMICIDAL

T4	G23	5	3.35	16479	GBX5/UVC	100	8000	Clear, Preheat, 2 Pin Internal Starter, UVC Source	106	9, 16
		9	5.71	15877	GBX9/UVC	100	8000	Clear, Preheat, 2 Pin Internal Starter, UVC Source	106	9, 16
		11	8.46	15879	GBX11/UVC	100	8000	Clear, Preheat, 2 Pin Internal Starter, UVC Source	106	9, 16
	GH23	13	6.69	15881	GBX13/UVC	100	8000	Clear, Preheat, 2 Pin Internal Starter, UVC Source	106	9, 16
T6	2G11	18	8.8	15882	GBX18/UVC/2G11	40	8000	Clear, UVC Source	106	9, 16
		36	16.33	15883	GBX36/UVC/2G11	40	8000	Clear, UVC Source	106	9, 16
		55	21.1	15885	GBX55/UVC/2G11	25	8000	Clear, UVC Source	106	9, 16

BLACKLIGHT

T4	G23	5	3.35	42935	F9BX BL G23	10	10000	Blacklight UVA Source 2 pin Internal Starter	104	8
		11	5.71	42936	F11BX BL G23	10	10000	Blacklight UVA Source 2 pin Internal Starter	104	8
	GX23	13	8.46	42937	F13BX BL GX23	10	10000	Blacklight UVA Source 2 pin Internal Starter	104	8
T4	G24d-3	26	6.7	42938	F26DBX BL G24d-3	10	10000	Blacklight UVA Source 4 Pin Electronic	104	8
T6	2G11	24	12.8	42939	F24BX BL 2G11	10	10000	Blacklight UVA	104	8
		36	16.33	42940	F36BX BL 2G11	10	10000	Blacklight UVA	104	8
		55	21.1	42941	F55BX BL 2G11	10	10000	Blacklight UVA	104	8

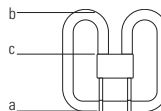


Compact Fluorescent Lamps

FOOTNOTES

Footnote

- 1 Fluorescent lamp lumens decline during life.
- 2 Based on 60Hz reference circuit.
- 3 10-watt, 16-watt and 28-watt 2D® lamps may be operated in any position. 21-watt, 38-watt, 39-watt and 55-watt 2D® lamps must be used with the leg marked (a) in the diagram below the bend (b), in order to avoid overheating the end of the cap marked (c).
- 4 Life ratings for the F18BX preheat lamps are based on operating the lamp at 3hrs. per start on a preheat type circuit. Operation on rapid start and instant start ballasts is not recommended.
- 5 Cold cathode resistance is approximately 6.0 Ohms.
- 6 4-Pin lamp minimum starting temperature is a function of the ballast. Most ballasts are rated with a minimum starting temperature of 50°F (10°C). Ballasts are also available that provide reliable starting to 0°F (-18°C) and -20°F (-29°C).
- 7 Most one piece self ballasted lamps for incandescent sockets and plug-in lamps with screw-in adapters do not work with clip-on shades.
- 8 Lumens on one piece self ballasted lamp systems are measured base up.
- 9 Best performance if operated base up and at 77°F (25°C) ambient temperature.
- 10 Use only on 120V, 60Hz circuits. Do not use on dimming circuits, photocells or timers. Do not use in wet locations.
- 11 Adapters rated at 40,000 hours life.
- 12 Amalgam products experience stable brightness over a wider temperature range and in various operating positions.
- 13 Life ratings are based on operating the lamp at 3hrs. per start on a rapid start type ballast. Life rating on a preheat or instant start ballast is 25% lower.
- 14 Use only on 120V, 60Hz circuits. Do not use on with photocells or timers. Do not use in wet locations.
- 15 These lamps are only recommended for use with single lamp ballasts or parallel wired 2-lamp ballasts.
- 16 UL Listed for wet locations. Use only on 120V, 60Hz circuits. Do not use on dimming circuits, photocells or timers.
- 17 Max. bulb wall temperature not to exceed 180°C. Consult GE sales representative for further information.



WARNING AND CAUTION NOTICES

151

⚠ CAUTION

Lamp may shatter and cause injury if broken

- Remove and install by grasping only plastic portion of the lamp

152

⚠ CAUTION

Risk of electric shock

- Do not use where directly exposed to water
- Do not open - no user serviceable parts inside

Lamp may shatter and cause injury if broken

- Remove and install by grasping only plastic portion of the lamp

This product complies with Part 18 of the FCC Rules, but may cause interference to radios, televisions, wireless telephones, and remote controls. Avoid placing this product near these devices. If interference occurs, move the product away from the device or plug either into a different outlet. Do not install this product near maritime safety equipment or other critical navigation or communication equipment operating between 0.45-30 MHz. Not intended for use with emergency exit fixtures or lights, electronic timers, photocells, dimmers, or in totally enclosed recessed fixtures.

153

⚠ CAUTION

Risk of electric shock

- Do not use where directly exposed to water
- Do not open - no user serviceable parts inside

Lamp may shatter and cause injury if broken

- Remove and install by grasping only plastic portion of the lamp

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154

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- Do not use where directly exposed to water
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safety equipment or other critical navigation or communication equipment operating between 0.45 - 30 MHz. Not intended for use with emergency exit fixtures or lights, in totally enclosed recessed fixtures, or with dimmers

155

⚠ CAUTION

Risk of electric shock

- Do not use where directly exposed to water
- Do not open - no user serviceable parts inside

Lamp may shatter and cause injury if broken

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156

⚠ CAUTION

Risk of electric shock

- Do not use where directly exposed to water
- Do not open - no user serviceable parts inside

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This product complies with Part 18 of the FCC Rules, but may cause interference to radios, televisions, wireless telephones, and remote controls. Avoid placing this product near these devices. If interference occurs, move the product away from the device or plug either into a different outlet. Do not install this product near maritime safety equipment or other critical navigation or communication equipment operating between 0.45-30 MHz. Not intended for use with emergency exit fixtures or lights, electronic timers, photocells, or in totally enclosed recessed fixtures.

157

⚠ CAUTION

Risk of electric shock

- Do not open - no user serviceable parts inside
- Do not use where directly exposed to water or outdoors without an enclosed fixture

This product complies with Part 18 of the FCC Rules, but may cause interference to radios, televisions, wireless telephones, and remote controls. Avoid placing this product near these devices. If interference occurs, move the product away from the device or plug either into a different outlet. Do not install this product near maritime safety equipment or other critical navigation or communication equipment operating between 0.45-30 MHz. Not intended for use with emergency exit fixtures or lights, electronic timers, photocells, or with dimmers.



Compact Fluorescent Lamps

WARNING AND CAUTION NOTICES (CONTINUED)

158**▲ CAUTION****Risk of electric shock**

- Do not open - no user serviceable parts inside
- Do not use where directly exposed to water or outdoors without an enclosed fixture

This product complies with Part 18 of the FCC Rules, but may cause interference to radios, televisions, wireless telephones, and remote controls. Avoid placing this product near these devices. If interference occurs, move the product away from the device or plug either into a different outlet. Do not install this product near maritime safety equipment or other critical navigation or communication equipment operating between 0.45-30 MHz. Not intended for use with emergency exit fixtures or lights, electronic timers, photocells, dimmers, or in totally enclosed recessed fixtures.

159**▲ CAUTION****Risk of electric shock**

- Do not open - no user serviceable parts inside
- Do not use in wet locations
- Use indoors only

Risk of fire

- Do not use this adapter on dimmers, electronic timers, or photocells

Added weight may cause instability of free-standing portable lamps. Use only with portable lamps in which the distance from the bottom of the base to the top of the lamp holder does not exceed three times the base width and which are provided with lamp shades. Not intended for use with emergency exit fixtures or lights.

160**▲ CAUTION****Risk of electric shock**

- Do not use where directly exposed to water
- Do not open - no user serviceable parts inside

Lamp may shatter and cause injury if broken

- Remove and install by grasping only plastic portion of the lamp

This product may cause interference to radio equipment operating in the frequency range of 2.2 - 2.8 MHz. Avoid placing this product near these devices. To reduce the possibility of radio interference to maritime safety communications, this device should not be installed:

- 1) On board cargo vessels of more than 300 tons
- 2) On board cargo vessels carrying more than 12 passengers for hire
- 3) At any medium frequency public coast station

Further, installation is not recommended on board vessels equipped with medium frequency, single sideband marine radios. If interference occurs, move this product away from the device or plug either into a different outlet. Such interference complaints should be reported to: Application Solutions at General Electric Company, 1975 Noble Road, Cleveland, Ohio 44112, or call toll free (800) 435-4448 from 8:00 am to 6:00 pm EST.

Not intended for use with emergency exit fixtures or lights, electronic timers, photocells, dimmers, or in totally enclosed recessed fixtures.

161**▲ CAUTION****Risk of electric shock**

- Do not use where directly exposed to water
- Do not open - no user serviceable parts inside
- Use indoors only

Lamp may shatter and cause injury if broken

- Remove and install by grasping only plastic portion of the lamp

This product complies with Part 18 of the FCC Rules, but may cause interference to radios, televisions, wireless telephones, and remote controls. Avoid placing this product near these devices. If interference occurs, move the product away from the device or plug either into a different outlet. Do not install this product near maritime safety equipment or other critical navigation or communication equipment operating between 0.45-30 MHz. Not intended for use with emergency exit fixtures or lights, electronic timers, photocells, in totally enclosed recessed fixtures, or with dimmers. Use only with portable lamps which are provided with lamp shades.

162**▲ CAUTION****Risk of electric shock**

- Do not use where directly exposed to water
- Do not open - no user serviceable parts inside
- Use indoors only

Lamp may shatter and cause injury if broken

- Remove and install by grasping only plastic portion of the lamp

This product complies with Part 18 of the FCC Rules, but may cause interference to radios, televisions, wireless telephones, and remote controls. Avoid placing this product near these devices. If interference occurs, move the product away from the device or plug either into a different outlet. Do not install this product near maritime safety equipment or other critical navigation or communication equipment operating between 0.45-30 MHz. Not intended for use with emergency exit fixtures or lights, electronic timers, photocells, in totally enclosed recessed fixtures, or with dimmers. Added weight may cause instability of free-standing portable lamps. Use only with portable lamps in which the distance from the bottom of the base to the top of the lamp holder does not exceed three times the base width. Use only with portable lamps which are provided with lamp shades.

163**▲ CAUTION****Risk of electric shock**

- Do not use where directly exposed to water
- Do not open - no user serviceable parts inside
- Use indoors only

Lamp may shatter and cause injury if broken

- Remove and install by grasping only plastic portion of the lamp

Added weight may cause instability of free-standing portable lamps. Use only with portable lamps in which the distance from the bottom of the base to the top of the lamp holder does not exceed three times the base width or with portable lamps which are provided with lamp shades. Not intended for use with emergency exit fixtures or lights, electronic timers, photocells, in totally enclosed recessed fixtures, or with dimmers.

164**▲ CAUTION****Risk of electric shock**

- Do not use where directly exposed to water
- Do not open - no user serviceable parts inside
- Use indoors only

Lamp may shatter and cause injury if broken

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This product complies with Part 18 of the FCC Rules, but may cause interference to radios, televisions, wireless telephones, and remote controls. Avoid placing this product near these devices. If interference occurs, move the product away from the device or plug either into a different outlet. Do not install this product near maritime safety equipment or other critical navigation or communication equipment operating between 0.45-30 MHz. Not intended for use with emergency exit fixtures or lights, in totally enclosed recessed fixtures, or with dimmers. Added weight may cause instability of free-standing portable lamps. Use only with portable lamps in which the distance from the bottom of the base to the top of the lamp holder does not exceed three times the base width. Use only with portable lamps which are provided with lamp shades.

165**▲ CAUTION****Risk of electric shock**

- Do not open - no user serviceable parts inside
- Do not use where directly exposed to water or outdoors without an enclosed fixture

This product complies with Part 18 of the FCC Rules, but may cause interference to radios, televisions, wireless telephones, and remote controls. Avoid placing this product near these devices. If interference occurs, move the product away from the device or plug either into a different outlet. Do not install this product near maritime safety equipment or other critical navigation or communication equipment operating between 0.45-30 MHz. Not intended for use with emergency exit fixtures or lights, electronic timers, photocells or in totally enclosed recessed fixtures.

166**▲ CAUTION****Risk of electric shock**

This product complies with Part 18 of the FCC Rules, but may cause interference to radios, televisions, wireless telephones, and remote controls. Avoid placing this product near these devices. If interference occurs, move the product away from the device or plug either into a different outlet. Do not install this product near maritime safety equipment or other critical navigation or communication equipment operating between 0.45-30 MHz. Not intended for use with emergency exit fixtures or lights, electronic timers, photocells, or with dimmers.



Compact Fluorescent Lamps

CFL CROSS REFERENCE

GE Description	Generic Description	Osram/Sylvania Description	Philips Description
ORDER THIS GE LAMP	IF YOU CURRENTLY USE THESE LAMPS		
LOW WATTAGE BIAX® 2-PIN			
F5BX/SPX27	CFT5W/G23/827	CF5DS/827	PL-S 5W/827
F5BX/SPX41	CFT5W/G23/841	CFDS/841	—
F7BX/SPX27	CFT7W/G23/827	CF7DS/827	PL-S 7W/827
F7BX/SPX35	CFT7W/G23/835	CF7DS/835	PL-S 7W/835
F7BX/SPX41	CFT7W/G23/841	CF7DS/841	PL-S 7W/841
F9BX/SPX27	CFT9W/G23/827	CF9DS/827	PL-S 9W/827
F9BX/SPX35	CFT9W/G23/835	CF9DS/835	PL-S 9W/835
F9BX/SPX41	CFT9W/G23/841	CF9DS/841	PL-S 9W/841
F13BX/SPX27	CFT13W/G23/827	CF13DS/827	PL-S 13W/827
F13BX/SPX30	CFT13W/G23/830	CF13DS/830	PL-S 13W/830
F13BX/SPX35	CFT13W/G23/835	CF13DS/835	PL-S 13W/835
F13BX/SPX41	CFT13W/G23/841	CF13DS/841	PL-S 13W/841
F13BX/SPX50	CFT13W/G23/850	CF13DS/850	PL-S 13W/850
F13BX/E/827	CFT13W/G23/827	—	—
F13BX/E/830	CFT13W/G23/835	—	—
F13BX/E/835	CFT13W/G23/830	—	—
F13BX/E/841	CFT13W/G23/841	—	—
F13BX/E/850	CFT13W/G23/850	—	—
HIGH LUMEN BIAX®			
F18BX/SPX30	FT18W/2G11/830	FT18DL/830	PL-L 18W/830
F18BX/SPX35	FT18W/2G11/835	FT18DL/835	PL-L 18W/835
F18BX/SPX41	FT18W/2G11/841	FT18DL/841	PL-L 18W/841
F18BX/SPX30/RS	FT18W/2G11/RS/830	FT18DL/830/RS	PL-L 18W/830
F18BX/SPX35/RS	FT18W/2G11/RS/835	FT18DL/835/RS	PL-L 18W/835
F18BX/SPX41/RS	FT18W/2G11/RS/841	FT18DL/841/RS	PL-L 18W/841
F18BX/SPX65/RS	FT18W/2G11/RS/865	—	—
F27BX/SPX3/RS	FT24W/2G11/830	FT24DL/830	PL-L 24W/830
F27BX/SPX35/RS	FT24W/2G11/835	FT24DL/835	PL-L 24W/835
F27BX/SPX41/RS	FT24W/2G11/841	FT24DL/841	PL-L 24W/841
F39BX/SPX3/RS	FT36W/2G11/830	FT36DL/830	PL-L 36W/830
F39BX/SPX3/RS	FT36W/2G11/835	FT36DL/835	PL-L 36W/835
F39BX/SPX3/RS	FT36W/2G11/841	FT36DL/841	PL-L 36W/841
F40/30BX/SPX30	FT40W/2G11/RS/830	FT40DL/830/RS	PL-L 40W/830/RS/IS
F40/30BX/SPX35	FT40W/2G11/RS/835	FT40DL/835/RS	PL-L 40W/835/RS/IS
F40/30BX/SPX41	FT40W/2G11/RS/841	FT40DL/841/RS	PL-L 40W/841/RS/IS
F40/30BX/SPX50/RS	FT40W/2G11/RS/850	—	—
F50/30BX/SPX30/RS	FT50W/2G11/RS/830	—	PL-L 50W/830/RS
F50/30BX/SPX35/RS	FT50W/2G11/RS/835	—	PL-L 50W/835/RS
F50/30BX/SPX41/RS	FT50W/2G11/RS/841	—	PL-L 50W/841/RS
F55BX/830	FT55W/2G11/RS/830	FT55DL/830	—
F55BX/835	FT55W/2G11/RS/835	FT55DL/835	—
F55BX/841	FT55W/2G11/RS/841	FT55DL/841	—

GE Description	Generic Description	Osram/Sylvania Description	Philips Description
ORDER THIS GE LAMP	IF YOU CURRENTLY USE THESE LAMPS		
DOUBLE BIAX® 2-PIN			
F9DBX23T4/SPX27	CFQ9W/G23/827	CF9DD/827	—
F9DBX23T4/841	CFQ9W/G23/841	—	—
F13DBX23T4/SPX27	CFQ13W/GX23/827	CF13DD/827	PL-C 13W/827/USA
F13DBX23T4/SPX30	CFQ13W/GX23/830	CF13DD/830	PL-C 13W/830/USA
F13DBX23T4/SPX35	CFQ13W/GX23/835	CF13DD/835	PL-C 13W/835/USA
F13DBX23T4/SPX41	CFQ13W/GX23/841	CF13DD/841	PL-C 13W/841/USA
F13DBXT4/SPX27	CFQ13W/G24d/827	—	PL-C 13W/827
F13DBXT4/SPX30	CFQ13W/G24d/830	—	PL-C 13W/830
F13DBXT4/SPX35	CFQ13W/G24d/835	—	—
F13DBXT4/SPX41	CFQ13W/G24d/841	—	—
F18DBXT4/SPX27	CFQ18W/G24d/827	CF18DD/827	PL-C 18W/827
F18DBXT4/SPX30	CFQ18W/G24d/830	CF18DD/830	PL-C 18W/830
F18DBXT4/SPX35	CFQ18W/G24d/835	CF18DD/835	PL-C 18W/835
F18DBXT4/SPX41	CFQ18W/G24d/841	CF18DD/841	PL-C 18W/841
F26DBXT4/SPX27	CFQ26W/G24d/827	CF26DD/827	PL-C 26W/827
F26DBXT4/SPX30	CFQ26W/G24d/830	CF26DD/830	PL-C 26W/830
F26DBXT4/SPX35	CFQ26W/G24d/835	CF26DD/835	PL-C 26W/835
F26DBXT4/SPX41	CFQ26W/G24d/841	CF26DD/841	PL-C 26W/841
F26DBX/E/827	CFQ26W/G24d/827	—	—
F26DBX/E/830	CFQ26W/G24d/830	—	—
F26DBX/E/835	CFQ26W/G24d/835	—	—
F26DBX/E/841	CFQ26W/G24d/841	—	—
DOUBLE BIAX® 4-PIN			
F13DBX/SPX27/4P	CFQ13W/G24q/827	CF13DD/E/827	PL-C 13W/827/4P
F13DBX/SPX30/4P	CFQ13W/G24q/830	CF13DD/E/830	PL-C 13W/830/4P
F13DBX/SPX35/4P	CFQ13W/G24q/835	CF13DD/E/835	PL-C 13W/835/4P
F13DBX/SPX41/4P	CFQ13W/G24q/841	CF13DD/E/841	PL-C 13W/841/4P
F18DBX/SPX27/4P	CFQ18W/G24q/827	CF18DD/E/827	PL-C 18W/827/4P
F18DBX/SPX30/4P	CFQ18W/G24q/830	CF18DD/E/830	PL-C 18W/830/4P
F18DBX/SPX35/4P	CFQ18W/G24q/835	CF18DD/E/835	PL-C 18W/835/4P
F18DBX/SPX41/4P	CFQ18W/G24q/841	CF18DD/E/841	PL-C 18W/841/4P
F26DBX/SPX27/4P	CFQ26W/G24q/827	CF26DD/E/827	PL-C 26W/827/4P
F26DBX/SPX30/4P	CFQ26W/G24q/830	CF26DD/E/830	PL-C 26W/830/4P
F26DBX/SPX35/4P	CFQ26W/G24q/835	CF26DD/E/835	PL-C 26W/835/4P
F26DBX/SPX41/4P	CFQ26W/G24q/841	CF26DD/E/841	PL-C 26W/841/4P



Compact Fluorescent Lamps

CFL CROSS REFERENCE

GE Description	Generic Description	Osram/Sylvania Description	Philips Description
ORDER THIS GE LAMP	IF YOU CURRENTLY USE THESE LAMPS		
TRIPLE BIAx® 4-PIN			
F13TBX/SPX27/A/4P	CFTR13W/GX24q/827	CF13DT/E/827	—
F13TBX/SPX27/A/4P	CFTR13W/GX24q/830	CF13DT/E/830	—
F13TBX/SPX27/A/4P	CFTR13W/GX24q/835	CF13DT/E/835	—
F13TBX/SPX27/A/4P	CFTR13W/GX24q/841	CF13DT/E/841	—
F18TBX/SPX27/A/4P	CFTR18W/GX24q/827	CF18DT/E/IN/827	PL-T 18W/827/4P
F18TBX/SPX30/A/4P	CFTR18W/GX24q/830	CF18DT/E/IN/830	PL-T 18W/830/4P
F18TBX/SPX35/A/4P	CFTR18W/GX24q/835	CF18DT/E/IN/835	PL-T 18W/835/4P
F18TBX/SPX41/A/4P	CFTR18W/GX24q/841	CF18DT/E/IN/841	PL-T 18W/841/4P
F26TBX/SPX27/A/4P	CFTR26W/GX24q/827	CF26DT/E/IN/827	PL-T 26W/827/4P
F26TBX/SPX30/A/4P	CFTR26W/GX24q/830	CF26DT/E/IN/830	PL-T 26W/830/4P
F26TBX/SPX35/A/4P	CFTR26W/GX24q/835	CF26DT/E/IN/835	PL-T 26W/835/4P
F26TBX/SPX41/A/4P	CFTR26W/GX24q/841	CF26DT/E/IN/841	PL-T 26W/841/4P
F32TBX/SPX27/A/4P	CFTR32W/GX24q/827	CF32DT/E/IN/827	PL-T 32W/827/4P
F32TBX/SPX30/A/4P	CFTR32W/GX24q/830	CF32DT/E/IN/830	PL-T 32W/830/4P
F32TBX/SPX35/A/4P	CFTR32W/GX24q/835	CF32DT/E/IN/835	PL-T 32W/835/4P
F32TBX/SPX41/A/4P	CFTR32W/GX24q/841	CF32DT/E/IN/841	PL-T 32W/841/4P
F42TBX/827/A/4P/EOL	CFTR42W/GX24q/827	CF42DT/E/IN/827	PL-T 42W/827/4P
F42TBX/830/A/4P/EOL	CFTR42W/GX24q/830	CF42DT/E/IN/830	PL-T 42W/830/4P
F42TBX/835/A/4P/EOL	CFTR42W/GX24q/835	CF42DT/E/IN/835	PL-T 42W/835/4P
F42TBX/841/A/4P/EOL	CFTR42W/GX24q/841	CF42DT/E/IN/841	PL-T 42W/841/4P
HIGH OUTPUT BIAx® 4-PIN			
F57QBX/827/A/4P/EOL	CFM57W/GX24q/827	CF57DT/E/IN/827	—
F57QBX/830/A/4P/EOL	CFM57W/GX24q/830	CF57DT/E/IN/830	—
F57QBX/835/A/4P/EOL	CFM57W/GX24q/835	CF57DT/E/IN/835	—
F57QBX/841/A/4P/EOL	CFM57W/GX24q/841	CF57DT/E/IN/841	—
F57QBX/850/A/4P/EOL	CFM57W/GX24q/850	CF57DT/E/IN/850	—
F70QBX/827/A/4P/EOL	CFM70W/GX24q/827	—	—
F70QBX/830/A/4P/EOL	CFM70W/GX24q/830	—	—
F70QBX/835/A/4P/EOL	CFM70W/GX24q/835	—	—
F70QBX/841/A/4P/EOL	CFM70W/GX24q/841	—	—
F70QBX/850/A/4P/EOL	CFM70W/GX24q/850	—	—



Compact Fluorescent Lamps

GE ENHANCED PLUG-IN PRODUCT CONVERSION

IF YOU USED TO ORDER GE PRODUCT:		NOW ORDER GE PRODUCT:		IF YOU USED TO ORDER GE PRODUCT:		NOW ORDER GE PRODUCT:	
PC	PC Description	New PC	New Description	PC	PC Description	New PC	New Description
37654	F5BX/SPX27/827	97551	F5BX/827/ECO	12870	F18DBX/SPX41/4P	97601	F18DBX/841/ECO4P
13575	F5BX/SPX27/CD	97552	F5BX/827/CDECO	46290	F26DBX/E/827	97602	F26DBX/E/827/ECO
37661	F5BX/SPX41/840	97553	F5BX/841/ECO	46291	F26DBX/E/830	97603	F26DBX/E/830/ECO
37846	F7BX/SPX27/827	97554	F7BX/827/ECO	46292	F26DBX/E/835	97604	F26DBX/E/835/ECO
13576	F7BX/SPX27/CD	97555	F7BX/827/CDECO	46294	F26DBX/E/841	97605	F26DBX/E/841/ECO
37659	F7BX/SPX35/835	97556	F7BX/835/ECO	35250	F26DBXT4/SPX27	97606	F26DBX/827/ECO
37660	F7BX/SPX41/840	97557	F7BX/841/ECO	35237	F26DBXT4/SPX30	97607	F26DBX/830/ECO
37651	F9BX/SPX27/827	97558	F9BX/827/ECO	35251	F26DBXT4/SPX35	97608	F26DBX/835/ECO
13577	F9BX/SPX27/CD	97559	F9BX/827/CDECO	35252	F26DBXT4/SPX41	97609	F26DBX/841/ECO
37652	F9BX/SPX35/835	97560	F9BX/835/ECO	35247	F26DBXT4SPX27/4P	97610	F26DBX/827/ECO4P
37653	F9BX/SPX41/840	97561	F9BX/841/ECO	35235	F26DBXT4SPX30/4P	97611	F26DBX/830/ECO4P
41645	F13BX/E/827	97562	F13BX/E/827/ECO	35248	F26DBXT4SPX35/4P	97612	F26DBX/835/ECO4P
41646	F13BX/E/830	97563	F13BX/E/830/ECO	35236	F26DBXT4SPX41/4P	97613	F26DBX/841/ECO4P
41649	F13BX/E/835	97564	F13BX/E/835/ECO	34391	F13TBX/SPX27/A/4	97619	F13TBX/827/A/ECO
41651	F13BX/E/841	97565	F13BX/E/841/ECO	34395	F13TBX/SPX30/A/4	97620	F13TBX/830/A/ECO
41652	F13BX/E850	97566	F13BX/E/850/ECO	34400	F13TBX/SPX35/A/4	97621	F13TBX/835/A/ECO
14583	F13BX/SPX27/CD	97567	F13BX/827/CDECO	34387	F13TBX/SPX41/A/4	97622	F13TBX/841/A/ECO
41757	F13BX/SPX35 100P	97568	F13BX/835 100P	47696	F13TBX827/4P/EOL	97623	F13TBX827/4P/ECO
17048	F13BX/SPX35/835	97569	F13BX/835/ECO	34392	F18TBX/SPX27/A/4	97624	F18TBX/827/A/ECO
41758	F13BX/SPX41 100P	97570	F13BX/841 100P	34396	F18TBX/SPX30/A/4	97625	F18TBX/830/A/ECO
20434	F13BX/SPX41/840	97571	F13BX/841/ECO	34405	F18TBX/SPX35/A/4	97626	F18TBX/835/A/ECO
11671	F13BX/SPX50	97572	F13BX/850/ECO	34385	F18TBX/SPX41/A/4	97627	F18TBX/841/A/ECO
14650	F13BXSPX27/827	97573	F13BX/827/ECO	48869	F18TBX827/4P/EOL	97628	F18TBX827/4P/ECO
17612	F13BXSPX30/830	97574	F13BX/830/ECO	34393	F26TBX/SPX27/A/4	97614	F26TBX/827/A/ECO
42065	F9DBX23T4/841	97575	F9DBX23/841/ECO	34397	F26TBX/SPX30/A/4	97615	F26TBX/830/A/ECO
12409	F9DBX23T4SPX27/8	97576	F9DBX23/827/ECO	34406	F26TBX/SPX35/A/4	97616	F26TBX/835/A/ECO
13578	F13DBX/SPX27/CD	97585	F13DBX/827/CD	34381	F26TBX/SPX41/A/4	97617	F26TBX/841/A/ECO
18844	F13DBX23T4/SPX27	97586	F13DBX23/827/ECO	48870	F26TBX827/4P/EOL	97618	F26TBX827/4P/ECO
10574	F13DBX23T4/SPX30	97587	F13DBX23/830/ECO	39377	F32TBX/SPX27A/4P	97629	F32TBX/827/A/ECO
18556	F13DBX23T4/SPX35	97588	F13DBX23/835/ECO	39378	F32TBX/SPX30A/4P	97630	F32TBX/830/A/ECO
20531	F13DBX23T4/SPX41	97589	F13DBX23/841/ECO	39379	F32TBX/SPX35A/4P	97631	F32TBX/835/A/ECO
18557	F13DBXT4/SPX27	97590	F13DBX/827/ECO	39380	F32TBX/SPX41A/4P	97632	F32TBX/841/A/ECO
12956	F13DBXT4/SPX30	97591	F13DBX/830/ECO	46312	F42TBX827A4P/EOL	97633	F42TBX/827/A/ECO
18559	F13DBXT4/SPX35	97592	F13DBX/835/ECO	46313	F42TBX830A4P/EOL	97634	F42TBX/830/A/ECO
20532	F13DBXT4/SPX41	97593	F13DBX/841/ECO	46314	F42TBX835A4P/EOL	97635	F42TBX/835/A/ECO
30035	F13DBX/SPX27/4P	97594	F13DBX/827/ECO4P	46315	F42TBX841A4P/EOL	97636	F42TBX/841/A/ECO
10580	F13DBX/SPX30/4P	97595	F13DBX/830/ECO4P	48861	F57QBX/827/A/4P/EOL	48861	F57QBX/827/A/ECO
30037	F13DBX/SPX35/4P	97596	F13DBX/835/ECO4P	48862	F57QBX/830/A/4P/EOL	48862	F57QBX/830/A/ECO
30038	F13DBX/SPX41/4P	97597	F13DBX/841/ECO4P	48863	F57QBX/835/A/4P/EOL	48863	F57QBX/835/A/ECO
12860	F18DBXT4/SPX27	97577	F18DBX/827/ECO	48864	F57QBX/841/A/4P/EOL	48864	F57QBX/841/A/ECO
12861	F18DBXT4/SPX30	97578	F18DBX/830/ECO	93404	F57QBX/850/A/4P/EOL	93404	F57QBX/850/A/ECO
12863	F18DBXT4/SPX35	97579	F18DBX/835/ECO	48865	F70QBX/827/A/4P/EOL	48865	F70QBX/827/A/ECO
12864	F18DBXT4/SPX41	97580	F18DBX/841/ECO	48866	F70QBX/830/A/4P/EOL	48866	F70QBX/830/A/ECO
12865	F18DBX/SPX27/4P	97598	F18DBX/827/ECO4P	48867	F70QBX/835/A/4P/EOL	48867	F70QBX/835/A/ECO
12866	F18DBX/SPX30/4P	97599	F18DBX/830/ECO4P	48868	F70QBX/841/A/4P/EOL	48868	F70QBX/841/A/ECO
12869	F18DBX/SPX35/4P	97600	F18DBX/835/ECO4P	93406	F70QBX/850/A/4P/EOL	93406	F70QBX/850/A/ECO



SpringLight™ Specifications

Compact Fluorescent

Applications:

Perfect for most applications: Use where a standard incandescent is used.

- + Table Lamps
- + Floor Lamps
- + Ceiling Fixtures
- + Wall Sconces
- + Vanities
- + Track Lighting



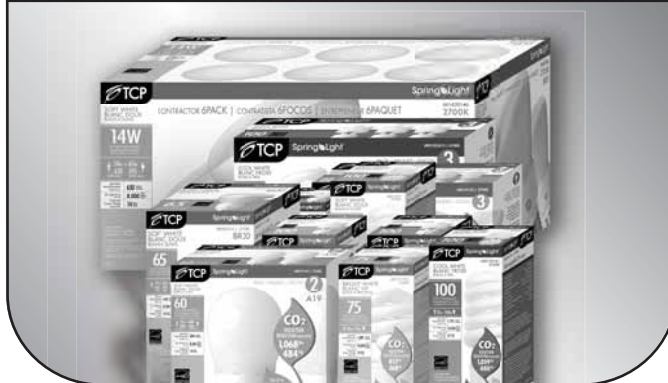
Features and Benefits:

- Long life, 10,000 hour average rated life – SpringLamps®
- 8,000 hour average rated life – globes/a-lamp/floodlights
- Lasts 9 years, based on 3 hours use per day – SpringLamps®
- Lasts 7 years, based on 3 hours use per day – globes/a-lamp/floodlights
- Replace less often, ideal for hard to reach places
- Lower maintenance costs for lamp replacements
- Saves up to 75% in energy costs compared to similar light output incandescent lamps
- Available in the following color temperatures: 2700K, 3500K, 4100K and 5000K
- Quick run-up time
- Medium base and compact height fits anywhere a standard incandescent fits
- Instant start, flicker free
- End of Life logic guards against violent failures
- World class phosphor insures high lumen output and excellent lumen maintenance
- Up to 23 watts approved for enclosed fixtures

Catalog Number

Notes

Type



Specifications: (at full brightness)

End of Life Protection	Yes
Ballast Type	Electronic
Starting Method	Modified Rapid Start
Input Line Voltage	120VAC
Input Line Frequency	50/60HZ
Lamp Life (rated)	10,000 Hours / 8,000 Hours
Color Temperature	2700°K
Color Rendering Index	82
Minimum Starting Temperature	-20°F, -29°C
Maximum Operating Temperature	160°F, 71°C
U.L. / C.U.L. Listed	Yes
FCC Compliance	47 C.F.R. Part 18
Lamp Operating Frequency	45 KHZ
Lamp Current Crest Factor	<1.60
Max. Open Circuit Voltage	600V
Total Harmonic Distortion	<150%
Power Factor Rated	>.50

Special Application Notes:

Up to 23 watt is UL approved for totally enclosed fixtures.

Use a 27 watt in an open recessed can.





SpringLight™ Specifications

Meeting Your Needs.

SpringLight™ is our basic standard CFL lineup which includes half SpringLamps® and standard floods. These high quality lamps are reasonably priced, designed to fit your budget, and are available in a variety of pack sizes from 1-packs to contractor packs and pallet programs.



TYPE E (REVISED
MODEL NUMBER)

TYPE D (REVISED
MODEL NUMBER)

Item Number	ENERGY STAR®	Item Description	Unit/Ballast Watts	Incandescent Comparison (Watts)	Initial Lumens	CCT (Kelvin)	CRI	MOL/Height (Inches)	Diameter/Width (Inches)	Input Line Current	Case Quantity
SPRINGLIGHT™ SPRINGLAMPS®											
801009	★	9W SpringLamp 27K	9	40	550	2700	82	4.0	1.8	.15A	6
80100935	★	9W SpringLamp 35K	9	40	550	3500	82	4.0	1.8	.15A	6
TYPE E (REVISED MODEL NUMBER)	★	9W SpringLamp 41K	9	40	550	4100	82	4.0	1.8	.15A	12
	★	9W SpringLamp 50K	9	40	500	5000	82	4.0	1.8	.15A	12
	★	14W SpringLamp 27K	14	60	900	2700	82	4.4	1.8	.23A	12
	★	14W SpringLamp 27K 3PK	14	60	900	2700	82	4.4	1.8	.23A	12
	★	14W SpringLamp 35K	14	60	900	3500	82	4.4	1.8	.23A	12
80101441	★	14W SpringLamp 41K	14	60	900	4100	82	4.4	1.8	.23A	12
TYPE D (REVISED MODEL NUMBER)	★	14W SpringLamp 41K 3PK	14	60	900	4100	82	4.4	1.8	.23A	12
	★	14W SpringLamp 50K	14	60	850	5000	82	4.4	1.8	.23A	12
	★	19W SpringLamp 27K	19	75	1200	2700	82	4.4	2.3	.31A	12
	★	19W SpringLamp 27K 3PK	19	75	1200	2700	82	4.4	2.3	.31A	12
	★	19W SpringLamp 35K	19	75	1200	3500	82	4.4	2.3	.31A	12
80101941	★	19W SpringLamp 41K	19	75	1200	4100	82	4.4	2.3	.31A	6
801019413	★	19W SpringLamp 41K 3PK	19	75	1200	4100	82	4.4	2.3	.31A	6
80101950	★	19W SpringLamp 50K	19	75	1200	5000	82	4.4	2.3	.31A	12
801023	★	23W SpringLamp 27K	23	100	1600	2700	82	4.8	2.3	.38A	12
8010233	★	23W SpringLamp 27K 3PK	23	100	1600	2700	82	4.8	2.3	.38A	12
80102335	★	23W SpringLamp 35K	23	100	1600	3500	82	4.8	2.3	.38A	12
80102341	★	23W SpringLamp 41K	23	100	1600	4100	82	4.8	2.3	.38A	12
801023413	★	23W SpringLamp 41K 3PK	23	100	1600	4100	82	4.8	2.3	.38A	12
80102350	★	23W SpringLamp 50K	23	100	1500	5000	82	4.8	2.3	.38A	12
801027	★	27W SpringLamp 27K	27	100	1850	2700	82	5.5	2.4	.45A	12
8010273	★	27W SpringLamp 27K 3PK	27	100	1850	2700	82	5.5	2.4	.45A	12
80102735	★	27W SpringLamp 35K	27	100	1850	3500	82	5.5	2.4	.45A	12
80102741	★	27W SpringLamp 41K	27	100	1750	4100	82	5.5	2.4	.45A	12
801027413	★	27W SpringLamp 41K 3PK	27	100	1750	4100	82	5.5	2.4	.45A	12
80102750	★	27W SpringLamp 50K	27	100	1750	5000	82	5.5	2.4	.45A	12
SPRINGLIGHT™ REFLECTOR LAMPS											
802014	★	14w R20 Flood SpringLamp	14	50	495	2700	82	4.3	2.5	.23A	12
803014	★	14w R30 Flood SpringLamp	14	65	645	2700	82	5.4	3.7	.23A	12
8030142	★	14w R30 Flood SpringLamp 2PK	14	65	645	2700	82	5.4	3.7	.23A	12
805023	★	23w Par38 Flood SpringLamp	23	90	1200	2700	82	6.2	4.8	.38A	12
8050232	★	23w Par38 Flood SpringLamp 2PK	23	90	1200	2700	82	6.2	4.8	.38A	12
804023	★	23w R40 Flood SpringLamp	23	120	1200	2700	82	6.1	4.8	.38A	12
SPRINGLIGHT™ GLOBES											
8060092	★	9w G25 Globe SpringLamp 2PK	9	40	495	2700	82	4.3	3.1	.15A	12
8060142	★	14w G25 Globe SpringLamp 2PK	14	60	800	2700	82	4.3	3.1	.23A	12
SPRINGLIGHT™ A-LAMPS											
8070092	★	9w A-Lamp SpringLamp 2pk	9	40	450	2700	82	4.1	2.2	.15A	12
8070142	★	14w A-Lamp SpringLamp 2pk	14	60	800	2700	82	4.3	3.1	.23A	12



SpringLamp



R20 Flood



R30 Flood



R40 Flood



PAR38 Flood



G25 Globe



A-Lamp



ISO 9002
CERTIFIED



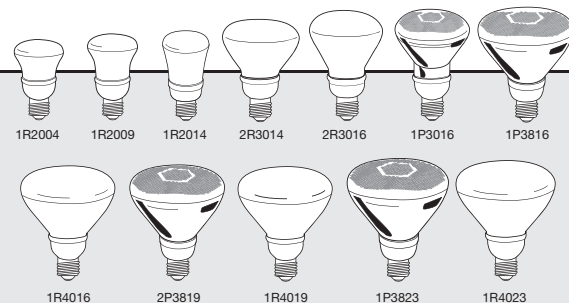
Floodlight Specifications

SpringLamp® Compact Fluorescent

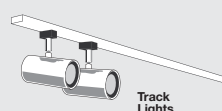
- An Energy Saving Solution for hard to reach light fixtures

TYPE F

Item #	Wattage	Incandescent Wattage Comparison	Initial Lumens	Input Line Current	M.O.L. (inches)	Diameter (inches)	Life vs. Incandescent	Power Factor
		15	130	.15A	3.8	2.5	4X	NPF
		25	300	.15A	3.8	2.5	4X	NPF
		50	500	.23A	4.3	2.5	4X	NPF
		65	650	.23A	5.3	3.7	4X	NPF
2R3016 ★	16	75	750	.27A	5.7	3.7	4X	NPF
1R4016	16	75	750	.27A	5.9	4.7	4X	NPF
1R4019	19	85	950	.32A	5.9	4.7	4X	NPF
1R4023 ★	23	120	1250	.38A	6.5	4.8	3X	NPF
1P3016	16	75	750	.27A	5.7	3.7	4X	NPF
1P3816	16	75	750	.27A	5.9	4.6	4X	NPF
2P3819	19	85	950	.32A	5.9	4.6	4X	NPF
1P3823 ★	23	90	1200	.38A	6.5	4.7	3X	NPF



Ideal for:



Specifications (at full brightness)

End of Life Protection	Yes
Ballast Type	Electronic
Starting Method	Modified Rapid Start
Input Line Voltage	120VAC
Input Line Frequency	50/60HZ
Lamp Life (rated)	8,000 Hours
Color Temperature	2700°K
Color Rendering Index	82
Minimum Starting Temperature	-20 ° F
Maximum Operating Temperature	160 ° F
U.L. / C.U.L. Listed	Yes
FCC Compliance	Part 18, Subpart C
Lamp Operating Frequency	45 KHZ
Lamp Current Crest Factor	< 1.60
Maximum Open Circuit Voltage	600V
Power Factor	> .50
Total Harmonic Distortion	< 150%

Features and Benefits:

- Long life CFL, 8,000 hours average rated life
- NEW Amalgam technology- provides cooler operating temperatures for consistent performance in any position
- No lead glass- Better lumen maintenance over life of bulb
- 2700°K color temperature closest to incandescent light
- Medium base
- Replace less often, ideal for hard to reach places
- U.L. Listed for wet locations - use indoors or outdoors
- 12 Month Warranty
- Quickstart technology - fast run up time

Special Application Options: (Ordering Suffix)

- 3100°K (31K), 3500°K (35K), 4100°K (41K), 5100°K (51K), 6500°K (65K)
- Long Neck 1.65" (165), 1.75" (175), 2.25" (225)
- Shatter Resistant (SS) R20 only
- Pink (P), Soft Pink (SP), Red (R), Green (G), Blue (B)

**12** MONTH
WARRANTY

Light Output

1R2009			2R3014			2R3016			1R4019			2P3819		
HT	FC	DIA	HT	FC	DIA	HT	FC	DIA	HT	FC	DIA	HT	FC	DIA
4	4.0	18.5	4	10.0	12.3	4	11.2	11.3	4	14.4	12.4	4	19.6	13.4
6	1.8	24.6	6	4.5	18.5	6	5.0	17.1	6	6.4	18.5	6	8.7	20.0
8	1.0	30.8	8	2.5	24.6	8	2.8	22.9	8	3.6	24.6	8	4.9	26.6
10	0.6	37.0	10	1.6	30.8	10	1.8	28.6	10	2.3	30.8	10	3.1	33.3
12	0.5	43.1	12	1.1	37.0	12	1.3	34.3	12	1.6	37.0	12	2.2	39.9

HT = Mounting Height in Feet

FC = Foot Candle Value at Center of Beam

DIA = Diameter in Feet



289 Series (18W-68W) SpringLamp® Specification

SpringLamps Compact Fluorescent, NPF

10,000-12,000 Hours
average rated life

Applications:

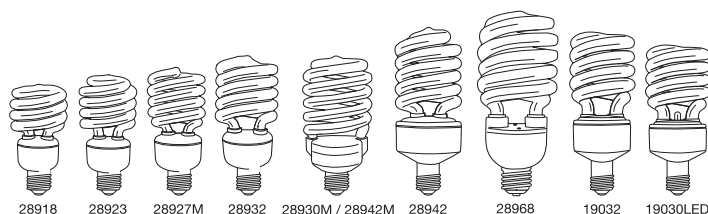
See below.

Special Application Options: (Ordering Suffix)

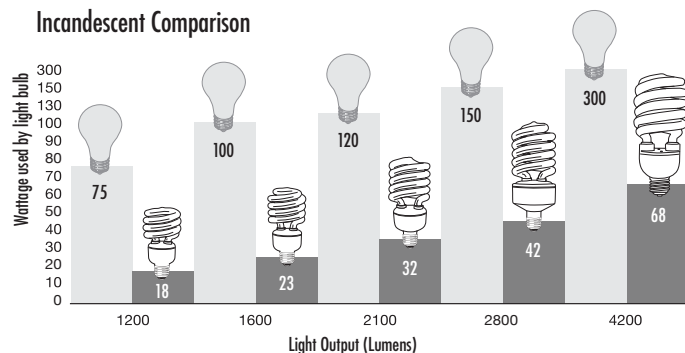
- 3000°K (30K), 3500°K (35K), 4100°K (41K), 5100°K (51K), 6500°K (65K)
- Long Neck 1.65" (165), 1.75" (175), 2.25" (225)
- Wet location (WL)

Features and Benefits:

- Amalgam Technology – provides cooler operating temperatures for consistent performance in any position
- Long life, 10,000 hours to 12,000 hours average rated life
- No lead glass – Better lumen maintenance over life of bulb
- 2700°K color temperature closest to incandescent light
- Medium base
- Replace less often, ideal for hard to reach places
- End of Life logic guards against violent failures



Incandescent Comparison



Type P

★ = ENERGY STAR® approved FS = Full Spectrum 5500°K, 88CRI

Item #	Wattage	Incandescent Wattage Comparison	Initial Lumens	M.O.L. (inches)	Diameter (inches)	Lamp Life (hours)	Table/ Floor Lamps	Chandeliers	Recessed Cans	Bare Bulb Fixtures	High Bay Fixtures	Ceiling Fixtures	Desk Lamp	Outdoor Covered
★ 28918	18	75	1200	4.4	4.4	12K	•	•	•	•		•		•
★ 28923	23	100	1600	4.7	2.4	12K	•	•	•	•		•		•
28923FS	23	100	1200	4.7	2.4	12K	•	•	•	•				•
★ 28927M	27	100	1850	5.4	2.4	12K				•				
28930M	30	120	2000	5.4	2.8	10K		•		•			•	
★ 28932	32	120	2200	6.0	2.8	10K				•				
★ 28942M	42	150	2650	6.0	2.8	10K	•			•				
28942	42	150	2800	7.0	2.8	10K	•			•	•			
28968	68	300	4200	9.5	4.1	10K					•			
★ 19032	14/19/32	40/75/150	750/1400/2150	6.8	2.8	10K	•						•	
19030LED	19/30/1	75/120/Night Light	1300/1850/NA	5.3	2.8	10K	•							

Type J

10,000 HR Lamps
18 MONTH
WARRANTY
Type K (19W)
Type O (32W)

Ideal for:

TCP, Inc.
325 Campus Dr. | Aurora, Ohio 44202 | P: 1-800-324-1496 | F: 330-995-6188 | tcp.com

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289 Series (2W-13W) Specifications

SpringLamp® Compact Fluorescent, NPF

Ideal for:



TYPE G

TYPE H

TYPE I

Item #	Wattage	Incandescent Wattage Comparison	Initial Lumens	Input Line Current	M.O.L. (inches)	Diameter (inches)	Lamp Life (hours)	Table/floor Lamps	Chandeliers	Recessed Cans	Bare bulb Fixtures	Wall Sconce	Ceiling Fixtures	Desk Lamp	Mirror Lights	Outdoor Lights
28902	2	15	150	.03A	3.0	1.3	8K		•		•	•		•	•	
28902C	2	15	150	.03A	3.0	1.3	8K		•		•	•		•	•	
28902T	2	15	150	.03A	3.2	1.2	8K		•		•	•		•	•	
28902TC	2	15	150	.03A	3.2	1.2	8K		•		•	•		•	•	
28904★	4	25	250	.07A	3.1	1.5	8K		•		•	•		•	•	
28904C	4	25	250	.07A	3.1	1.5	8K		•		•	•		•	•	
28904T★	4	25	250	.07A	3.5	1.2	8K		•		•	•		•	•	
28904TC	4	25	250	.07A	3.5	1.2	8K		•		•	•		•	•	
28909★	9	40	550	.15A	3.6	1.9	12K	•	•	•	•	•	•	•		•
28913★	13	60	900	.22A	3.9	1.9	12K	•	•	•	•	•	•	•		•
28913Y	13	60	500	.22A	3.9	1.9	12K									•

★ = ENERGY STAR® approved



28902



28902C



28902T



28902TC



28904



28904C



28904T



28904TC



28909



28913

Features and Benefits:

- Small size
- Amalgam Technology – provides cooler operating temperatures for consistent performance in any position
- Long life, 8,000 hours to 12,000 hours average rated life
- No lead glass – Better lumen maintenance over life of bulb
- 2700°K color temperature closest to incandescent light
- Medium base or Candelabra base
- Replace less often, ideal for hard to reach places
- End of Life logic guards against violent failures
- UL Approved for totally enclosed fixtures

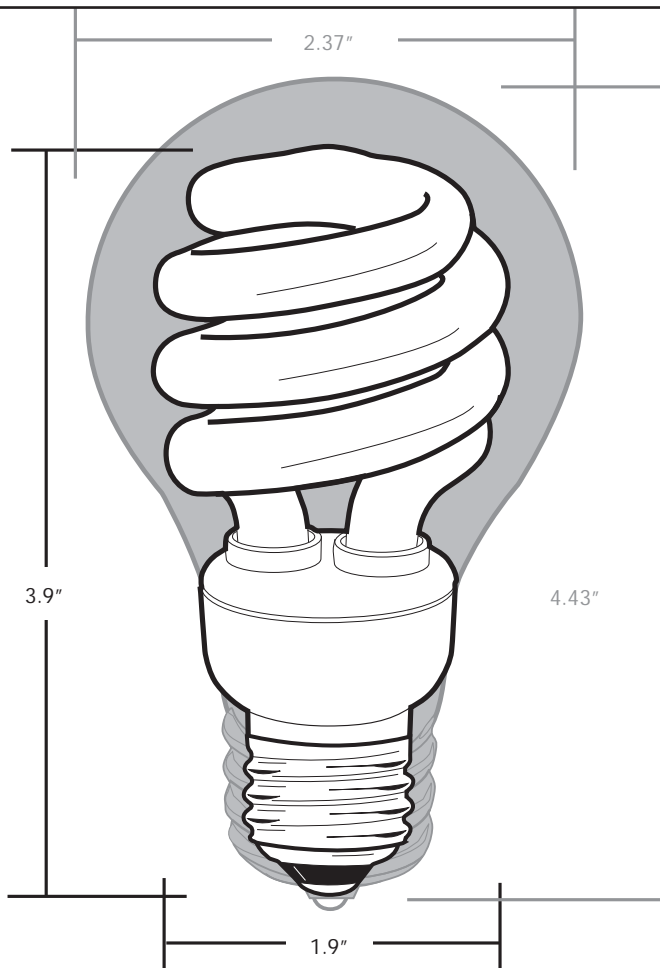
Specifications (at full brightness)

End of Life Protection	Yes
Ballast Type	Electronic
Starting Method	Modified Rapid Start
Input Line Voltage	120VAC
Input Line Frequency	50/60HZ
Lamp Life (rated)	8,000 or 12,000 Hours
Color Temperature	2700°K
Color Rendering Index	82
Min. Starting Temperature	-20 ° F
Max. Operating Temperature	160 ° F
U.L. / C.U.L. Listed	Yes
FCC Compliance	Part 18, Subpart C
Lamp Operating Frequency	45 KHZ
Lamp Current Crest Factor	< 1.60
Max. Open Circuit Voltage	600V
Power Factor	> .50
Total Harmonic Distortion	< 150%

Special Application Options: (Ordering Suffix)

- 3100°K(31K), 3500°K(35K), 4100°K(41K), 5100°K(51K), 6500°K(65K)
- Long Neck 1.65" (165), 1.75" (175), 2.25" (225) (9W & 13W only)
- Wet Location(WL) • Shatter Resistant(SS)
- Blue(BL), Green(GR), Red(RD), Pink(P), Soft Pink(SP), Yellow(Y)

Actual Size Comparison: (28913 compared to 60 watt incandescent)

12 MONTH
WARRANTY
on 8,000 hour lamps24 MONTH
WARRANTY
on 12,000 hour lamps



ENERGY STAR® CFLs

TCP is proud to have been awarded ENERGY STAR® Partner of the Year 2009.

TCP is committed to providing high quality CFLs that are the benchmark in energy efficiency. Our compact fluorescent light bulbs use 75% less energy than standard incandescent bulbs and last up to 10 times longer.

However, to have lamps ENERGY STAR qualified, they have to pass several test criteria. For example, all ENERGY STAR qualified lamps must be designated by a specific color temperature; 2700K, 3000K, 4100K, etc., consumers typically relate these color temperatures to words like warm white, bright white or cool white. These lamps must fall within a 7-step ANSI MacAdam ellipse for that color temperature, which ensures color consistency in the manufacturing process.

In addition to the technical aspects of bulb testing, the product packaging must tell a true story to the consumer. The packaging of an ENERGY STAR qualified CFL must list numerous components and features of the lamp, and be supported with test data.

By selecting energy saving lighting, you will be working toward reducing your energy bills and significantly reducing greenhouse gases into our atmosphere. TCP's ENERGY STAR qualified CFLs save \$30 or more in electricity costs over the lifetime of each bulb. TCP is proud of our diversified selection of ENERGY STAR qualified CFLs.



PARTNER OF THE YEAR

*Material taken from <http://www.energystar.gov/>

	Item Number	Item Description	Unit/Ballast Watts	Incandescent Comparison	Initial Lumens	Rated Life
TCP Pro NEW!	4R3014	14W R30 InstaBright G2	14	65	650	8000
	4G2514	14W G25 InstaBright G2	14	60	800	8000
	4T213	13W T2 Full SpringLamp®	13	60	825	12000
	4T223	23W T2 Full SpringLamp®	23	100	1600	12000
TYPE L	10120	20W Dimming SpringLamp®	20	75	1100	10000
	10123	23W Dimming SpringLamp®	23	100	1500	10000
	070931K	9W Torpedo 31K	9	40	425	8000
	0709C31K	9W Candelabra Torpedo 31K	9	40	425	8000
	1309	9W A Lamp	9	40	450	8000
	130941K	9W A Lamp 41K	9	40	400	8000
	1316	16W A Lamp	16	60	900	8000
	131631K	16W A Lamp 31K	16	60	900	8000
	1319	19W A Lamp	19	60	1100	8000
	1931931K	19W A Lamp 31K	19	60	1100	8000
	18215	15W HPF SpringLamp®	15	60	900	10000
	18220	20W HPF SpringLamp®	20	75	1100	10000
	19032	14/19/32W 3-WAY SpringLamp®	14/19/32	40/75/150	2150	10000
	1G2504	4W G25 27K	4	25	250	8000
	1G2509	9W G25 27K	9	40	520	8000
	1G250931K	9W G25 30K	9	40	520	8000
	1G250935K	9W G25 35K	9	40	450	8000
	1G250951K	9W G25 51K	9	40	450	8000
	1G3014	14W G30 27K	14	60	750	8000
	1G3019	19W G30 27K	19	75	900	8000
	1G4014	14W G40 27K	14	60	800	8000
	1P3816	16W Par 38 27K	16	75	750	8000
	1P381631K	16W Par 38 31K	16	75	750	8000
	1P381641K	16W Par 38 41K	16	75	750	8000
	1P3823	23W Par 38 27K	23	90	1200	8000
	1R2009	9W R20 27K	9	25	300	8000
	1R2014	14W R20 27K	14	50	500	8000
	1R201441K	14W R20 27K	14	50	400	8000
	1R4016	16W R40 27K	16	75	750	8000
	1R4023	23W R40 27K	23	120	1200	8000
	1T2004	4W T20 Capsule	4	25	250	8000
	1T2009	9W T20 Capsule	9	40	520	8000
	1T2014	14W T20 Capsule	14	60	800	8000
	1T2409	9W T24 Capsule	9	40	495	8000
	1T2414	14W T24 Capsule	14	60	900	8000
	21314	14W A Lamp	14	60	800	8000
	2131431K	14W A LAMP 31K	14	60	800	8000
	2131435K	14W A LAMP 35K	14	60	800	8000
	2131441K	14W A Lamp 41K	14	60	800	8000
	2131465K	14W A Lamp 65K	14	60	800	8000
	28904	4W 27K SpringLamp®	4	25	250	8000
	28904T	4W Tall 27k SpringLamp®	4	25	250	8000
	28909	9W 27k SpringLamp®	9	40	550	12000
	2890950k	9W 50K SpringLamp®	9	40	450	10000
	28913	13W 27k SpringLamp®	13	60	900	12000
	28914F2	14W Fresh 2	14	60	900	10000
	28918	18W 27K SpringLamp®	18	75	1200	12000
	2891835K	18W 35K SpringLamp®	18	75	1100	12000
	2891850K	18W 50K SpringLamp®	18	75	1100	10000
	28923F2	23W Fresh 2	23	100	1600	10000
	28923	23W 27k SpringLamp®	23	100	1600	10000
	2892335K	23W 35K SpringLamp®	23	100	1500	12000
	2892341K	23W 41K SpringLamp®	23	100	1500	12000
	2892350K	23W 50K SpringLamp®	23	100	1500	10000
	28927M	27W 27K SpringLamp®	27	100	1850	10000
	28927M31K	27W 31K SpringLamp®	27	100	1850	12000
	28927M35K	27W 35K SpringLamp®	27	100	1750	12000
	28930M	30W 27K Mini SpringLamp®	30	125	2000	10000
	28932	32W 27K SpringLamp®	32	120	2100	10000
	28942	42W 27K SpringLamp®	42	150	2700	10000
	28942M	42W 27K Mini SpringLamp®	42	150	2800	10000
	28968	68W 27K SpringLamp®	68	300	4200	10000
	2G2514	14W G25 27K	14	60	800	8000
	2G251435K	14W G25 35K	14	60	800	8000
	2R3014	14W R30 27K	14	65	650	8000
	2R3014 BULK 48	14W R30 Bulk 48	14	65	650	8000
	2R30144	14W R30 4 pack	14	65	650	8000
	2R301435K	14W R30 35K	14	65	600	8000
	2R3016	16W R30 27K	16	75	750	8000
	2R3016BULK48	16W R30 Bulk 48	16	75	750	8000
	PF301641K	16W Flat Par 30 41K	16	75	700	8000



TCP Pro R30 InstaBright G2



TCP Pro 13W T2



20W TCP Dimming SpringLamp®



9W G25 TCP 27K



9W R20 TCP 27K



23W R40 TCP 27K



14W A Lamp TCP 27K



4W SpringLamp® TCP 27K



27W Mini SpringLamp® TCP 27K



23W Par 38 TCP 27K

TCP, Inc.

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Compact Fluorescent Lamps

Section Updated 07 / 2010

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Lamps

Incandescent

Halogen

High Intensity
Discharge

Fluorescent

Compact
Fluorescent

LED Lamps
and Systems

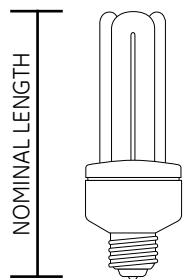
Stage and Studio

Miniature and
Sealed Beam

Projection

Compact Fluorescent Lamps

Bulb Identification



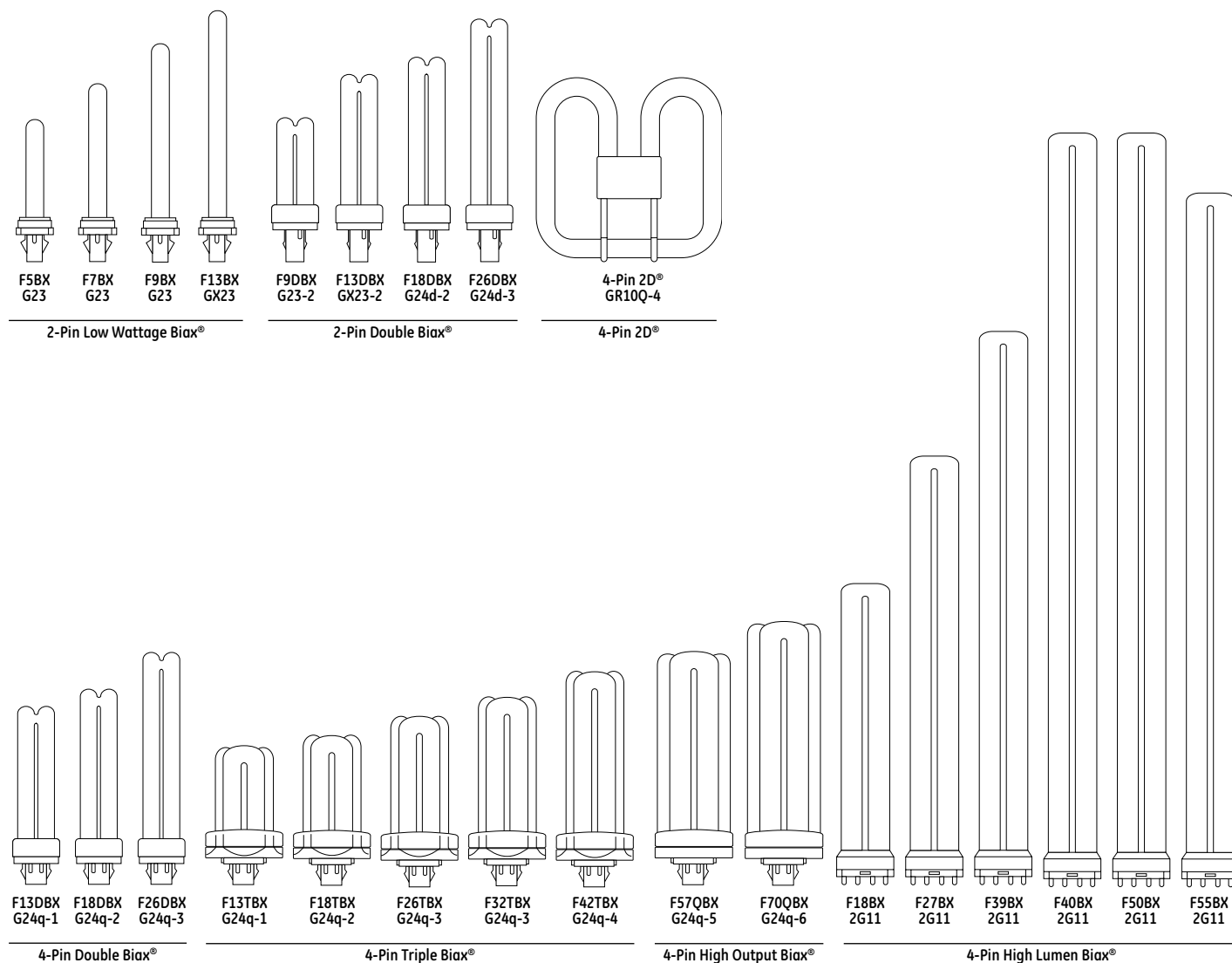
NOMINAL LENGTH:

Overall length including base or pins.

Note: Lamp drawings are not drawn to scale. Be sure to check size and dimension information when identifying each lamp.

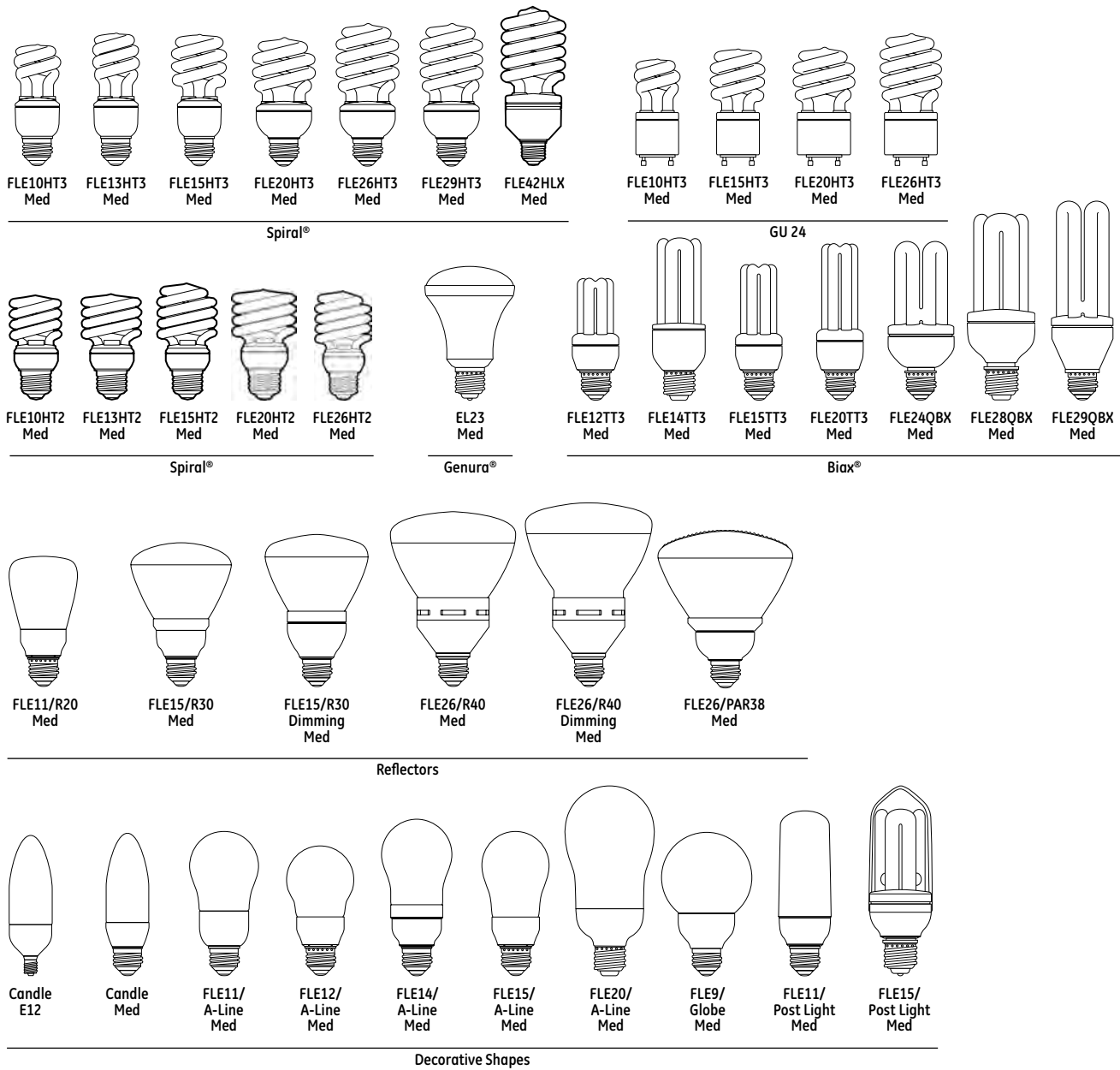
To convert inches to millimeters, multiply the dimension (in inches) by 25.4 (i.e. 1.5" x 25.4 = 38.1 mm).

Lamp Locator

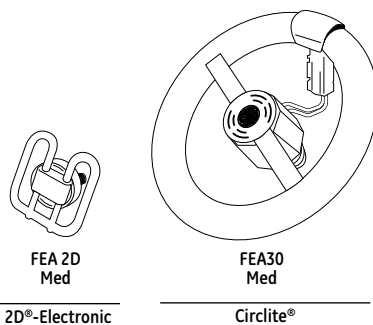


Plug-in Lamps

Lamp Locator (continued)



Self-Ballasted Lamps

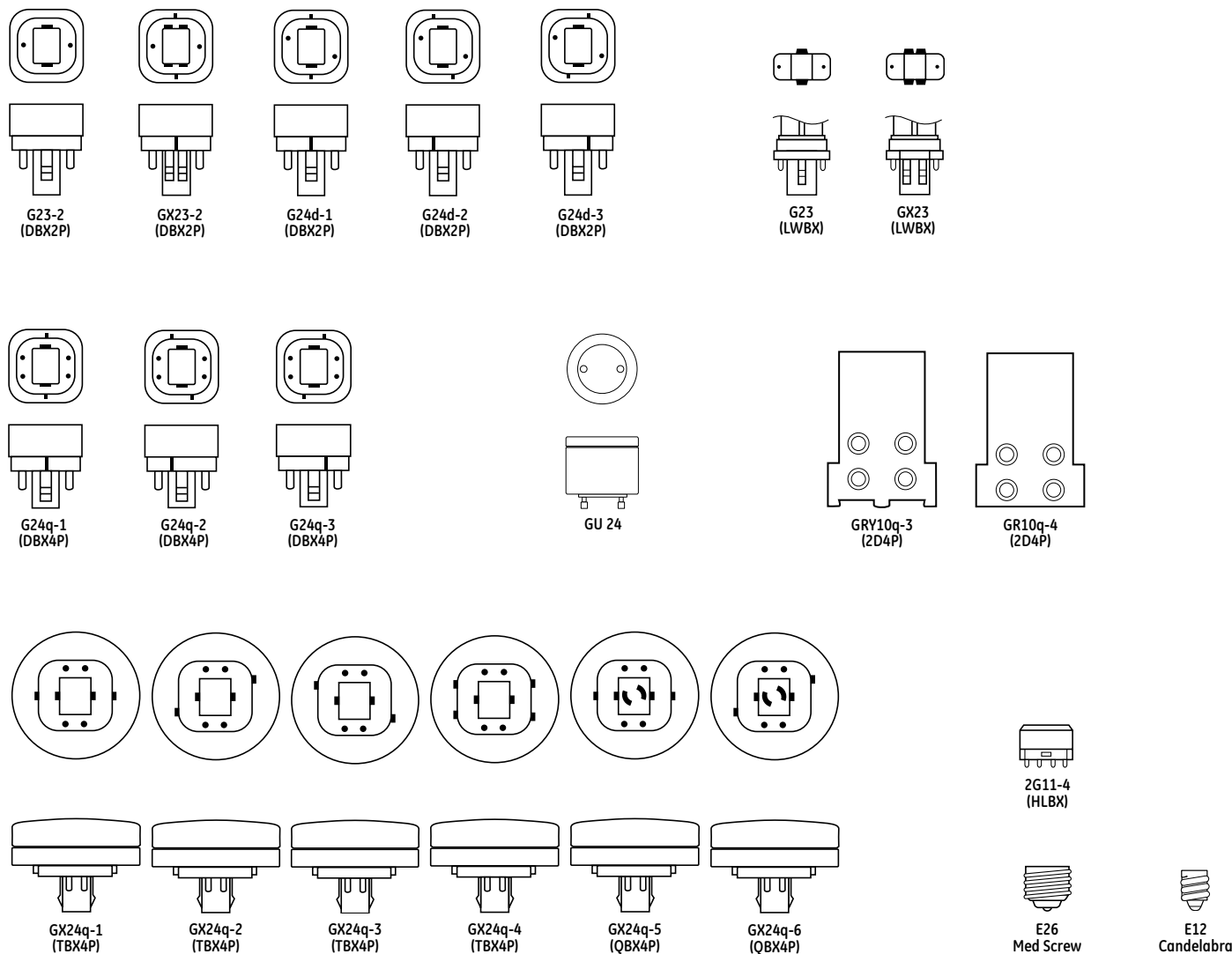


Lamps and Adapters

Compact Fluorescent Lamps

Page Updated 01 / 2010

Base Identification



Introduction

GE Compact Fluorescent lamps offer many advantages:

- Dramatic energy cost savings...up to 77% vs. incandescent lamps of comparable light output
- Extra long life...most last 8 to 10 times longer, and some last up to 20 times longer, than standard incandescent lamps
- High light output comparable to, and in many cases exceeding, incandescent lamps replaced
- Excellent color rendering...rare earth tri-phosphor provides such high-quality color you won't believe it's fluorescent. Most types offer a choice of color options, from warm to cool, to let you select the tone and atmosphere you need.
- A choice of wattages, shapes and sizes to meet your lighting needs. Designed to fit everything from table lamps to wall sconces and ceiling fixtures.
- Many lamps use amalgam technology which provides stable lumen performance when operated in any position, over a wider range of ambient temperatures.

Compact Fluorescent Brand Name Cross-Reference

GE	OSRAM/SYLVANIA	PHILIPS
2D®	—	—
Biax®	Dulux® S	PL-S
High Lumen Biax®	Dulux® L	PL-L
Double Biax®	Dulux® D, D/E	PL-C
Triple Biax®	Dulux® T/E	PL-T
Quad Biax®	—	—
High Output Biax®	—	PL-H
Spiral®	Dulux® EL Twist	EL Twist
Genura®	Dura-One	—

ATTENTION: This brand-name cross-reference chart is provided only as a quick reference. Other lamp company brand listings may only represent a near equivalent, versus an identical match to GE Lighting brands. Individual lamp manufacturers' performance specifications should be consulted. Lamp performance may be affected by environmental conditions, ballast type and/or other auxiliary equipment.

Product Information

Plug-in Lamps

2-Pin Low Wattage Biax® (pg 5-7)

- Compact size offers fixture and design flexibility
- GX23 and G23 bases are preheat lamps with internal starters
- 13-watt version also available with internal electronic starter, providing flicker-free instant on
- Available in warm and cool color temperatures
- TCLP Compliant

4-Pin High Lumen Biax® (pg 5-7)

- Available in a range of sizes and wattages for innovative compact luminaires
- High efficiency and outstanding performance in fixtures make them ideal for 2X2, 1X1 and indirect fixtures
- Available in warm to cool color temperatures; excellent color rendering

2-Pin Double Biax® (pg 5-8)

- More compact than low-wattage Biax® CFLs with higher lumen output—suitable for a broad range of applications
- Preheat lamps with starters; not suitable for use with dimming ballasts
- 26-watt version also available with internal electronic starter, providing flicker-free instant on
- Available in warm to cool color temperatures
- TCLP Compliant

4-Pin Double Biax® (pg 5-8)

- More compact than low-wattage Biax® CFLs with higher lumen output—suitable for a broad range of applications
- Dimmable and compatible with electronic ballasts
- Available in warm to cool color temperatures
- TCLP Compliant

4-Pin Triple Biax® (pg 5-8)

- GE's shortest, most compact Biax® lamp. 17-31% shorter than similar wattage Double Biax® lamps.
- 4-Pin, dimmable and compatible with electronic ballasts
- Available in a wide range of wattages: from 13 to 42 watts
- Available in warm to cool color temperatures
- TCLP Compliant

4-Pin High Output Biax® (pg 5-9)

- GE's highest light output compact fluorescent lamps
- High efficacy 72-75 LPW
- Dimmable, available in 5 colors (2,700 to 5,000K)
- Suitable for high-bay lighting
- TCLP Compliant

4-Pin 2D® (pg 5-9)

- Unique shape suitable for broad range of applications
- Uniform light distribution
- High light output – up to 200W incandescent equivalent

Self-Ballasted Lamps

Spiral® (pg 5-10)

- Long life – up to 12,000 hours or more
- One-piece unit screws directly into incandescent sockets
- Wide variety of wattages to meet application needs
- T2 & T3 Spiral® CFLs provide economical solution with small overall size
- The 42-watt T4 Spiral® CFL provides a 150W incandescent replacement in the smallest possible size (fits an 8.5" harp)

GU 24 (pg 5-11)

- Long life – 10,000 hour rating
- Simple twist and lock design allows quick and easy lamp change
- Fits all fixtures with GU 24 base

Biax® (pg 5-11)

- Super long life – from 10,000 to 15,000 hour rating
- One-piece unit screws directly into incandescent sockets
- Wide variety of wattages to meet application needs
- T3 Mini Biax® CFL provides longest life with smallest overall size
- Selected lamps offer 3-way or dimming functionality

Reflectors (pg 5-11)

- R20, R30, R40 and PAR38 glass reflectors available to meet application needs
- Medium based; fits most incandescent reflector applications
- R30 and R40 lamps available with dimming functionality

Genura® (pg 5-12)

- Extremely long life – rated life of 15,000 hours
- One-piece unit screws directly into incandescent sockets
- Provides more light than 75W incandescent reflector lamps
- Electrodeless design

Decorative Shapes (pg 5-12)

- Variety of shapes (A-Line, Bullet, Candle, Globe, and Post) and wattages to meet all needs
- One-piece unit screws directly into incandescent sockets
- Candle-shaped CFLs available in both medium base and candelabra base

Compact Fluorescent Lamps

Headings in this catalog section

The following terms and descriptions can help you when checking Compact Fluorescent lamp specifications and when ordering

products. Within each product line, lamps are divided into families, within these families, lamps are then listed by wattage.

Energy Used – Nominal Watts: Energy Used (as defined by FTC lamp label rules). To estimate energy consumption (kWh), multiply watts x hours of use and divide by 1000.		Nominal Length: Lamp length including base and/or pins.		Order Code: It is important to use this five-digit code when ordering to ensure that you receive the exact product you require.		Description: The lamp's identification code.		Case Quantity: Number of product units packed in a case.		Volt: Rated voltage.		Rated Life @ 3hrs. per start		Rated Life @ 12hrs. per start		Rated Life – Hours: Life (as defined by FTC Lamp Label Rules) is rated life in hours.		Light Output – Initial Lumens: Light output (as defined by FTC Lamp Label Rules) is rated average lumens.		Light Output – Mean Lumens: Lamp light output (lumens) at 40% of rated lamp life.		Color Temperature – Kelvins (K): A measure of the visual "warmth" or "coolness" of the light from the lamp. The higher the value, the whiter or "cooler" the light appears.		Color Rendering Index (CRI or Ra): An indication of the ability of the lamp to render object colors in a normal, natural way. The higher the number (0-100), the better the color appearance.		Minimum Starting Temperature: The minimum ambient temperature at which the lamp will start reliably.		Power Factor (PF): The ratio of total watts to total volt-amperes. A value of .5 to .6 is typical for CFLs.		Total Harmonic Distortion (THD): A measure (in percent) of power quality. Indicates the distortion of the alternating current wave form.		Additional Information: Typical application and/or other important information.		Caution Notice: Related cautions, see page 5-16.		Footnotes: See page 5-15 for more information.	
Base	Watts	Nominal Length (in)	Order Code	Description	Case Qty	Volts	Rated Life (hrs)	Initial Lumens	Mean Lumens	Color Temp K	CRI	Min. Start. Temp (°F)	Power Fact.	THD	TCLP Compliant Plug-Ins	EOL Protection Plug-Ins	ENERGY STAR® Screw-Ins	Additional Information	Caution Notice	Footnotes																	

Self-Ballasted Lamps

Spiral®																				
Med	10	4.4	15829	FLE10HT3/2/827	10	120	8000	520	420	2700	82	5	0.6	120			★	T3 Spiral®, Boxed	153	1,7,8,9,10



FL E 10 HT3 / 2 / 827

Identifies as Fluorescent Lamp

Identifies wattage

Identifies additional information

Identifies lamp shape




Identifies lamp's finish or color

Electronically ballasted

WHEN YOU DON'T KNOW THE LAMP DESCRIPTION

1. Identify bulb shape next to lamp information.
2. Measure bulb diameter using ruler in appendix section page A-1 to determine width in eighths of an inch.
3. Identify base type using table on page 5-4.
4. Find your lamp in the table containing the bulb shape, size and base.

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Base	Watts	Nom. Length (in)	Order Code	Description	Case Qty	Rated Life (hrs)	Initial Lumens	Mean Lumens	Color Temp K	CRI	Min Starting Temp (°F)	TCLP Compliant Plug-Ins	EOL Protection Plug-Ins	Additional Information	Caution Notice	Footnotes
Plug-in Lamps																
2-Pin Low Wattage Biax®																
	5	4.2	97551	F5BX/827/ECO	100	10000	265	220	2700	82		*			151	1,2
	5	4.2	97552	F5BX/827/CDECO	6	10000	265	220	2700	82		*		Corded	151	1,2
	5	4.2	97553	F5BX/841/ECO	100	10000	265	220	4100	82		*			151	1,2
	7	5.3	97554	F7BX/827/ECO	100	10000	425	350	2700	82		*			151	1,2
	7	5.3	97555	F7BX/827/CDECO	6	10000	425	350	2700	82		*		Corded	151	1,2
	7	5.3	97556	F7BX/835/ECO	100	10000	425	350	3500	82		*			151	1,2
	7	5.3	97557	F7BX/841/ECO	100	10000	425	350	4100	82		*			151	1,2
	9	6.6	97558	F9BX/827/ECO	100	10000	600	500	2700	82		*			151	1,2
	9	6.6	97559	F9BX/827/CDECO	6	10000	600	500	2700	82		*		Corded	151	1,2
	9	6.6	97560	F9BX/835/ECO	100	10000	600	500	3500	82		*			151	1,2
	9	6.6	97561	F9BX/841/ECO	100	10000	600	500	4100	82		*			151	1,2
	13	7.0	97573	F13BX/827/ECO	100	10000	825	710	2700	82		*			151	1,2
	13	7.0	97567	F13BX/827/CDECO	6	10000	825	710	2700	82		*		Corded	151	1,2
	13	7.0	97574	F13BX/830/ECO	100	10000	825	710	3000	82		*			151	1,2
	13	7.0	97569	F13BX/835/ECO	100	10000	825	710	3500	82		*			151	1,2
	13	7.0	97568	F13BX/835ECO100P	100	10000	825	710	3500	82		*		Bulk Pack	151	1,2
	13	7.0	97571	F13BX/841/ECO	100	10000	825	710	4100	82		*			151	1,2
	13	7.0	97570	F13BX/841ECO100P	100	10000	825	710	4100	82		*		Bulk Pack	151	1,2
	13	7.0	97572	F13BX/850/ECO	100	10000	784	675	5000	80		*			151	1,2
	13	7.0	97562	F13BX/E/827/ECO	100	10000	825	710	2700	82		*		Internal Electronic Starter	151	1,2
	13	7.0	97563	F13BX/E/830/ECO	100	10000	825	710	3000	82		*		Internal Electronic Starter	151	1,2
	13	7.0	97564	F13BX/E/835/ECO	100	10000	825	710	3500	82		*		Internal Electronic Starter	151	1,2
	13	7.0	97565	F13BX/E/841/ECO	100	10000	825	710	4100	82		*		Internal Electronic Starter	151	1,2
	13	7.0	97566	F13BX/E/850/ECO	100	10000	785	675	5000	82		*		Internal Electronic Starter	151	1,2
4-Pin High Lumen Biax®																
	18	9.0	16649	F18BX/SPX30 10PK	40	10000	1200	1080	3000	82	25				151	1,2,4,6
	18	9.0	16053	F18BX/SPX35 10PK	40	10000	1200	1080	3500	82	25				151	1,2,4,6
	18	9.0	16940	F18BX/SPX41 10PK	40	10000	1200	1080	4100	82	25				151	1,2,4,6
	18	10.0	17174	F18BXSPX30RS10PK	40	20000	1250	1130	3000	82	50				151	1,2,6,13
	18	10.5	17175	F18BXSPX35RS10PK	40	20000	1250	1130	3500	82	50				151	1,2,6,13
	18	10.5	17176	F18BXSPX41RS10PK	40	20000	1250	1130	4100	82	50				151	1,2,6,13
	18	10.5	12521	F18BX/SPX65/RS	40	20000	1160	1050	6500	82	50				151	1,2,6,13
	27	4.9	16944	F27BXSPX30RS10PK	40	12000	1800	1620	3000	82	50				151	1,2,6,13
	27	12.8	16948	F27BXSPX35RS10PK	40	12000	1800	1620	3500	82	50				151	1,2,6,13
	27	12.8	16951	F27BXSPX41RS10PK	40	12000	1800	1620	4100	82	50				151	1,2,6,13
	39		16538	F39BXSPX30RS10PK	40	12000	2850	2510	3000	82	50				151	1,2,6,13
	39	16.5	15867	F39BXSPX35RS10PK	40	12000	2850	2510	3500	82	50				151	1,2,6,13
	39	16.5	16952	F39BXSPX41RS10PK	40	12000	2850	2510	4100	82	50				151	1,2,6,13
	40	22.5	16953	F4030BXSPX30 10P	40	20000	3150	2840	3000	82	50				151	1,2,6,13
	40	22.5	20444	F40/30BXSPX30-36	36	20000	3150	2840	3000	82	50			Bulk Pack	151	1,2,6,13
	40	22.5	16648	F40/30BX/SPX35	40	20000	3150	2840	3500	82	50				151	1,2,6,13
	40	22.5	20446	F40/30BXSPX35-36	36	20000	3150	2840	3500	82	50			Bulk Pack	151	1,2,6,13
	40	22.5	16954	F40/30BX/SPX41	40	20000	3150	2840	4100	82	50				151	1,2,6,13
	40	22.5	20447	F40/30BXSPX41-36	36	20000	3150	2840	4100	82	50			Bulk Pack	151	1,2,6,13
	40	22.5	10490	F40/30BX/SPX50RS	36	20000	2900	2700	5000	80	50			Bulk Pack	151	1,2,6,13
	25	21.5	75399	F40/25BX830/IS/WM	40	20000	2600		3000	82					151	1,2,6,13
	25	21.5	75400	F40/25BX835/IS/WM	40	20000	2600		3500	82					151	1,2,6,13
	25	21.5	75401	F40/25BX840/IS/WM	40	20000	2600		4100	82					151	1,2,6,13
	25	21.5	75402	F40/25BX850/IS/WM	40	20000	2600		5000	82					151	1,2,6,13
	50	22.5	20898	F50BXSPX30RS10PK	40	20000	4000	3400	3000	82	50				151	1,2,6,13
	50	22.5	20899	F50BXSPX35RS10PK	40	20000	4000	3400	3500	82	50				151	1,2,6,13
	50	22.5	20900	F50BXSPX41RS10PK	40	20000	4000	3400	4100	82	50				151	1,2,6,13
	55	20.7	31951	F55BX/830	25	20000	4800	4080	3000	82	50				151	1,2,6,13
	55	20.7	31952	F55BX/835	25	20000	4800	4080	3500	82	50				151	1,2,6,13
	55	20.7	31953	F55BX/840	25	20000	4800	4080	4100	82	50				151	1,2,6,13
	55	5.8	45851	F55BX/AR/FS 6PK	6	10000	4800	4080	9325	67	50			Fresh and Salt Water Phosphor	151	1,2,6,13
	55		45859	F55BX/AR/FS/BULK	25	10000	4800	4080	9325	67	50			Fresh and Salt Water Phosphor	151	1,2,6,13

For the most up-to-date product information, see www.gelighting.com. To convert inches to millimeters, multiply by 25.4.
All footnotes and caution notices found at the end of this section (page 5-15).

Lamps

Incandescent

Halogen

High Intensity
Discharge

Fluorescent

Compact
FluorescentLED Lamps
and Systems









Stage and Studio







Miniature and
Sealed Beam

Projection







Compact Fluorescent Lamps

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Base	Watts	Nom. Length (in)	Order Code	Description	Case Qty	Rated Life (hrs)	Rated Life @ 12 Hrs	Initial Lumens	Mean Lumens	Color Temp K	CRI	Min Starting Temp (°F)	TCLP Compliant Plug-Ins	EOL Protection Plug-Ins	Additional Information	Caution Notice	Footnotes
Plug-in Lamps (continued)																	
2-Pin Double Biax®																	
	9	4.3	97576	F9DBX23/827/ECO	50	10000		550	470	2700	82		*			151	1,2,17
	9	5.43	97575	F9DBX23/841/ECO	50	10000		550	470	4100	82		*			151	1,2,17
	13	4.7	97586	F13DBX23/827/ECO	50	10000		810	685	2700	82		*			151	1,2,17
	13	4.7	97585	F13DBX/827/CD	6	10000		810	685	2700	82		*		Carded	151	1,2,17
	13	4.7	97587	F13DBX23/830/ECO	50	10000		810	685	3000	82		*			151	1,2,17
	13	4.7	97588	F13DBX23/835/ECO	50	10000		810	685	3500	82		*			151	1,2,17
	13	4.7	97589	F13DBX23/841/ECO	50	10000		810	685	4100	82		*			151	1,2,17
	13	5.3	97590	F13DBX/827/ECO	50	10000		900	755	2700	82		*			151	1,2,17
	13	5.3	97591	F13DBX/830/ECO	50	10000		900	755	3000	82		*			151	1,2,17
	13	5.3	97592	F13DBX/835/ECO	50	10000		900	755	3500	82		*			151	1,2,17
	13	5.3	97593	F13DBX/841/ECO	50	10000		900	755	4100	82		*			151	1,2,17
	13	5.3	97594	F13DBX/827/ECO4P	50	10000	20000	900	755	2700	82		*	▲		151	1,2,6,17
	18	6.1	97577	F18DBX/827/ECO	50	10000		1200	980	2700	82		*			151	1,2,5,17
	18	6.1	97578	F18DBX/830/ECO	50	10000		1200	980	3000	82		*			151	1,2,5,17
	18	6.1	97579	F18DBX/835/ECO	50	10000		1200	980	3500	82		*			151	1,2,5,17
	18	6.1	97580	F18DBX/841/ECO	50	10000		1200	980	4100	82		*			151	1,2,5,17
	18	6.1	97597	F18DBX/827/ECO4P	50	12000	20000	1200	970	2700	82		*	▲		151	1,2,6,17
	26	6.7	97606	F26DBX/827/ECO	50	10000		1710	1460	2700	82		*			151	1,2,17
	26	6.7	97607	F26DBX/830/ECO	50	10000		1710	1460	3000	82		*			151	1,2,17
	26	6.7	97608	F26DBX/835/ECO	50	10000		1710	1460	3500	82		*			151	1,2,17
	26	6.7	97609	F26DBX/841/ECO	50	10000		1710	1460	4100	82		*			151	1,2,17
	26	6.7	97602	F26DBX/E/827/ECO	50	10000		1710	1460	2700	82		*		Internal Electronic Starter	151	1,2,15,17
	26	6.7	97603	F26DBX/E/830/ECO	50	10000		1710	1460	3000	82		*		Internal Electronic Starter	151	1,2,15,17
	26	6.7	97604	F26DBX/E/835/ECO	50	10000		1710	1460	3500	82		*		Internal Electronic Starter	151	1,2,15,17
	26	6.7	97605	F26DBX/E/841/ECO	50	10000		1710	1460	4100	82		*		Internal Electronic Starter	151	1,2,15,17
	26	6.7	97613	F26DBX/827/4P/ECO	10	12000	20000	900	755	2700	82		*	▲	Non-Amalgam	151	1,2,6,12,17
	13	4.2	97623	F13TBX/827/4P/ECO	10	12000	20000	900	755	2700	82		*	▲	Non-Amalgam	151	1,2,6,12,17
	13	4.2	97619	F13TBX/827/A/ECO	10	12000	20000	900	755	2700	82		*	▲		151	1,2,6,12,17
	13	4.2	97620	F13TBX/830/A/ECO	10	12000	20000	900	755	3000	82		*	▲		151	1,2,6,12,17
	13	4.2	97621	F13TBX/835/A/ECO	10	12000	20000	900	755	3500	82		*	▲		151	1,2,6,12,17
	13	4.2	97622	F13TBX/841/A/ECO	10	12000	20000	900	755	4100	82		*	▲		151	1,2,6,12,17
	18	4.8	97628	F18TBX/827/4P/ECO	10	12000	20000	1200	1010	2700	82		*	▲	Non-Amalgam	151	1,2,6,17
	18	4.8	97624	F18TBX/827/A/ECO	10	12000	20000	1200	1010	2700	82		*	▲		151	1,2,6,12,17
	18	4.8	97625	F18TBX/830/A/ECO	10	12000	20000	1200	1010	3000	82		*	▲		151	1,2,6,12,17
	18	4.8	97626	F18TBX/835/A/ECO	10	12000	20000	1200	1010	3500	82		*	▲		151	1,2,6,12,17
	18	4.8	97627	F18TBX/841/A/ECO	10	12000	20000	1200	1010	4100	82		*	▲		151	1,2,6,12,17
	26	5.2	97618	F26TBX/827/4P/ECO	10	12000	20000	1800	1530	2700	82		*	▲	Non-Amalgam	151	1,2,6,17
	26	5.2	97614	F26TBX/827/A/ECO	10	12000	20000	1800	1530	2700	82		*	▲		151	1,2,6,12,17
	26	5.2	97615	F26TBX/830/A/ECO	10	12000	20000	1800	1530	3000	82		*	▲		151	1,2,6,12,17
	26	5.2	97616	F26TBX/835/A/ECO	10	12000	20000	1800	1530	3500	82		*	▲		151	1,2,6,12,17
	26	5.2	97617	F26TBX/841/A/ECO	10	12000	20000	1800	1530	4100	82		*	▲		151	1,2,6,12,17

Base	Watts	Nom. Length (in)	Order Code	Description	Case Qty	Rated Life (hrs)	Rated Life 12 Hrs	Initial Lumens	Mean Lumens	Color Temp K	CRI	Min Starting Temp (°F)	TCLP Compliant Plug-Ins	EOL Protection Plug-Ins	Additional Information	Caution Notice	Footnotes	
Plug-in Lamps (continued)																		
4-Pin Triple Biax® (continued)																		
	GX24q-3	32	5.5	97629	F32TBX/827/A/ECO	10	12000	20000	2400	2040	2700	82		✱	▲		151	1,2,6,12,17
		32	5.5	97630	F32TBX/830/A/ECO	10	12000	20000	2400	2040	3000	82		✱	▲		151	1,2,6,12,17
		32	5.5	97631	F32TBX/835/A/ECO	10	12000	20000	2400	2040	3500	82		✱	▲		151	1,2,6,12,17
		32	5.5	97632	F32TBX/841/A/ECO	10	12000	20000	2400	2040	4100	82		✱	▲		151	1,2,6,12,17
	GX24-q4	42	6.4	97633	F42TBX/827/A/ECO	10	12000	20000	3200	2690	2700	82		✱	▲		151	1,2,6,12,17
		42	6.4	97634	F42TBX/830/A/ECO	10	12000	20000	3200	2690	3000	82		✱	▲		151	1,2,6,12,17
		42	6.4	97635	F42TBX/835/A/ECO	10	12000	20000	3200	2690	3500	82		✱	▲		151	1,2,6,12,17
		42	6.4	97636	F42TBX/841/A/ECO	10	12000	20000	3200	2690	4100	82		✱	▲		151	1,2,6,12,17
4-Pin High Output Biax®																		
	GX24-q5	57	7.1	48861	F57QBX827A4P/EOL	10	12000		4300	3700	2700	82		✱	▲		151	1,2,6,12,17
		57	7.1	48862	F57QBX830A4P/EOL	10	12000		4300	3700	3000	82		✱	▲		151	1,2,6,12,17
		57	7.1	48863	F57QBX835A4P/EOL	10	12000		4300	3700	3500	82		✱	▲		151	1,2,6,12,17
		57	7.1	48864	F57QBX/841/A/ECO	10	12000		4300	3700	4100	82		✱	▲		151	1,2,6,12,17
		57	5.2	93404	F57QBX850A4P/EOL	10	12000		4300	3700	5000	82		✱	▲		151	1,2,6,12,17
	GX24-q6	70	8.2	48865	F70QBX827A4P/EOL	10	12000		5200	4470	2700	82		✱	▲		151	1,2,6,12,17
		70	8.2	48866	F70QBX830A4P/EOL	10	12000		5200	4470	3000	82		✱	▲		151	1,2,6,12,17
		70	8.2	48867	F70QBX835A4P/EOL	10	12000		5200	4470	3500	82		✱	▲		151	1,2,6,12,17
		70	8.2	48868	F70QBX/841/A/ECO	10	12000		5200	4470	4100	82		✱	▲		151	1,2,6,12,17
		70	8.2	93406	F70QBX850A4P/EOL	10	12000		5200	4470	5000	82		✱	▲		151	1,2,6,12,17
4-Pin 2D®																		
	GR10q-4	10	3.6	21301	F102D/827/4P	60	10000		650	545	2700	82					151	1,2,3,6
		16	5.5	22169	F162D/827/4P	50	10000		1050	880	2700	82					151	1,2,3,6
		16	5.5	22177	F162D/835/4P	50	10000		1050	880	3500	82					151	1,2,3,6
		21	5.5	21303	F212D/827/4P	50	10000		1350	1135	2700	82					151	1,2,3,6
		21	5.5	22178	F212D/835/4P	50	10000		1350	1135	3500	82					151	1,2,3,6
		28	8.1	22172	F282D/827/4P	20	10000		2050	1720	2700	82					151	1,2,3,6
		28	8.1	22180	F282D/835/4P	20	10000		2050	1720	3500	82					151	1,2,3,6
		38	8.1	21305	F382D/827/4P	20	10000		2850	2395	2700	82		✱			151	1,2,3,6
		38	8.1	25427	F38/2D/827/4P/CD	5	10000		2850	2395	2700	82		✱		Corded	151	1,2,3,6
		38	8.1	22181	F382D/835/4P	20	10000		2850	2395	3500	82		✱			151	1,2,3,6
	GRY10q-3	55	8.1	36358	F552D/830A/T4P/B	20	10000		4000	3400	3000	82				Torchiere Replacement Lamp	151	1,2,3,6
		55	8.1	40184	F552D/830/4P/CD	5	10000		4000	3400	3000	82				Torchiere Replacement Lamp, Corded	151	1,2,3,6

Compact Fluorescent Lamps














Base	Watts	Nominal Length (in)	Order Code	Description	Case Qty	Volts	Rated Life (hrs)	Initial Lumens	Mean Lumens	Color Temp K	CRI	Min. Start. Temp (°F)	Power Factor	THD	ENERGY STAR® Screw-Ins	Additional Information	Caution Notice	Footnotes		
Self-Ballasted Lamps																				
Spiral®																				
	Med	10	4.4	15829	FLE10HT3/2/827	10	120	8000	520	420	2700	82	5	0.6	120	★	T3 Spiral®, Boxed	153	1,7,8,9,10	
		10	4.4	49906	FLE10HT3/2/SW/CD	12	120	8000	520	420	2700	82	5	0.6	120	★	T3 Spiral®, Carded Single Pack	153	1,7,8,9,10	
		10	4.4	49907	FLE10HT32SWCD2PK	3	120	8000	520	420	2700	82	5	0.6	120	★	T3 Spiral®, Carded Twin Pack	153	1,7,8,9,10	
		10	4.4	25182	FLE10HT3/2/841	10		8000	520	420	4100	82	5	0.6		★	T3 Spiral®, Boxed	153	1,7,8,9,10	
		10	4.4	89082	FLE10HT3/2/D/CD	12	120	8000	500	400	6500	82	5	0.6	120	★	Carded Single Pack			
		10	4.4	85393	FLE10HT3/2/D/2PK	3	120	8000	500	400	6500	82	5	0.6	120	★	T3 Spiral®, Carded Twin Pack	153	1,7,8,9,10	
		10	4.4	80936	FLE10HT3/2/XL	10	120	12000	550	440	2700	82	5	0.6	120	★	T3 Spiral®, Boxed	153	1,7,8,9,10	
		10	4.4	47430	FLE10HT3/2/XL/CD	12	120	12000	550	440	2700	82	5	0.6	120	★	T3 Spiral®, Carded Single Pack	153	1,7,8,9,10	
		10	4.4	49671	FLE10HT3/2/XL2PK	3	120	12000	550	440	2700	82	5	0.6	120	★	T3 Spiral®, Carded Twin Pack	153	1,7,8,9,10	
		10	3.7	86241	FLE10HT2/2/827	10	120	12000	580	460	2700	82	5	0.5	120	★	T2 Spiral®, Boxed	153	1,7,8,9,10	
		10	3.7	85382	FLE10HT2/2/SW/CD	3	120	12000	580	464	2700	82	5	0.5	120	★	T2 Spiral®, Carded Single Pack	153	1,7,8,9,10	
	Med	13	4.7	16460	FLE13HT3/2/SW/CD	12	120	8000	825	660	2700	82	5	0.6	120	★	T3 Spiral®, Carded Single Pack	153	1,7,8,9,10	
		13	4.7	16459	FLE13HT3/2/SW/2P	3	120	8000	825	660	2700	82	5	0.6	120	★	T3 Spiral®, Carded Twin Pack	153	1,7,8,9,10	
		13	4.7	21760	FLE13HT3/2/10PK	10	120	8000	825	660	2700	82	5	0.6	120	★	T3 Spiral®, Consumer 10-Pack	153	1,7,8,9,10	
		13	4.7	71763	FLE13HT3/2/6STP	6	120	6000	855	685	5000	82	5	0.6	145	★	T3 Spiral®, Tray Pack	153	1,7,8,9,10	
		13	3.9	86256	FLE13HT2/2/827	10	120	12000	870	695	2700	82	5	0.5	120	★	T2 Spiral®, Boxed	153	1,7,8,9,10	
		13	3.9	85383	FLE13HT2/2/SW/CD	3	120	12000	870	750	2700	82	5	0.6	120	★	T2 Spiral®, Carded Single Pack	153	1,7,8,9,10	
	Med	15	4.8	15831	FLE15HT3/2/827	10	120	8000	950	765	2700	82	5	0.6	145	★	T3 Spiral®, Boxed	153	1,7,8,9,10	
		15	4.8	25183	FLE15HT3/2/841	10	120	8000	950	765	4100	82	5	0.6	145	★	T3 Spiral®, Boxed	153	1,7,8,9,10	
		15	4.8	89091	FLE15HT3/2/D/CD	3	120	8000	900	738	6500	82	5	0.6	145	★	Carded Single Pack			
		15	4.8	85394	FLE15HT3/2/D/2PK	3	120	8000	900	738	6500	82	5	0.6	145	★	T3 Spiral®, Carded Twin Pack	153	1,7,8,9,10	
		15	4.8	80937	FLE15HT3/2/XL/SW	10	120	12000	950	765	2700	82	5	0.6	145	★	T3 Spiral®, Boxed	153	1,7,8,9,10	
		15	4.8	47435	FLE15HT3/2/XL/CD	12	120	12000	950	765	2700	82	5	0.6	145	★	T3 Spiral®, Carded Single Pack	153	1,7,8,9,10	
		15	4.8	49680	FLE15HT3/2/XL2PK	3	120	12000	950	765	2700	82	5	0.6	145	★	T3 Spiral®, Carded Twin Pack	153	1,7,8,9,10	
		15	4.1	86271	FLE15HT2/2/827	10	120	12000	950	760	2700	82	5	0.5	120	★	T2 Spiral®, Boxed	153	1,7,8,9,10	
		15	4.1	85385	FLE15HT2/2/SW/CD	12	120	8000	950	765	2700	82	5	0.6	145	★	T2 Spiral®, Carded Single Pack	153	1,7,8,9,10	
		V	15	5.2	89619	FLE15HT3/2/DV	10	120	10000	900	720	2700	82	5	0.6	120	★	Dimming, Boxed	152	1,7,8,9,14
			15	5.2	89623	FLE15HT3/2/DV/CD	12	120	10000	900	720	2700	82	5	0.6	120	★	Dimming, Carded Single Pack	152	1,7,8,9,14
			20	4.7	15834	FLE20HT3/2/827	10	120	8000	1200	965	2700	82	5	0.6	135	★	T3 Spiral®, Boxed	153	1,7,8,9,10
			20	4.7	15516	FLE20HT3/2/SW/CD	12	120	8000	1200	965	2700	82	5	0.6	135	★	T3 Spiral®, Carded Single Pack	153	1,7,8,9,10
			20	4.7	15518	FLE20HT3/2/SW/2P	3	120	8000	1200	965	2700	82	5	0.6	135	★	T3 Spiral®, Carded Twin Pack	153	1,7,8,9,10
			20	4.7	25186	FLE20HT3/2/841	10	120	8000	965	965	4100	82	5	0.6	135	★	T3 Spiral®, Boxed	153	1,7,8,9,10
		20	4.7	80888	FLE20HT3/2/XL827	10	120	12000	1300	1040	2700	82	5	0.6	135	★	T3 Spiral®, Boxed	153	1,7,8,9,10	
		20	4.7	71764	FLE20HT3/2/6S/TP	6	120	6000	1235	990	5000	82	5	0.6	145	★	T3 Spiral®, Tray Pack	153	1,7,8,9,10	
		20	4.7	89094	FLE20HT3/2/D/CD	12	120	8000	1150	945	6500	82	5	0.6	145	★	Carded Single Pack	153	1,7,8,9,14	
		20	4.8	85396	FLE20HT3/2/D/2PK	3	120	8000	1150	945	6500	82	5	0.6	135	★	T3 Spiral®, Carded Twin Pack	153	1,7,8,9,10	
	Type W	20	4.8	47442	FLE20HT3/2/XL/CD	12	120	12000	1300	1040	2700	82	5	0.6	135	★	T3 Spiral®, Carded Single Pack	153	1,7,8,9,10	
		20	4.8	49684	FLE20HT3/2/XL2PK	3	120	12000	1300	1040	2700	82	5	0.6	135	★	T3 Spiral®, Carded Twin Pack	153	1,7,8,9,10	
		20	4.8	47466	FLE20HT3/2/XL/D	12	120	12000	1250	1000	6500	82	5	0.6	135	★	T3 Spiral®, Carded Single Pack, Daylight	153	1,7,8,9,10	
		20	4.5	72880	FLE20HT2/2/XL/CD	3	120	12000	1250	1000	2700	82	5	0.6	120	★	T3 Spiral®, Carded	153	1,7,8,9,10	
	Med	23	5.1	80889	FLE23HT3/2/XL827	10	120	12000	1600	1280	2700	82	5	0.6	135	★	T3 Spiral®, Boxed	153	1,7,8,9,10	
		23	5.1	47445	FLE23HT3/2/XL/CD	12	120	12000	1600	1280	2700	82	5	0.6	135	★	T3 Spiral®, Carded Single Pack	153	1,7,8,9,10	
		Med	26	5.1	89095	FLE26HT3/2/D/CD	12	120	8000	1600	1280	6500	82	5	0.6	120	★	Carded Single Pack	153	1,7,8,9,10
			26	5.2	15836	FLE26HT3/2/827	10	120	8000	1700	1365	2700	82	5	0.6	120	★	T3 Spiral®, Boxed	153	1,7,8,9,10
			26	5.2	15517	FLE26HT3/2/SW/CD	12	120	8000	1700	1365	2700	82	5	0.6	120	★	T3 Spiral®, Carded Single Pack	153	1,7,8,9,10

For the most up-to-date product information, see www.gelighting.com. To convert inches to millimeters, multiply by 25.4.
All footnotes and caution notices found at the end of this section (page 5-15).




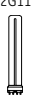


	Base	Watts	Nominal Length (in)	Order Code	Description	Case Qty	Volts	Rated Life (hrs)	Initial Lumens	Mean Lumens	Color Temp K	CRI	Min. Start. Temp (°F)	Power Factor	THD	ENERGY STAR® Screw-In	Additional Information	Caution Notice	Footnotes
Self-Ballasted Lamps (continued)																			
Spiral® (continued)																			
	Med	26	5.2	71765	FLE26HT3/2/6STP	6	120	6000	1660	1325	5000	82	5	0.6	145	★	T3 Spiral®, Tray Pack	153	1,7,8,9,10
		26	5.1	85397	FLE26HT3/2/D/2PK	3	120	8000	1600	1315	6500	82	5	0.6	120	★	T3 Spiral®, Carded Twin Pack	153	1,7,8,9,10
		26	5.2	15519	FLE26HT3/2/SW/2P	3	120	8000	1700	1365	2700	82	5	0.6	120	★	T3 Spiral®, Carded Twin Pack	153	1,7,8,9,10
		26	5.2	21845	FLE26HT3/2/10PK	10	120	8000	1700	1365	2700	82	5	0.6	120	★	T3 Spiral®, Consumer 10 Pack	153	1,7,8,9,10
		26	5.2	25195	FLE26HT3/2/841	10	120	8000	1700	1365	4100	82	5	0.6	120	★	T3 Spiral®, Boxed	153	1,7,8,9,10
		26	5.2	80890	FLE26HT3/2/XL827	10	120	12000	1700	1365	2700	82	5	0.6	120	★	T3 Spiral®, Boxed	153	1,7,8,9,10
		26	5.8	89621	FLE26HT3/2/DV	10	120	10000	1700	1360	2700	82	5	0.6	120	★	Dimming, Boxed	152	1,7,8,9,14
		26	5.8	89624	FLE26HT3/2/DV/CD	12	120	10000	1700	1360	2700	82	5	0.6	120	★	Dimming, Carded Single Pack	152	1,7,8,9,14
		26	5.1	47446	FLE26HT3/2/XL/CD	12	120	12000	1700	1365	2700	82	5	0.6	120	★	T3 Spiral®, Carded Single Pack	153	1,7,8,9,10
		26	5.1	49685	FLE26HT3/2/XL2PK	3	120	12000	1700	1365	2700	82	5	0.6	120	★	T3 Spiral®, Carded Twin Pack	153	1,7,8,9,10
	26	4.8	72881	FLE26HT2/2/XL/CD	3	120	12000	1650	1320	2700	82	5	0.6	120	★	T2 Spiral®, Carded	153	1,7,8,9,10	
	Med	29	6.3	81514	FLE29HLX/2XL/827	10	120	12000	2200	1760	2700	82	5	0.6	170	★	T4 Spiral®, Boxed	153	1,7,8,9,10
		29	6.3	47459	FLE29HLX/2/XL/CD	12	120	12000	2200	1760	2700	82	5	0.6	170	★	T4 Spiral®, Carded Single Pack	153	1,7,8,9,10
		12 23 29	6.3	81515	FLE29HLX/2D3/827	10	120	10000	600/ 1600/ 2150	480/ 1280/ 1740	2700	82	5	0.6	170	★	T3 Spiral®, Boxed, 3-Way	155	1,7,8,9,10
		12 23 29	6.3	47448	FLE29HLX/2/D3/CD	12	120	10000	600/ 1600/ 2150	480/ 1280/ 1740	2700	82	5	0.6	170	★	T3 Spiral®, Carded Single Pack, 3-Way	155	1,7,8,9,10
		42	6.9	80891	FLE42HLX/2/XL827	10	120	12000	2700	2160	2700	82	5	0.6	170	★	T4 Spiral®, Boxed	153	1,7,8,9,10
		42	6.9	47452	FLE42HLX/2/XL/CD	12	120	12000	2700	2160	2700	82	5	0.6	170	★	T4 Spiral®, Carded Single Pack	153	1,7,8,9,10
GU 24																			
	Med	10	3.5	76135	FLE10HT3/2GU24CD	3	120	10000	550	440	2700	80	5	0.6	120	★	T3 GU 24 Base, Carded	153	1,2
		15	3.9	75367	FLE15HT3/2GU24CD	3	120	10000	900	720	2700	80	5	0.6	120	★	T3 GU 24 Base, Carded	153	1,2
		20	4.1	76136	FLE20HT3/2GU24CD	3	120	10000	1200	960	2700	80	5	0.6	120	★	T3 GU 24 Base, Carded	153	1,2
		26	4.6	76137	FLE26HT3/2GU24CD	3	120	10000	1750	1400	2700	80	5	0.6	120	★	T3 GU 24 Base, Carded	153	1,2
Biax®																			
	Med	15	4.9	12004	FLE15TT3/827	10	120	15000	900	720	2700	82	5	0.6	145		T3 Triple Biax®, Boxed	153	1,7,8,9,10,12
		20	5.5	12008	FLE20TT3/827	10	120	15000	1200	960	2700	82	5	0.6	130	★	T3 Triple Biax®, Boxed	153	1,7,8,9,10,12
		24	5.6	23669	FLE24QBX/A/827	6	120	18000	1520	1290	2700	82	-9	0.6	170	★	Boxed	153	1,7,8,9,10,12
		28	5.9	46270	FLE28QBX/A/827	6	120	12000	1750	1485	2700	82	-9	0.6	170			153	1,7,8,9,10,12
	29	6.3	41457	FLE29QBX/DV/827	6	120	10000	1750	1500	2700	82	-9	0.6	170		Dimming	156	1,7,8,9,12,14	
Reflectors																			
	Med	11	4.7	80892	FLE11/2/R20XL827	10	120	10000	400	320	2700	82	5	0.6	120	★	Soft White, R20 Glass Reflector, Boxed	157	1,8,9,10,12
		11	4.7	47477	FLE11/2/R20XL/CD	12	120	10000	400	320	2700	82	5	0.6	120	★	Soft White, R20 Glass Reflector, Carded Single Pack	157	1,8,9,10,12
	Med	15	5.4	20708	FLE15/2/R30/SWCD	12	120	8000	700	565	2700	82	5	0.6	120	★	Soft White, R30 Glass Reflector, Carded Single Pack	158	1,8,9,10,12
		15	5.5	80893	FLE15/2/R30XL827	10	120	10000	750	600	2700	82	5	0.6	120	★	Soft White, R30 Glass Reflector, Boxed	157	1,8,9,10,12
		15	5.3	47478	FLE15/2/R30XL/CD	12	120	10000	750	600	2700	82	5	0.6	120	★	Soft White, R30 Glass Reflector, Carded Single Pack	157	1,8,9,10,12
		15	5.6	21709	FLE15/2/DV/R30	6	120	6000	700	565	2700	82	5	0.6	170	★	Dimming, Soft White, R30 Glass Reflector, Boxed	165	1,8,9,10,14
		15	5.6	21710	FLE15/2DVR30SWCD	3	120	6000	700	565	2700	82	5	0.6	170	★	Dimming, Soft White, R30 Glass Reflector, Carded Single Pack	165	1,8,9,12,14
		15	5.6	89617	FLE15/2/R30/PINK	10	120	10000	700	560			5	0.5	120		Pink	157	1,8,9,10,12

Compact Fluorescent Lamps

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
Base	Watts	Nominal Length (in)	Order Code	Description	Case Qty	Volts	Rated Life (hrs)	Initial Lumens	Mean Lumens	Color Temp K	CRI	Min. Start. Temp (°F)	Power Factor	THD	ENERGY STAR® Screw-Ins	Additional Information	Caution Notice	Footnotes
Self-Ballasted Lamps (continued)																		
Reflectors (continued)																		
	26	6.5	21738	FLE26/2/R40/SWCD	3	120	6000	1300	1040	2700	82	5	0.6	170	★	Soft White, R40 Glass Reflector, Carded Single Pack	158	1,8,9,10,12
	26	6.5	80894	FLE26/2/R40XL827	6	120	10000	1300	1040	2700	82	5	0.6	120	★	Soft White, R40 Glass Reflector, Boxed	157	1,8,9,10,12
	26	6.5	47479	FLE26/2/R40XL/CD	3	120	10000	1300	1040	2700	82	5	0.6	120	★	Soft White, R40 Glass Reflector, Carded Single Pack	157	1,8,9,10,12
	26		21716	FLE26/2/DV/R40	6	120	6000	1200	970	2700	82	5	0.6	170	★	Dimming, Soft White, R40 Glass Reflector, Boxed	165	1,8,9,12,14
	26	6.9	21718	FLE26/2/DVR40SWCD	3	120	6000	1200	970	2700	82	5	0.6	170	★	Dimming, Soft White, R40 Glass Reflector, Carded Single Pack	165	1,8,9,12,14
	26	6.6	89618	FLE26/2/R40/PINK	10	120	10000	1400	1120			5	0.5	120		Pink	157	1,8,9,10,12
	26	5.5	21739	FLE26/2/PAR38/CD	3	120	6000	1200	970	2700	82	5	0.6	120	★	Soft White, Par 38 Glass Reflector, Carded Single Pack	164	1,8,9,12,16
	26	5.5	80895	FLE26/2/PAR38/XL	6	120	10000	1300	1040	2700	82	5	0.6	120	★	Soft White, Par 38 Glass Reflector, Boxed, Wet Rated	166	1,8,9,12,16
	26	5.6	47483	FLE26/2/PAR38XCD	3	120	10000	1300	1040	2700	82	5	0.6	120	★	Soft White, Par 38 Glass Reflector, Carded Single Pack, Wet Rated	166	1,8,9,12,16
	23	5.3	73265	FLE23/3/PAR38FL	6	120	8000	1000		2700	82	5	0.5	150		Flat Lens PAR38	166	1,8,9,12,16
Genura®																		
	23	4.9	25418	EL23/R25/SW	6	120	15000	1100	880	2700	82	32	0.6	130		Genura® Electrodeless Design, Soft White	160	1,8,9,10
	23	4.9	12273	EL23/R25/WW	6	120	15000	1100	880	3000	82	32	0.6	130		Genura® Electrodeless Design, RE 830 Phosphor, Warm White	160	1,8,9,10
Decorative Shapes																		
	5	4.8	16098	FLE5/2/CAC/827	10	120	6000	200	160	2700	82	5	0.6	145		Candle Shape, Candelabra Base, Boxed	157	1,8,10,12
	5	4.8	16099	FLE5/2/CAM/827	10	120	6000	200	160	2700	82	5	0.6	145		Candle Shape, Medium Base, Boxed	157	1,8,10,12
	7	5.2	16103	FLE7/2/CAC/827	10	120	6000	370	296	2700	82	5	0.6	130		Candle Shape, Candelabra Base, Boxed	157	1,8,10,12
	7	5.2	16104	FLE7/2/CAM/827	10	120	6000	370	296	2700	82	5	0.6	130	★	Candle Shape, Medium Base, Boxed	157	1,8,10,12
	9	5.4	85388	FLE9/2/CAC/SW/CD	12	120	6000	430	344	2700	82	5	0.6	125		Candle Shape, Candelabra Base, Carded Single Pack	157	1,8,10,12
	9	5.4	16105	FLE9/2/CAC/827	10	120	6000	430	344	2700	82	5	0.6	125		Candle Shape, Candelabra Base, Boxed	157	1,8,10,12
	9	5.4	47488	FLE9/2/CAM/XL/CD	12	120	10000	430	344	2700	82	5	0.6	125	★	Candle Shape, Medium Base, Carded Single Pack	157	1,8,10,12
	9	5.4	16106	FLE9/2/CAM/827	10	120	6000	430	344	2700	82	5	0.6	125	★	Candle Shape, Medium Base, Boxed	157	1,8,10,12
	10	4.2	89622	FLE11/2/A19XL	10	120	10000	500	400	2700	82	5	0.6	130	★	A-Line Shape, Boxed	157	1,8,10,12
	11	4.4	47486	FLE11/2/A17XL/CD	12	120	10000	500	400	2700	82	5	0.6	120	★	A-Line Shape, Carded Single Pack	157	1,8,10,12
	11	4.2	89629	FLE11/2/G25XL	10	120	10000	500	400	2700	82	5	0.6	130	★	Globe Shape, Boxed	157	1,8,10,12
	11	4.8	47484	FLE11/2/G25XL/CD	12	120	10000	500	400	2700	82	5	0.5	130	★	Globe Shape, Carded Single Pack	157	1,8,10,12
	11	4.1	89631	FLE11/2/T14XL	10	120	10000	500	400	2700	82	5	0.6		★	Bullet Shape, Boxed		1,8,10,12
	11	96.0	49894	FLE11/2/TC14SW/CD	3	120	6000	520	420	2700	82	5	0.6	120	★	Post Light, Carded Single Pack	157	1,8,10,12
	11	96.0	49895	FLE11/2/TC14BUGCD	3	120	6000	520	420	2700	82	5	0.6	120	★	Bug Yellow Post Light, Carded Single Pack	157	1,8,10,12
	11	96.0	49895	FLE11/2/TC14BUGCD	3	120	6000	520	420	2700	82	5	0.6	120	★	Bug Yellow Post Light, Carded Single Pack	157	1,8,10,12
	14	5.0	85384	FLE14/2/TC16SWCD	12	120	10000	750	600	2700	82	5	0.5	150	★	Bullet Shape, Carded Single Pack		1,8,10,12
	14	5.0	47464	FLE14/2/TC16/BUG	12	120	10000	750		2700	82		0.5	150	★	Bug Yellow Post Light, Carded Single Pack	157	1,8,10,12
	15	4.6	89632	FLE15/2/A19XL	10	120	10000	825	660	2700	82	5	0.6	120	★	A-Line Shape, Boxed		1,8,10,12
	15	4.8	47487	FLE15/2/A21XL/CD	12	120	10000	825	660	2700	82	5	0.6	120	★	A-Line Shape, Carded Single Pack	157	1,8,10,12
	15	4.6	89633	FLE15/2/G25XL	10	120	10000	825	660	2700	82	5	0.5	150	★	Globe Shape, Boxed		1,8,10,12


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Base	Watts	Nominal Length (in)	Order Code	Description	Case Qty	Volts	Rated Life (hrs)	Initial Lumens	Mean Lumens	Color Temp K	CRI	Min. Start. Temp (°F)	Power Factor	THD	ENERGY STAR® Screw-In	Additional Information	Caution Notice	Footnotes
Self-Ballasted Lamps (continued)																		
Decorative Shapes (continued)																		
Med	15	4.8	47485	FLE15/2/G25XL/CD	12	120	10000	825	660	2700	82	5	0.6	120	★	Globe Shape, Carded Single Pack	157	1,8,10,12
	15	4.7	21733	FLE15/2/A21/SWCD	12	120	8000	850	689	2700	82	5	0.6	120	★	A-Line Shape, Carded Single Pack	157	1,8,10,12
	20	5.4	89635	FLE20/2/T19XL	10	120	10000	1100	880	2700	82	5	0.6	130	★	Bullet Shape, Boxed		1,8,10,12
	20	5.7	89634	FLE20/2/A19XL	10	120	10000	1100	880	2700	82	5	0.6	130	★	A-Line Shape, Boxed	158	1,8,10,12
Med	26	6.0	89636	FLE26/2/T21XL	10	120	10000	1350	1080	2700	82	5	0.6	130	★	Bullet Shape, Boxed	157	1,8,10,12
Specialty																		
covRguard® Spiral®																		
	15	4.8	78961	FLE15HT3/2/B27/CVG	10	120	8000	920	736	2700	82	5	0.6	120		Shatter Resistant Coating		
	20	4.7	78962	FLE20HT3/2/B27/CVG	10	120	8000	1260	1008	2700	82	5	0.6	120		Shatter Resistant Coating		
	26	5.2	78963	FLE26HT3/2/B27/CVG	10	120	8000	1700	1360	2700	82	5	0.6	120		Shatter Resistant Coating		
Blacklight																		
	GX23	13	6.7	42937	F13BX/BL	10	59	5000		Blacklight						Blacklight UVA Source 2-Pin Internal Starter. Lamp emits UV irradiation which may cause eye/skin irritation. RGI.	104	
	2G11	24	12.5	42939	F24BX/BL	10	75	5000		Blacklight						Blacklight UVA Source 4-Pin Electronic. Lamp emits UV irradiation which may cause eye/skin irritation. RGI.	104	
	36	16.3	42940	F36BX/BL	10	90	5000			Blacklight						Blacklight UVA Source 4-Pin Electronic. Lamp emits UV irradiation which may cause eye/skin irritation. RGI.	104	
	55	20.7	42941	F55BX/BL	10	101	5000			Blacklight						Blacklight UVA Source 4-Pin Electronic. Lamp emits UV irradiation which may cause eye/skin irritation. RGI.	104	
Germicidal																		
	G23	5	3.4	40695	GBX5/UVC	10		8000								Clear, Preheat, 2-Pin Internal Starter, UVC Source. WARNING: Risk group 3 (High Risk): UV emitted from this lamp. Avoid exposure of eyes and skin to unshielded lamp. Skin or eye injury will result. Life rating is based on UV maintenance curve and is measured at 80% of initial (100 hr) UVC output.		
	G23	9	5.7	40696	GBX9/UVC	10		8000								Clear, Preheat, 2-Pin Internal Starter, UVC Source. WARNING: Risk group 3 (High Risk): UV emitted from this lamp. Avoid exposure of eyes and skin to unshielded lamp. Skin or eye injury will result. Life rating is based on UV maintenance curve and is measured at 80% of initial (100 hr) UVC output.		

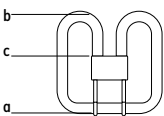
Compact Fluorescent Lamps

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Base	Watts	Nominal Length (in)	Order Code	Description	Case Qty	Volts	Rated Life (hrs)	Initial Lumens	Mean Lumens	Color Temp K	CRI	Min. Start Temp (°F)	Power Factor	THD	ENERGY STAR® Screw-In	Additional Information	Caution Notice	Footnotes
Specialty (continued)																		
Germicidal (continued)																		
G23	11	8.8	40700	GBX11/UVC	10		8000									Clear, Preheat, 2-Pin Internal Starter, UVC Source. WARNING: Risk group 3 (High Risk): UV emitted from this lamp. Avoid exposure of eyes and skin to unshielded lamp. Skin or eye injury will result. Life rating is based on UV maintenance curve and is measured at 80% of initial (100 hr) UVC output.		
	GX23	13	6.7	40703	GBX13/UVC	10	8000									Clear, Preheat, 2-Pin Internal Starter, UVC Source. WARNING: Risk group 3 (High Risk): UV emitted from this lamp. Avoid exposure of eyes and skin to unshielded lamp. Skin or eye injury will result. Life rating is based on UV maintenance curve and is measured at 80% of initial (100 hr) UVC output.		
	2G11	18	8.8	40704	GBX18/UVC	40	8000									Clear, 4-Pin UVC Source. WARNING: Risk group 3 (High Risk): UV emitted from this lamp. Avoid exposure of eyes and skin to unshielded lamp. Skin or eye injury will result. Life rating is based on UV maintenance curve and is measured at 80% of initial (100 hr) UVC output.		
		36	16.3	40705	GBX36/UVC	40	8000									Clear, 4-Pin UVC Source. WARNING: Risk group 3 (High Risk): UV emitted from this lamp. Avoid exposure of eyes and skin to unshielded lamp. Skin or eye injury will result. Life rating is based on UV maintenance curve and is measured at 80% of initial (100 hr) UVC output.		
	2G11	55	20.7	15885	GBX55/UVC	25	8000									Clear, 4-Pin UVC Source. WARNING: Risk group 3 (High Risk): UV emitted from this lamp. Avoid exposure of eyes and skin to unshielded lamp. Skin or eye injury will result. Life rating is based on UV maintenance curve and is measured at 80% of initial (100 hr) UVC output.		
		60	16.3	72301	GBX60/UVC	25	8000									Clear, 4-Pin UVC Source. WARNING: Risk group 3 (High Risk): UV emitted from this lamp. Avoid exposure of eyes and skin to unshielded lamp. Skin or eye injury will result. Life rating is based on UV maintenance curve and is measured at 80% of initial (100 hr) UVC output.		

Base	Watts	Nominal Length (in)	Order Code	Description	Case Qty	Volts	Rated Life (hrs)	Initial Lumens	Mean Lumens	Color Temp K	CRI	Min. Start. Temp (°F)	Power Factor	THD	ENERGY STAR® Screw-In	Additional Information	Caution Notice	Footnotes
Specialty (continued)																		
Film and TV Lighting HLBX 4-Pin																		
	55	20.7	41869	F55BX/STUDIOBX32	40		10000	4100		3200	86					High color rendering. Ideal for TV studios, live broadcasts. Color tuned to match tungsten and daylight light sources.		
	55	20.7	41873	F55BX/STUDIOBX56	40		10000	4100		5600	89					High color rendering. Ideal for TV studios, live broadcasts. Color tuned to match tungsten and daylight light sources.		
	55	20.7	41903	F55BX/CINPLUS/32	40		2000	2400		3200	92					High color rendering. Soft light used in film applications. GEL free light source. Matches the color spectrum of film. LB and CC +/-5.		
	55	20.7	41911	F55BX/CINPLUS/55	40		2000	2400		5500	95					High color rendering. Soft light used in film applications. GEL free light source. Matches the color spectrum of film. LB and CC +/-5.		

Footnotes

- Fluorescent lamp lumens decline during life.
- Based on 60Hz reference circuit.
- 

10-watt, 16-watt and 28-watt 2D® lamps may be operated in any position. 21-watt, 38-watt, 39-watt and 55-watt 2D® lamps must be used with the leg marked (a) in the diagram below the bend (b), in order to avoid overheating the end of the cap marked (c).
- Life ratings for the F18BX preheat lamps are based on operating the lamp at 3 hrs. per start on a preheat type circuit. Operation on rapid start and instant start ballasts is not recommended.
- Cold cathode resistance is approximately 6.0 Ohms.
- 4-Pin lamp minimum starting temperature is a function of the ballast. Most ballasts are rated with a minimum starting temperature of 50°F (10°C). Ballasts are also available that provide reliable starting to 0°F (-18°C) and -20°F (-29°C).
- Most one-piece self-ballasted lamps for incandescent sockets and plug-in lamps with screw-in adapters do not work with clip-on shades.
- Lumens on one-piece self-ballasted lamp systems are measured base up.
- Best performance if operated base up and at 77°F (25°C) ambient temperature.
- Use only on 120V, 60Hz circuits. Do not use on dimming circuits, photocells or timers. Do not use in wet locations.
- Adapters rated at 40,000 hours life.
- Amalgam products experience stable brightness over a wider temperature range and in various operating positions.
- Life ratings are based on operating the lamp at 3 hrs. per start on a rapid start type ballast. Life rating on a preheat or instant start ballast is 25% lower.
- Use only on 120V, 60Hz circuits. Do not use on with photocells or timers. Do not use in wet locations.
- These lamps are only recommended for use with single-lamp ballasts or parallel-wired 2-lamp ballasts.
- UL Listed for wet locations. Use only on 120V, 60Hz circuits. Do not use on dimming circuits, photocells or timers.
- Max. bulb wall temperature not to exceed 180°C. Consult GE sales representative for further information.

Compact Fluorescent Lamps

Caution Notices

151**⚠ CAUTION****Lamp may shatter and cause injury if broken**

- Remove and install by grasping only plastic portion of the lamp

152**⚠ CAUTION****Risk of electric shock**

- Do not use where directly exposed to water
- Do not open—no user serviceable parts inside

Lamp may shatter and cause injury if broken

- Remove and install by grasping only plastic portion of the lamp

This product complies with Part 18 of the FCC Rules, but may cause interference to radios, televisions, wireless telephones, and remote controls. Avoid placing this product near these devices. If interference occurs, move the product away from the device or plug either into a different outlet. Do not install this product near maritime safety equipment or other critical navigation or communication equipment operating between 0.45-30 MHz. Not intended for use with emergency exit fixtures or lights or in electronic timers.

153**⚠ CAUTION****Risk of electric shock**

- Do not use where directly exposed to water
- Do not open—no user serviceable parts inside

Lamp may shatter and cause injury if broken

- Remove and install by grasping only plastic portion of the lamp

This product complies with Part 18 of the FCC Rules, but may cause interference to radios, televisions, wireless telephones, and remote controls. Avoid placing this product near these devices. If interference occurs, move the product away from the device or plug either into a different outlet. Do not install this product near maritime safety equipment or other critical navigation or communication equipment operating between 0.45-30 MHz. Not intended for use with emergency exit fixture or lights, electronic timers, photocells, or with dimmers

155**⚠ CAUTION****Risk of electric shock**

- Do not use where directly exposed to water
- Do not open—no user serviceable parts inside

Lamp may shatter and cause injury if broken

- Remove and install by grasping only plastic portion of the lamp

This product complies with Part 18 of the FCC Rules, but may cause interference to radios, televisions, wireless telephones, and remote controls. Avoid placing this product near these devices. If interference occurs, move the product away from the device or plug either into a different outlet. Do not install this product near maritime safety equipment or other critical navigation or communication equipment operating between 0.45 - 30 MHz. Not intended for use with emergency exit fixtures or lights, electronic timers, photocells, in totally enclosed recessed fixtures, or with dimmers

156**⚠ CAUTION****Risk of electric shock**

- Do not use where directly exposed to water
- Do not open—no user serviceable parts inside

Lamp may shatter and cause injury if broken

- Remove and install by grasping only plastic portion of the lamp

This product complies with Part 18 of the FCC Rules, but may cause interference to radios, televisions, wireless telephones, and remote controls. Avoid placing this product near these devices. If interference occurs, move the product away from the device or plug either into a different outlet. Do not install this product near maritime safety equipment or other critical navigation or communication equipment operating between 0.45-30 MHz. Not intended for use with emergency exit fixtures or lights, electronic timers, photocells, or in totally enclosed recessed fixtures.

157**⚠ CAUTION****Risk of electric shock**

- Do not open—no user serviceable parts inside
- Do not use where directly exposed to water or outdoors without an enclosed fixture

This product complies with Part 18 of the FCC Rules, but may cause interference to radios, televisions, wireless telephones, and remote controls. Avoid placing this product near these devices. If interference occurs, move the product away from the device or plug either into a different outlet. Do not install this product near maritime safety equipment or other critical navigation or communication equipment operating between 0.45-30 MHz. Not intended for use with emergency exit fixtures or lights, electronic timers, photocells, or with dimmers.

158**⚠ CAUTION****Risk of electric shock**

- Do not open—no user serviceable parts inside
- Do not use where directly exposed to water or outdoors without an enclosed fixture

This product complies with Part 18 of the FCC Rules, but may cause interference to radios, televisions, wireless telephones, and remote controls. Avoid placing this product near these devices. If interference occurs, move the product away from the device or plug either into a different outlet. Do not install this product near maritime safety equipment or other critical navigation or communication equipment operating between 0.45-30 MHz. Not intended for use with emergency exit fixtures or lights, electronic timers, photocells, dimmers, or in totally enclosed recessed fixtures.

160**⚠ CAUTION****Risk of electric shock**

- Do not use where directly exposed to water
- Do not open—no user serviceable parts inside

Lamp may shatter and cause injury if broken

- Remove and install by grasping only plastic portion of the lamp

This product may cause interference to radio equipment operating in the frequency range of 2.2 - 2.8 MHz. Avoid placing this product near these devices. To reduce the possibility of radio interference to maritime safety communications, this device should not be installed:

- 1) On board cargo vessels of more than 300 tons
- 2) On board cargo vessels carrying more than 12 passengers for hire
- 3) At any medium frequency public coast station

Further, installation is not recommended on board vessels equipped with medium frequency, single sideband marine radios. If interference occurs, move this product away from the device or plug either into a different outlet. Such interference complaints should be reported to: Application Solutions at General Electric Company, 1975 Noble Road, Cleveland, Ohio 44112, or call toll free (800) 435-4448 from 8:00 am to 6:00 pm EST.

Not intended for use with emergency exit fixtures or lights, electronic timers, photocells, dimmers, or in totally enclosed recessed fixtures.

163**⚠ CAUTION****Risk of electric shock**

- Do not use where directly exposed to water
- Do not open—no user serviceable parts inside
- Use indoors only

Lamp may shatter and cause injury if broken

- Remove and install by grasping only plastic portion of the lamp

Added weight may cause instability of free-standing portable lamps. Use only with portable lamps in which the distance from the bottom of the base to the top of the lamp holder does not exceed three times the base width or with portable lamps which are provided with lamp shades. Not intended for use with emergency exit fixtures or lights, electronic timers, photocells, in totally enclosed recessed fixtures, or with dimmers.

Caution Notices (continued)

164**⚠ CAUTION****Risk of electric shock**

- Do not use where directly exposed to water
- Do not open—no user serviceable parts inside
- Use indoors only

Lamp may shatter and cause injury if broken

- Remove and install by grasping only plastic portion of the lamp

This product complies with Part 18 of the FCC Rules, but may cause interference to radios, televisions, wireless telephones, and remote controls. Avoid placing this product near these devices. If interference occurs, move the product away from the device or plug either into a different outlet. Do not install this product near maritime safety equipment or other critical navigation or communication equipment operating between 0.45-30 MHz. Not intended for use with emergency exit fixtures or lights, in totally enclosed recessed fixtures, or with dimmers. Added weight may cause instability of free-standing portable lamps. Use only with portable lamps in which the distance from the bottom of the base to the top of the lamp holder does not exceed three times the base width. Use only with portable lamps which are provided with lamp shades.

165**⚠ CAUTION****Risk of electric shock**

- Do not open—no user serviceable parts inside
- Do not use where directly exposed to water or outdoors without an enclosed fixture

This product complies with Part 18 of the FCC Rules, but may cause interference to radios, televisions, wireless telephones, and remote controls. Avoid placing this product near these devices. If interference occurs, move the product away from the device or plug either into a different outlet. Do not install this product near maritime safety equipment or other critical navigation or communication equipment operating between 0.45-30 MHz. Not intended for use with emergency exit fixtures or lights, electronic timers, photocells or in totally enclosed recessed fixtures.

166**⚠ CAUTION****Risk of electric shock**

- Do not open—no user serviceable parts inside

This product complies with Part 18 of the FCC Rules, but may cause interference to radios, televisions, wireless telephones, and remote controls. Avoid placing this product near these devices. If interference occurs, move the product away from the device or plug either into a different outlet. Do not install this product near maritime safety equipment or other critical navigation or communication equipment operating between 0.45-30 MHz. Not intended for use with emergency exit fixtures or lights, electronic timers, photocells, or with dimmers.

Compact Fluorescent Lamps

Cross-Reference

GE Description	Generic Description	Osram/Sylvania Description	Philips Description
Order This GE Lamp	If you currently use these lamps		
Low Wattage Biax® 2-Pin			
F58X/SPX27	CFT5W/G23/827	CF5DS/827	PL-S 5W/827
F58X/SPX41	CFT5W/G23/841	CFDS/841	—
F78X/SPX27	CFT7W/G23/827	CF7DS/827	PL-S 7W/827
F78X/SPX35	CFT7W/G23/835	CF7DS/835	PL-S 7W/835
F78X/SPX41	CFT7W/G23/841	CF7DS/841	PL-S 7W/841
F98X/SPX27	CFT9W/G23/827	CF9DS/827	PL-S 9W/827
F98X/SPX35	CFT9W/G23/835	CF9DS/835	PL-S 9W/835
F98X/SPX41	CFT9W/G23/841	CF9DS/841	PL-S 9W/841
F138X/SPX27	CFT13W/G23/827	CF13DS/827	PL-S 13W/827
F138X/SPX30	CFT13W/G23/830	CF13DS/830	PL-S 13W/830
F138X/SPX35	CFT13W/G23/835	CF13DS/835	PL-S 13W/835
F138X/SPX41	CFT13W/G23/841	CF13DS/841	PL-S 13W/841
F138X/SPX50	CFT13W/G23/850	CF13DS/850	PL-S 13W/850
F138X/E/827	CFT13W/G23/827	—	—
F138X/E/830	CFT13W/G23/835	—	—
F138X/E/835	CFT13W/G23/830	—	—
F138X/E/841	CFT13W/G23/841	—	—
F138X/E/850	CFT13W/G23/850	—	—
High Lumen Biax®			
F188X/SPX30	FT18W/2G11/830	FT18DL/830	PL-L 18W/830
F188X/SPX35	FT18W/2G11/835	FT18DL/835	PL-L 18W/835
F188X/SPX41	FT18W/2G11/841	FT18DL/841	PL-L 18W/841
F188X/SPX30/RS	FT18W/2G11/RS/830	FT18DL/830/RS	PL-L 18W/830
F188X/SPX35/RS	FT18W/2G11/RS/835	FT18DL/835/RS	PL-L 18W/835
F188X/SPX41/RS	FT18W/2G11/RS/841	FT18DL/841/RS	PL-L 18W/841
F188X/SPX65/RS	FT18W/2G11/RS/865	—	—
F278X/SPX3/RS	FT24W/2G11/830	FT24DL/830	PL-L 24W/830
F278X/SPX35/RS	FT24W/2G11/835	FT24DL/835	PL-L 24W/835
F278X/SPX41/RS	FT24W/2G11/841	FT24DL/841	PL-L 24W/841
F398X/SPX3/RS	FT36W/2G11/830	FT36DL/830	PL-L 36W/830
F398X/SPX3/RS	FT36W/2G11/835	FT36DL/835	PL-L 36W/835
F398X/SPX3/RS	FT36W/2G11/841	FT36DL/841	PL-L 36W/841
F40/25/BX830/IS/WM	FT40W/2G11/IS/830	F40DL/28W/830/SS/IS/ECO	PL-L 40W/830/XEW/4P/IS 25W
F40/25/BX835/IS/WM	FT40W/2G11/IS/835	F40DL/28W/835/SS/IS/ECO	PL-L 40W/835/XEW/4P/IS 25W
F40/25/BX841/IS/WM	FT40W/2G11/IS/841	F40DL/28W/841/SS/IS/ECO	PL-L 40W/841/XEW/4P/IS 25W
F40/25/BX850/IS/WM	FT40W/2G11/IS/850	—	—
F40/308X/SPX30	FT40W/2G11/RS/830	FT40DL/830/RS	PL-L 40W/830/RS/IS
F40/308X/SPX35	FT40W/2G11/RS/835	FT40DL/835/RS	PL-L 40W/835/RS/IS
F40/308X/SPX41	FT40W/2G11/RS/841	FT40DL/841/RS	PL-L 40W/841/RS/IS
F40/308X/SPX50/RS	F40/308X/SPX50/RS	—	—
F50/308X/SPX30/RS	FT50W/2G11/RS/830	—	PL-L 50W/830/RS
F50/308X/SPX35/RS	FT50W/2G11/RS/835	—	PL-L 50W/835/RS
F50/308X/SPX41/RS	FT50W/2G11/RS/841	—	PL-L 50W/841/RS
F558X/830	FT55W/2G11/RS/830	FT55DL/830	—
F558X/835	FT55W/2G11/RS/835	FT55DL/835	—
F558X/841	FT55W/2G11/RS/841	FT55DL/841	—
Double Biax® 2-Pin			
F9DBX23T4/SPX27	CFQ9W/G23/827	CF9DD/827	—
F9DBX23T4/841	CFQ9W/G23/841	—	—
F13DBX23T4/SPX27	CFQ13W/GX23/827	CF13DD/827	PL-C 13W/827/USA
F13DBX23T4/SPX30	CFQ13W/GX23/830	CF13DD/830	PL-C 13W/830/USA
F13DBX23T4/SPX35	CFQ13W/GX23/835	CF13DD/835	PL-C 13W/835/USA
F13DBX23T4/SPX41	CFQ13W/GX23/841	CF13DD/841	PL-C 13W/841/USA
F13DBXT4/SPX27	CFQ13W/G24d/827	—	PL-C 13W/827
F13DBXT4/SPX30	CFQ13W/G24d/830	—	PL-C 13W/830
F13DBXT4/SPX35	CFQ13W/G24d/835	—	—
F13DBXT4/SPX41	CFQ13W/G24d/841	—	—
F18DBXT4/SPX27	CFQ18W/G24d/827	CF18DD/827	PL-C 18W/827
F18DBXT4/SPX30	CFQ18W/G24d/830	CF18DD/830	PL-C 18W/830
F18DBXT4/SPX35	CFQ18W/G24d/835	CF18DD/835	PL-C 18W/835
F18DBXT4/SPX41	CFQ18W/G24d/841	CF18DD/841	PL-C 18W/841
F26DBXT4/SPX27	CFQ26W/G24d/827	CF26DD/827	PL-C 26W/827

GE Description	Generic Description	Osram/Sylvania Description	Philips Description
Order This GE Lamp	If you currently use these lamps		
Double Biax® 2-Pin (continued)			
F26DBXT4/SPX30	CFQ26W/G24d/830	CF26DD/830	PL-C 26W/830
F26DBXT4/SPX35	CFQ26W/G24d/835	CF26DD/835	PL-C 26W/835
F26DBXT4/SPX41	CFQ26W/G24d/841	CF26DD/841	PL-C 26W/841
F26DBX/E/827	CFQ26W/G24d/827	—	—
F26DBX/E/830	CFQ26W/G24d/830	—	—
F26DBX/E/835	CFQ26W/G24d/835	—	—
F26DBX/E/841	CFQ26W/G24d/841	—	—
Double Biax® 4-Pin			
F13DBX/SPX27/4P	CFQ13W/G24q/827	CF13DD/E/827	PL-C 13W/827/4P
F13DBX/SPX30/4P	CFQ13W/G24q/830	CF13DD/E/830	PL-C 13W/830/4P
F13DBX/SPX35/4P	CFQ13W/G24q/835	CF13DD/E/835	PL-C 13W/835/4P
F13DBX/SPX41/4P	CFQ13W/G24q/841	CF13DD/E/841	PL-C 13W/841/4P
F18DBX/SPX27/4P	CFQ18W/G24q/827	CF18DD/E/827	PL-C 18W/827/4P
F18DBX/SPX30/4P	CFQ18W/G24q/830	CF18DD/E/830	PL-C 18W/830/4P
F18DBX/SPX35/4P	CFQ18W/G24q/835	CF18DD/E/835	PL-C 18W/835/4P
F18DBX/SPX41/4P	CFQ18W/G24q/841	CF18DD/E/841	PL-C 18W/841/4P
F26DBX/SPX27/4P	CFQ26W/G24q/827	CF26DD/E/827	PL-C 26W/827/4P
F26DBX/SPX30/4P	CFQ26W/G24q/830	CF26DD/E/830	PL-C 26W/830/4P
F26DBX/SPX35/4P	CFQ26W/G24q/835	CF26DD/E/835	PL-C 26W/835/4P
F26DBX/SPX41/4P	CFQ26W/G24q/841	CF26DD/E/841	PL-C 26W/841/4P
Triple Biax® 4-Pin			
F13TBX/SPX27/A/4P	CFTR13W/GX24q/827	CF13DT/E/827	—
F13TBX/SPX27/A/4P	CFTR13W/GX24q/830	CF13DT/E/830	—
F13TBX/SPX27/A/4P	CFTR13W/GX24q/835	CF13DT/E/835	—
F13TBX/SPX27/A/4P	CFTR13W/GX24q/841	CF13DT/E/841	—
F18TBX/SPX27/A/4P	CFTR18W/GX24q/827	CF18DT/E/IN/827	PL-T 18W/827/4P
F18TBX/SPX30/A/4P	CFTR18W/GX24q/830	CF18DT/E/IN/830	PL-T 18W/830/4P
F18TBX/SPX35/A/4P	CFTR18W/GX24q/835	CF18DT/E/IN/835	PL-T 18W/835/4P
F18TBX/SPX41/A/4P	CFTR18W/GX24q/841	CF18DT/E/IN/841	PL-T 18W/841/4P
F26TBX/SPX27/A/4P	CFTR26W/GX24q/827	CF26DT/E/IN/827	PL-T 26W/827/4P
F26TBX/SPX30/A/4P	CFTR26W/GX24q/830	CF26DT/E/IN/830	PL-T 26W/830/4P
F26TBX/SPX35/A/4P	CFTR26W/GX24q/835	CF26DT/E/IN/835	PL-T 26W/835/4P
F26TBX/SPX41/A/4P	CFTR26W/GX24q/841	CF26DT/E/IN/841	PL-T 26W/841/4P
F32TBX/SPX27/A/4P	CFTR32W/GX24q/827	CF32DT/E/IN/827	PL-T 32W/827/4P
F32TBX/SPX30/A/4P	CFTR32W/GX24q/830	CF32DT/E/IN/830	PL-T 32W/830/4P
F32TBX/SPX35/A/4P	CFTR32W/GX24q/835	CF32DT/E/IN/835	PL-T 32W/835/4P
F32TBX/SPX41/A/4P	CFTR32W/GX24q/841	CF32DT/E/IN/841	PL-T 32W/841/4P
F42TBX/827/A/4P/EOL	CFTR42W/GX24q/827	CF42DT/E/IN/827	PL-T 42W/827/4P
F42TBX/830/A/4P/EOL	CFTR42W/GX24q/830	CF42DT/E/IN/830	PL-T 42W/830/4P
F42TBX/835/A/4P/EOL	CFTR42W/GX24q/835	CF42DT/E/IN/835	PL-T 42W/835/4P
F42TBX/841/A/4P/EOL	CFTR42W/GX24q/841	CF42DT/E/IN/841	PL-T 42W/841/4P
High Output Biax® 4-Pin			
F57QBX/827/A/4P/EOL	CFM57W/GX24q/827	CF57DT/E/IN/827	—
F57QBX/830/A/4P/EOL	CFM57W/GX24q/830	CF57DT/E/IN/830	—
F57QBX/835/A/4P/EOL	CFM57W/GX24q/835	CF57DT/E/IN/835	—
F57QBX/841/A/4P/EOL	CFM57W/GX24q/841	CF57DT/E/IN/841	—
F57QBX/850/A/4P/EOL	CFM57W/GX24q/850	CF57DT/E/IN/850	—
F70QBX/827/A/4P/EOL	CFM70W/GX24q/827	—	—
F70QBX/830/A/4P/EOL	CFM70W/GX24q/830	—	—
F70QBX/835/A/4P/EOL	CFM70W/GX24q/835	—	—
F70QBX/841/A/4P/EOL	CFM70W/GX24q/841	—	—
F70QBX/850/A/4P/EOL	CFM70W/GX24q/850	—	—

GE Enhanced Plug-in Product Conversion

PC	PC Description	New PC	New Description
If you used to order GE product:		Now order GE product:	
37654	F5BX/SPX27/827	97551	F5BX/827/ECO
13575	F5BX/SPX27/CD	97552	F5BX/827/CDECO
37661	F5BX/SPX41/840	97553	F5BX/841/ECO
37846	F7BX/SPX27/827	97554	F7BX/827/ECO
13576	F7BX/SPX27/CD	97555	F7BX/827/CDECO
37659	F7BX/SPX35/835	97556	F7BX/835/ECO
37660	F7BX/SPX41/840	97557	F7BX/841/ECO
37651	F9BX/SPX27/827	97558	F9BX/827/ECO
13577	F9BX/SPX27/CD	97559	F9BX/827/CDECO
37652	F9BX/SPX35/835	97560	F9BX/835/ECO
37653	F9BX/SPX41/840	97561	F9BX/841/ECO
41645	F13BX/E/827	97562	F13BX/E/827/ECO
41646	F13BX/E/830	97563	F13BX/E/830/ECO
41649	F13BX/E/835	97564	F13BX/E/835/ECO
41651	F13BX/E/841	97565	F13BX/E/841/ECO
41652	F13BX/E850	97566	F13BX/E/850/ECO
14583	F13BX/SPX27/CD	97567	F13BX/827/CDECO
41757	F13BX/SPX35 100P	97568	F13BX/835 100P
17048	F13BX/SPX35/835	97569	F13BX/835/ECO
41758	F13BX/SPX41 100P	97570	F13BX/841 100P
20434	F13BX/SPX41/840	97571	F13BX/841/ECO
11671	F13BX/SPX50	97572	F13BX/850/ECO
14650	F13BX/SPX27/827	97573	F13BX/827/ECO
17612	F13BX/SPX30/830	97574	F13BX/830/ECO
42065	F9DBX23T4/841	97575	F9DBX23/841/ECO
12409	F9DBX23T45PX27/8	97576	F9DBX23/827/ECO
13578	F13DBX/SPX27/CD	97585	F13DBX/827/CD
18844	F13DBX23T4/SPX27	97586	F13DBX23/827/ECO
10574	F13DBX23T4/SPX30	97587	F13DBX23/830/ECO
18556	F13DBX23T4/SPX35	97588	F13DBX23/835/ECO
20531	F13DBX23T4/SPX41	97589	F13DBX23/841/ECO
18557	F13DBXT4/SPX27	97590	F13DBX/827/ECO
12956	F13DBXT4/SPX30	97591	F13DBX/830/ECO
18559	F13DBXT4/SPX35	97592	F13DBX/835/ECO
20532	F13DBXT4/SPX41	97593	F13DBX/841/ECO
30035	F13DBX/SPX27/4P	97594	F13DBX/827/ECO4P
10580	F13DBX/SPX30/4P	97595	F13DBX/830/ECO4P
30037	F13DBX/SPX35/4P	97596	F13DBX/835/ECO4P
30038	F13DBX/SPX41/4P	97597	F13DBX/841/ECO4P
12860	F18DBXT4/SPX27	97577	F18DBX/827/ECO
12861	F18DBXT4/SPX30	97578	F18DBX/830/ECO
12863	F18DBXT4/SPX35	97579	F18DBX/835/ECO
12864	F18DBXT4/SPX41	97580	F18DBX/841/ECO
12865	F18DBX/SPX27/4P	97598	F18DBX/827/ECO4P
12866	F18DBX/SPX30/4P	97599	F18DBX/830/ECO4P
12869	F18DBX/SPX35/4P	97600	F18DBX/835/ECO4P
12870	F18DBX/SPX41/4P	97601	F18DBX/841/ECO4P
46290	F26DBX/E/827	97602	F26DBX/E/827/ECO
46291	F26DBX/E/830	97603	F26DBX/E/830/ECO
46292	F26DBX/E/835	97604	F26DBX/E/835/ECO
46294	F26DBX/E/841	97605	F26DBX/E/841/ECO
35250	F26DBXT4/SPX27	97606	F26DBX/827/ECO
35237	F26DBXT4/SPX30	97607	F26DBX/830/ECO
35251	F26DBXT4/SPX35	97608	F26DBX/835/ECO
35252	F26DBXT4/SPX41	97609	F26DBX/841/ECO
35247	F26DBXT45PX27/4P	97610	F26DBX/827/ECO4P
35235	F26DBXT45PX30/4P	97611	F26DBX/830/ECO4P
35248	F26DBXT45PX35/4P	97612	F26DBX/835/ECO4P
35236	F26DBXT45PX41/4P	97613	F26DBX/841/ECO4P
34391	F13T8X/SPX27/A/4	97619	F13T8X/827/A/ECO
34395	F13T8X/SPX30/A/4	97620	F13T8X/830/A/ECO
34400	F13T8X/SPX35/A/4	97621	F13T8X/835/A/ECO
34387	F13T8X/SPX41/A/4	97622	F13T8X/841/A/ECO

PC	PC Description	New PC	New Description
If you used to order GE product:		Now order GE product:	
47696	F13T8X827/4P/EOL	97623	F13T8X827/4P/ECO
34392	F18T8X/SPX27/A/4	97624	F18T8X/827/A/ECO
34396	F18T8X/SPX30/A/4	97625	F18T8X/830/A/ECO
34405	F18T8X/SPX35/A/4	97626	F18T8X/835/A/ECO
34385	F18T8X/SPX41/A/4	97627	F18T8X/841/A/ECO
48869	F18T8X827/4P/EOL	97628	F18T8X827/4P/ECO
34393	F26T8X/SPX27/A/4	97614	F26T8X/827/A/ECO
34397	F26T8X/SPX30/A/4	97615	F26T8X/830/A/ECO
34406	F26T8X/SPX35/A/4	97616	F26T8X/835/A/ECO
34381	F26T8X/SPX41/A/4	97617	F26T8X/841/A/ECO
48870	F26T8X827/4P/EOL	97618	F26T8X827/4P/ECO
39377	F32T8X/SPX27A/4P	97629	F32T8X/827/A/ECO
39378	F32T8X/SPX30A/4P	97630	F32T8X/830/A/ECO
39379	F32T8X/SPX35A/4P	97631	F32T8X/835/A/ECO
39380	F32T8X/SPX41A/4P	97632	F32T8X/841/A/ECO
46312	F42T8X827A4P/EOL	97633	F42T8X/827/A/ECO
46313	F42T8X830A4P/EOL	97634	F42T8X/830/A/ECO
46314	F42T8X835A4P/EOL	97635	F42T8X/835/A/ECO
46315	F42T8X841A4P/EOL	97636	F42T8X/841/A/ECO
48861	F57QB8X/827/A/4P/EOL	48861	F57QB8X/827/A/ECO
48862	F57QB8X/830/A/4P/EOL	48862	F57QB8X/830/A/ECO
48863	F57QB8X/835/A/4P/EOL	48863	F57QB8X/835/A/ECO
48864	F57QB8X/841/A/4P/EOL	48864	F57QB8X/841/A/ECO
93404	F57QB8X/850/A/4P/EOL	93404	F57QB8X/850/A/ECO
48865	F70QB8X/827/A/4P/EOL	48865	F70QB8X/827/A/ECO
48866	F70QB8X/830/A/4P/EOL	48866	F70QB8X/830/A/ECO
48867	F70QB8X/835/A/4P/EOL	48867	F70QB8X/835/A/ECO
48868	F70QB8X/841/A/4P/EOL	48868	F70QB8X/841/A/ECO
93406	F70QB8X/850/A/4P/EOL	93406	F70QB8X/850/A/ECO



ENERGY STAR® CFLs



All of TCP's CFLs listed below have undergone rigorous testing as required by the ENERGY STAR® 4.0 program. In order for a CFL to earn the ENERGY STAR it must pass various photometric, electronic, life performance and packaging tests. New to the ENERGY STAR® 4.0 specification are requirements such as committing to manufacture CFLs with no more than 5mg of mercury in lamps less than 25 watts and 6mg of mercury in lamps 25 watts up to 40 watts. Additionally, reflector lamps intended for indoor qualification must pass elevated temperature lumen maintenance testing, similar to life in a recessed can, a typical application for reflector lamps.

SpringLight™



Item Number	Item Description	Unit/Ballast Watts	Incandescent Comparison	Initial Lumens	Rated Life
801009	9W SpringLight™	9	40	540	10000
8010093	9W SpringLight™ 3 pack	9	40	540	10000
80100935	9W SpringLight™ 35K	9	40	440	10000
801009353	9W SpringLight™ 35K 3 pack	9	40	440	10000
80100950	9W SpringLight™ 50K	9	40	450	10000
801009503	9W SpringLight™ 50K 3 pack	9	40	450	10000
80101315	13W SpringLight™ 15 pack	13	60	900	10000
801014	14W SpringLight™	14	60	900	10000
8010143	14W SpringLight™ 3 pack	14	60	900	10000
80101435	14W SpringLight™ 35K	14	60	800	10000
801014353	14W SpringLight™ 35K 3 pack	14	60	800	10000
80101441	14W SpringLight™ 41K	14	60	800	10000
80101450	14W SpringLight™ 50K	14	60	800	10000
801014413	14W SpringLight™ 41K 3 pack	14	60	800	10000
801014503	14W SpringLight™ 50K 3 pack	14	60	800	10000
801019	19W SpringLight™	19	75	1200	10000
8010193	19W SpringLight™ 3 pack	19	75	1200	10000
80101935	19W SpringLight™ 35K	20	76	1100	10000
801019353	19W SpringLight™ 35K 3 pack	21	77	1100	10000
80101950	19W SpringLight™ 50K	19	75	1100	10000
801019503	19W SpringLight™ 50K 3 pack	19	75	1100	10000
801023	23W SpringLight™	23	100	1600	10000
8010233	23W SpringLight™ 3 pack	23	100	1600	10000
80102335	23W SpringLight™ 35K	23	100	1500	10000
801023353	23W SpringLight™ 35K 3 Pack	23	100	1500	10000
80102350	23W SpringLight™ 50K	23	90	1500	10000
801023503	23W SpringLight™ 50K 3 pack	23	90	1500	10000
801027	27W SpringLight™	27	100	1850	10000
8010273	27W SpringLight™ 3 pack	27	100	1850	10000
80102735	27W SpringLight™ 35K	27	100	1750	10000
801027353	27W SpringLight™ 35K 3 pack	27	100	1750	10000
80102750	27W SpringLight™ 50K	27	100	1750	10000
801027503	27W SpringLight™ 50K 3 pack	27	100	1750	10000
80143	14W SpringLight™ Shipper	14	60	900	10000
8014353	14W SpringLight™ 35K 3 pack Shipper	14	60	800	10000
80193	19W Shipper SpringLight™	19	75	1200	10000
802014	14W R20 SpringLight™	14	40	495	8000
8020142	14W R20 SpringLight™ 2 pack	14	40	495	8000
80233	23W Shipper SpringLight™	23	100	1600	10000
8023353	23W Shipper 35K SpringLight™ 3 pack	23	100	1500	10000
803014	14W R30 SpringLight™	14	65	645	8000
8030142	14W R30 SpringLight™ 2 pack	14	65	645	8000
80301435	14W R30 SpringLight™ 35K	14	65	600	8000
804023	23W R40 SpringLight™	23	120	1250	8000
805023	23W Par 38 SpringLight™	23	90	1200	8000
8050232	23W Par 38 SpringLight™ 2 pack	23	90	1200	8000
8060092	9W G25 SpringLight™	9	40	525	8000
8060142	14W G25 SpringLight™ 2 pack	14	60	800	8000
806142	14W G25 Shipper SpringLight™	14	60	800	8000
8070092	9W A Lamp SpringLight™ 2 pack	9	40	450	8000
8070142	14W A Lamp SpringLight™ 2 pack	14	60	800	8000
807142	14W A Lamp Shipper SpringLight™	14	60	800	8000





AEP GridSMART

KEMA Operations Manual

Supplement – Summary of Deemed Savings for
Incentives Year 2009



Summary of Common Deemed Savings Measures

The below table contains prescriptive measures in a convenient format for viewing the default deemed savings. These values are multiplied by business type using the chart found in the next section.

Measure	Unit	Incentive Per Unit	kW Per Unit	Total kWh Per Unit	Years Life
Screw in CFL 5-15 Watts	Lamp	\$2.00	0.029	155	2
Screw in CFL 16-26 Watts	Lamp	\$2.00	0.054	290	2
Screw in CFL 27 Watts or higher	Lamp	\$3.00	0.069	368	2
Hardwired CFL 29W or Less	Fixture	\$30.00	0.052	276	12
Hardwired 30W or Greater	Fixture	\$60.00	0.103	544	12
T12 to T8 Conversion (with electronic ballast): 2-foot & 3-foot T12 to T8	Lamp	\$6.00	0.012	60.5	11
T12 to T8 Conversion (with electronic ballast): 4-foot T12 U Tube to T8 U Tube	Lamp	\$5.00	0.009	46.7	11
T12 to T8 Conversion (with electronic ballast): 4-foot T12 to HP or RW T8	Lamp	\$7.00	0.012	62	11
T12 to T8 Conversion (with electronic ballast): 8-foot T12 to Reduced Wattage T8	Lamp	\$7.00	0.016	78.7	11
Standard T8 to Reduced Wattage T8 (Lamp Only): 4-foot T8 to RW T8 (lamp only)	Lamp	\$1.00	0.005	28.8	3
Standard T8 to Reduced Wattage T8 (Lamp Only): 8-foot T8 to RW T8 (lamp only)	Lamp	\$1.00	0.005	24.6	3
Delamping (Combined with T8 ballast retrofit): 2-foot & 3 -foot delamping	Lamps Removed	\$5.00	0.022	119.3	11
Delamping (Combined with T8 ballast retrofit): 4-foot delamping	Lamps Removed	\$7.50	0.032	172.3	11
Delamping (Combined with T8 ballast retrofit): 8-foot delamping	Lamps Removed	\$12.50	0.062	333.7	11
LED Exit Signs	Fixture	\$25.00	0.042	343.4	16
Cold Cathode Lamps	Lamp	\$5.00	0.020	108	5
Lighting Occupancy Sensors	Controlled kW	\$90.00	0.300	1385	8
New T8/T5 Fixture	kW Reduction	\$350.00	0.916	4914	11



Lighting Density	kW Reduction	\$400.00	0.916	4914	11
LED Traffic Signals	Lamp	\$15.00	0.085	275	6
LED Pedestrian Signals	Lamp	\$15.00	0.044	150	8



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Appendix A – AEP Ohio Prescriptive Lighting
Protocols



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Lighting

Most lighting measures presented in these work papers use the same methodology. The following provides the assumptions and methods used for calculating energy savings.

Baseline and retrofit equipment assumptions, i.e. wattages, are specific to the measure. Most lighting retrofits assume an early replacement of existing technologies where the baseline represents the equipment removed.

Savings are calculated by applying operating hours and other parameters that define the energy savings. These workpapers base the energy savings methodology on the California 2005 DEER Study¹ assumptions. The DEER database is a tool that was jointly developed by the California Public Utilities Commission (CPUC) and the California Energy Commission with support and input from the Investor-Owned Utilities and other interested stakeholders. DEER provides operating hours, interactive effects and coincidence factors by building type; however, savings for AEP Ohio Program will not be dependent on building type. Savings presented here are calculated using averages of DEER building type values.

Lighting factors used in savings calculations are listed in the table below. This document explains how these values and the resulting savings were derived.

Table 1: Average Lighting Factors

CFL Annual Operating Hours	Other Lighting Annual Operating Hours	Demand Interactive Effects	Coincident Diversity Factors	Energy Interactive Effects
4,321	4,389	1.19	0.77	1.12

Annual energy savings and the peak coincident demand savings were calculated using the equations below:

Non-coincident kW reduction = kW of existing equipment - kW of replacement equipment

Energy savings are based on the difference between baseline and efficient equipment connected wattage and annual operating hours, according to the following formula:

¹ 2005 Database for Energy Efficiency Resources (DEER) Update Study Final Report - Residential and Commercial Non-Weather Sensitive Measures

$$\text{kWh Reduction} = (\text{kW of existing equipment} - \text{kW of replacement equipment}) * (\text{Annual operating hours}) * (\text{Energy Interactive Effects})$$

Coincident demand savings are calculated by applying the coincidence factor and the demand interactive effect, according to the following formula:

$$\text{Coincident kW savings} = \text{non-coincident kW savings} * \text{Coincidence Factor} * \text{Demand interactive effect}$$

Interactive factors account for savings that the measures achieve through avoided air conditioning load because of reduced internal heat gains from energy-efficient lighting. The interactive effects do not apply to exterior lighting.

The annual operating hours, the coincidence factors, and the interactive effect factors are all derived from DEER figures.

The following table lists building types set by DEER. A straight average across DEER building types would heavily weight sectors that happen to have multiple DEER categories. For instance, DEER has four sectors in education and only two in medical. A straight average of operating hours would have weighted the education sector twice as heavily as the medical sector where in reality the two are similar in electric demand.² Instead, our average values are that of sector groupings as stated in the table below.

² AEP Ohio 2009 to 2028 Energy Efficiency, Peak Demand Reduction Potential Study, Volume 2. Page 48. Summit Blue Consulting, Inc. August 13, 2009.

Table 2: DEER Building Types

DEER	Average Grouping
Education – Primary School	K-12 School
Education – Secondary School	
Education – Community College	College/University
Education – University	
Grocery	Grocery
Health/Medical – Hospital	Medical
Health/Medical – Nursing Home	
Lodging – Hotel	Hotel/Motel
Lodging – Motel	
Lodging – Guest Room	
Manufacturing – Light Industrial	Light Industry
Office – Large	Office
Office – Small	
Restaurant – Sit-Down	Restaurant
Restaurant – Fast-Food	
Retail – 3-Story Large	Retail/Service
Retail – Single-Story Large	
Retail – Small	
Storage – Conditioned	Warehouse
Storage – Unconditioned	
Warehouse – Refrigerated	

The following tables list DEER values. Compact fluorescent lamps (CFLs), LED lighting (unless otherwise noted), and integrated ballast ceramic metal halides have CFL lighting operating hours. Other lighting categories have different operating hours as shown below.

Table 3: Interactive Effects by Building Type from DEER

DEER Market Sector	Demand Interactive Effects	Energy Interactive Effects
Education – Primary School	1.23	1.15
Education – Secondary School	1.23	1.15
Education – Community College	1.22	1.15
Education – University	1.22	1.15
Grocery	1.25	1.13
Medical – Hospital	1.26	1.18
Medical – Clinic	1.26	1.18
Lodging Hotel	1.14	1.14
Lodging Motel	1.14	1.14
Lodging – Guest Rooms	1.14	1.14
Manufacturing – Light Industrial	1.08	1.04
Office – Large	1.25	1.17
Office – Small	1.25	1.17
Restaurant – Sit-Down	1.26	1.15
Restaurant – Fast-Food	1.26	1.15
Retail – 3-Story Large	1.19	1.11
Retail – Single-Story Large	1.19	1.11
Retail – Small	1.19	1.11
Storage Conditioned	1.09	1.06
Storage Unconditioned	1.09	1.06
Warehouse	1.09	1.06

Table 4: Coincident Diversity Factors from DEER

DEER Market Sector	Coincident Diversity Factors
Education – Primary School	0.42
Education – Secondary School	0.42
Education – Community College	0.68
Education – University	0.68
Grocery	0.81
Medical – Hospital	0.74
Medical – Clinic	0.74
Lodging Hotel	0.67
Lodging Motel	0.67
Lodging – Guest Rooms	0.67
Manufacturing – Light Industrial	0.99
Office – Large	0.81
Office – Small	0.81
Restaurant – Sit-Down	0.68
Restaurant – Fast-Food	0.68
Retail – 3-Story Large	0.88
Retail – Single-Story Large	0.88
Retail – Small	0.88
Storage Conditioned	0.84
Storage Unconditioned	0.84
Warehouse	0.84

Table 5: Annual Operating Hours from DEER

DEER Market Sector	CFL Annual Operating Hours	Other Lighting Annual Operating Hours
Education – Primary School	1,440	1,440
Education – Secondary School	2,305	2,305
Education – Community College	3,792	3,792
Education – University	3,073	3,073
Grocery	5,824	5,824
Medical – Hospital	8,736	8,736
Medical – Clinic*	4,212	4,212
Lodging Hotel	8,736	8,736
Lodging Motel	8,736	8,736
Lodging – Guest Rooms	1,145	NA
Manufacturing – Light Industrial*	4,290	4,290
Office – Large	2,739	2,808
Office – Small	2,492	2,808
Restaurant – Sit-Down	3,444	4,368
Restaurant – Fast-Food	6,188	6,188
Retail – 3-Story Large	4,259	4,259
Retail – Single-Story Large	4,368	4,368
Retail – Small	3,724	4,004
Storage Conditioned*	2,860	4,859
Storage Unconditioned*	2,860	4,859
Warehouse*	2,600	4,859

* Not from DEER

Industrial-operating hours are assumed based on the following sources:

- DEER estimates hours to be 2,860.
- Efficiency Vermont Technical Reference User Manual's (No. 2004-29) estimates 5,913 hours.
- The 2004-2005 PG&E work papers assumed 6,650 hours for process industrial and 4,400 for assembly industrial.

DEER's estimated hours are far lower than figures other sources have provided and so we have increased the DEER values by 50% or to 4,290 hours. This value is reasonable and on the conservative side of the averages. We will use this conservative value until more data is available for AEP Ohio or other MidWestern utility territory.

Similarly, we believe that the DEER storage and warehouse operating hours are low as well. Using data from other programs in the region, KEMA has seen average operating hours that are significantly higher and is using a higher value of 4,859 as a better estimate of deemed operating hours for this region.

DEER has set Medical-Hospital operating hours at 8,736. We have lowered this value for the purposes of calculating our average by using operating hours that are 50% above that of offices or 4,212 hours (Medical-Clinic operating hours). This reduction accounts for areas in medical facilities that behave more like offices and do not operate around the clock. The value used in our calculations is the average of the DEER Hospital and the revised clinic operating hours.

Hotel/Motel operating hours are the average of guest room hours and either hotel or motel operating hours since a facility can only be one or the other.

Incremental costs are taken from a number of sources. The AEP Ohio 2009-2028 Energy Efficiency/Peak Demand Reduction Potential Study conducted in August of 2009 provides costs for some measures. Since this study was prepared specifically for AEP, the utility's costs are used whenever applicable. Because some measures listed in the study do not match with that of the program, costs are derived from other sources as well including DEER, KEMA, and the Commonwealth Edison Company's 2008-10 Energy Efficiency and Demand Response Plan prepared by ICF International. The ICF document is referenced as the ICF Portfolio Plan.

Compact Fluorescent Lamps, Screw-In	
Measure Description	ENERGY STAR-rated CFLs with lamp/ballast efficacy of ≥ 40 lumens per Watt. Measure applies only if incandescent or HID lamps are being replaced.
Units	Per lamp
Base Case Description	Incandescent or HID lamps.
Measure Savings	Source: KEMA
Measure Incremental Cost	Source: AEP Ohio Potential Study
Effective Useful Life	Source: DEER 2.5 years

This incentive applies to screw-in lamps and applies only if an incandescent or high-intensity discharge (HID) lamp is being replaced. All screw-in CFLs must be ENERGY STAR® rated. The lamp/ballast combination must have an efficacy ≥ 40 lumens per Watt (LPW). For screw-in CFLs, electronic ballasts are required for lamps ≥ 18 Watts.

Measure Savings

Baseline and retrofit equipment assumptions are presented in the next table. Most lighting retrofits assume an early replacement of existing technologies where the baseline represents the equipment removed. The table shows the wattages used for the savings calculations.

Table 6: Baseline and Retrofit Wattages

Measure	Base Wattage (Watts)	Retrofit Wattage (Watts)	kW Reductions (kW)
15 W or less	75	15	0.060
15 W or less	60	15	0.045
15 W or less	60	14	0.046
15 W or less	50	14	0.036
15 W or less	65	13	0.052
15 W or less	60	13	0.047
15 W or less	40	13	0.027
15 W or less	40	11	0.029
15 W or less	40	10	0.030
15 W or less	35	7	0.028
15 W or less	30	7	0.023
15 W or less	25	7	0.018
15 W or less	30	9	0.021
15 W or less	25	9	0.016
15 W or less	25	5	0.020
15 W or less	20	5	0.015
16W-25W	100	25	0.075
16W-25W	75	25	0.05
16W-25W	100	23	0.077
16W-25W	100	20	0.08
16W-25W	75	20	0.055
16W-25W	75	19	0.056
16W-25W	75	18	0.057
16W-25W	60	18	0.042
16W-25W	60	16	0.044
26W and Greater	150	40	0.11
26W and Greater	150	36	0.114
26W and Greater	100	30	0.07
26W and Greater	100	28	0.072
26W and Greater	100	26	0.074
26W and Greater	75	26	0.049

Table 7: Wattage Reduction

Wattage Category	Average Wattage Reduction
≤15	32
16 to 26	60
>26	76

The following tables provide the measure savings using the above wattage reduction assumptions.

Table 8: Measure Savings for 15 W or less

Annual Operating Hours	Demand Interactive Effects	Coincident Diversity Factors	Energy Interactive Effects	Peak kW Savings	kWh Savings
4,321	1.19	0.77	1.12	0.029	155

Table 9: Measure Savings for 16 – 26 W

Annual Operating Hours	Demand Interactive Effects	Coincident Diversity Factors	Energy Interactive Effects	Peak kW Savings	kWh Savings
4,321	1.19	0.77	1.12	0.054	290

Table 10: Measure Savings for > 26 W

Annual Operating Hours	Demand Interactive Effects	Coincident Diversity Factors	Energy Interactive Effects	Peak kW Savings	kWh Savings
4,321	1.19	0.77	1.12	0.069	368

Measure Savings Analysis

Annual energy savings and the peak coincident demand savings were calculated using the equations below.

Noncoincident kW reduction = kW of existing equipment - kW of replacement equipment

Energy savings are based on the difference between baseline and efficient equipment connected wattage and annual operating hours, according to the following formula:

$$\text{kWh Reduction} = (\text{kW of existing equipment} - \text{kW of replacement equipment}) * (\text{Annual operating hours}) * (\text{Energy Interactive Effects})$$

Coincident demand savings are calculated by applying the coincidence factor and the demand interactive effect, according to the following formula:

$$\text{Coincident kW savings} = \text{noncoincident kW savings} * \text{Coincidence Factor} * \text{Demand interactive effect}$$

Interactive factors account for savings that the measures achieve through avoided air conditioning load because of reduced internal heat gains from energy-efficient lighting.

The annual operating hours, the coincidence factors, and the interactive effect factors are all derived from DEER figures.³

Measure Life and Incremental Measure Cost

The following table provides the measure life and incremental measure cost (IMC) documented for this measure as well as the source of the data.

Incremental cost is the cost difference between the energy-efficient equipment and the less efficient option. For lighting measures, the IMC is equal to the full measure cost since the cost of the less efficient option, i.e., not conducting the retrofit, is \$0.

Table 11: Measure Life and Incremental Measure Cost

Wattage Category		Value	Source
All	Measure Life	2.5	DEER 2005
≤15W	Incremental Measure Cost	\$4.13	AEP Ohio Potential Study
16W-26W	Incremental Measure Cost	\$4.13	AEP Ohio Potential Study
> 26W	Incremental Measure Cost	\$4.13	AEP Ohio Potential Study

³ 2005 Database for Energy Efficiency Resources (DEER) Update Study Final Report - Residential and Commercial Non-Weather Sensitive Measures

Compact Fluorescent Fixtures, Hardwired	
Measure Description	New fixtures or modular retrofits with hardwired electronic ballasts qualify. The CFL ballast must be programmed start or programmed rapid start with a PF ≥ 90 and THD $\leq 20\%$.
Units	Per fixture
Base Case Description	Incandescent or HID lamps.
Measure Savings	Source: KEMA
Measure Incremental Cost	Source: KEMA
Effective Useful Life	Source: DEER 12 years

Hardwired CFL incentives apply only to complete new fixtures or modular (pin-based) retrofits with hardwired electronic ballasts. The CFL ballast must be programmed 'start' or programmed 'rapid start' with a PF ≥ 90 and THD ≤ 20 percent.

Measure Savings

Baseline and retrofit equipment assumptions are presented in the table below. Most lighting retrofits assume early replacement of existing technologies where the baseline represents the equipment removed. The following table shows the wattages used for the savings calculations.

Table 12: Baseline and Retrofit Wattages

Measure	Base Wattage	Retrofit Wattage	kW Reduction
29W or Less	100	28	0.072
29W or Less	125	27	0.098
29W or Less	110	27	0.083
29W or Less	100	26	0.074
29W or Less	75	26	0.049
29W or Less	100	25	0.075
29W or Less	75	25	0.05
29W or Less	100	23	0.077
29W or Less	75	20	0.055
29W or Less	75	19	0.056
29W or Less	75	18	0.057
29W or Less	60	18	0.042
29W or Less	60	16	0.044
29W or Less	60	15	0.045
29W or Less	60	14	0.046
29W or Less	60	13	0.047
29W or Less	40	13	0.027
29W or Less	40	9	0.031
30W or Greater	120	30	0.09
30W or Greater	120	40	0.08
30W or Greater	200	55	0.145
30W or Greater	200	65	0.135

Table 13: Wattage Reduction

Wattage Category	Average Wattage Reduction
≤29	57
≥30W	113

The following tables provide the measure savings using the above wattage reduction assumptions.

Table 14: Measure Savings for 29W or less

Annual Operating Hours	Demand Interactive Effects	Coincident Diversity Factors	Energy Interactive Effects	Peak kW Savings	kWh Savings
4,321	1.19	0.77	1.12	0.052	276

Table 15: Measure Savings for ≥30W

Annual Operating Hours	Demand Interactive Effects	Coincident Diversity Factors	Energy Interactive Effects	Peak kW Savings	kWh Savings
4,321	1.19	0.77	1.12	0.103	544

Measure Savings Analysis

Annual energy savings and the peak coincident demand savings were calculated using the equations below. The annual operation hours, the coincidence factors, and the interactive effect factors were all derived from the DEER database.⁴ DEER values by building type were averaged for the AEP Ohio Program.

Non-coincident kW reduction = kW of existing equipment - kW of replacement equipment

Energy savings are calculated by applying the annual operating hours and the energy interactive effect, according to the following formula:

kWh Reduction = non-coincident kW savings * Annual operating hours * Energy interactive effect

Coincident demand savings are calculated by applying the coincidence factor and the demand interactive effect, according to the following formula:

Coincident kW savings = non-coincident kW savings * Coincidence Factor * Demand interactive effect

Measure Life and Incremental Measure Cost

The table below provides the measure life and IMC documented for this measure as well as the source of the data.

Incremental cost is the cost difference between the energy-efficient equipment and the less efficient option. For lighting measures, the IMC is equal to the full measure cost since the cost of the less efficient option, i.e., not conducting the retrofit, is \$0.

⁴ 2005 Database for Energy Efficiency Resources (DEER) Update Study Final Report - Residential and Commercial Non-Weather Sensitive Measures

Table 16: Measure Life and Incremental Measure Cost

Wattage Category		Value	Source
All	Measure Life	12	DEER
≤29	Incremental Measure Cost	\$95	KEMA
≥30W	Incremental Measure Cost	\$132	KEMA

Permanent Lamp Removal	
Measure Description	Incentives are paid for the permanent removal of existing 8', 4', 3' and 2' fluorescent lamps. Unused lamps, lamp holders, and ballasts must be permanently removed from the fixture. This measure is applicable when retrofitting from T12 lamps to T8 lamps or simply removing lamps from a T8 fixture. Removing lamps from a T12 fixture that is not being retrofitted with T8 lamps are not eligible for this incentive.
Units	Per lamp
Base Case Description	Various configurations of fluorescent fixtures before removal of lamps.
Measure Savings	Source: KEMA
Measure Incremental Cost	Source: ICF Portfolio Plan
Effective Useful Life	Source: DEER 11 years

Incentives are paid for the permanent removal of existing fluorescent lamps resulting in a net reduction of the number of foot-lamps. Customers are responsible for determining whether or not to use reflectors in combination with lamp removal in order to maintain adequate lighting levels. Unused lamps, lamp holders, and ballasts must be permanently removed from the fixture. This measure is applicable when retrofitting from T12 lamps to T8 lamps or simply removing lamps from a T8 fixture. Removing lamps from a T12 fixture that is not being retrofitted with T8 lamps is not eligible for this incentive. A Pre-approval Application is required for lamp removal projects in order for KEMA to have the option of conducting a pre-retrofit inspection.

Measure Savings

Non-coincident demand savings are summarized by the following table:

Table 17: Wattage Reduction

Wattage Category	Average Wattage Reduction
8 Foot Lamp Removal	68
4 Foot Lamp Removal	35
2 Foot or 3 Foot Lamp Removal	24

Table 18: Measure Savings for 8-Foot Lamp Removal

Annual Operating Hours	Demand Interactive Effects	Coincident Diversity Factors	Energy Interactive Effects	8-foot Lamp Peak Savings (kW)	8-foot Savings (kWh)
4,389	1.19	0.77	1.12	0.062	333.7

Table 19: Measure Savings for 4-Foot Lamp Removal

Annual Operating Hours	Demand Interactive Effects	Coincident Diversity Factors	Energy Interactive Effects	4-foot Lamp Peak Savings (kW)	4-foot Savings (kWh)
4,389	1.19	0.77	1.12	0.032	172.3

Table 20: Measure Savings for 2-Foot or 3-Foot Lamp Removal

Annual Operating Hours	Demand Interactive Effects	Coincident Diversity Factors	Energy Interactive Effects	2-foot or 3-foot Lamp Peak Savings (kW)	2-foot or 3-foot Savings (kWh)
4,389	1.19	0.77	1.12	0.022	119.3

Measure Savings Analysis

Annual energy savings and the peak coincident demand savings were calculated using the equations below. The annual operating hours, the coincidence factors, and the interactive effect factors were all derived from the DEER database.⁵ However, DEER values by building type were averaged for the AEP Ohio Program.

Non-coincident kW reduction = kW of existing equipment - kW of replacement equipment

⁵ 2005 Database for Energy Efficiency Resources (DEER) Update Study Final Report - Residential and Commercial Non-Weather Sensitive Measures

Energy savings are calculated by applying the annual operating hours and the energy interactive effect, according to the following formula:

$$\text{kWh Reduction} = \text{non-coincident kW savings} * \text{Annual operating hours} * \text{Energy interactive effect}$$

Coincident demand savings are calculated by applying the coincidence factor and the demand interactive effect, according to the following formula:

$$\text{Coincident kW savings} = \text{non-coincident kW savings} * \text{Coincidence Factor} * \text{Demand interactive effect}$$

Baseline assumptions are presented in the next table. Most lighting retrofits assume an early replacement of existing technologies where the baseline represents the equipment removed. The table shows the wattages used for the savings calculations. Weighted average savings values are used when determining deemed savings for each 8 foot or 4 foot lamp permanently removed.

Table 21: Wattages for Eight-foot Lamps

Baseline	Base Wattage	Lamp Removed Wattage	Weight Percentages
Two 8' T12 (60W/75W)	140	70	85%
Two 8' T8 (59W)	111	56	15%
Total Weighted Average		68	

Table 22: Wattages for Four-foot Lamps

Baseline	Base Wattage	Lamp Removed Wattage	Weight Percentages
Two 4' T8 (32W)	65	36	3%
Two 4' T12 (34W/40W)	72	36	8%
Three 4' T8 (32W)	92	31	7%
Three 4' T12 (34W/40W)	115	38	22%
Four 4' T8 (32W)	118	30	15%
Four 4' T12 (34W/40W)	144	36	45%
Total Weighted Average		35	

Table 23: Wattages for Two and Three-foot Lamps

Baseline	Base Wattage	Lamp Removed Wattage	Weight Percentages
Two 3' T12 (30W)	76	38	15%
Two 3' T8 (34W/40W)	48	24	15%
Two 2' T8 (17W)	31	15	30%
Two 2' T12 (20W)	56	28	30%
Three 2' T8 (17W)	46	16	2.5%
Three 2' T12 (20W)	62	21	2.5%
Four 2' T8 (17W)	60	15	2.5%
Four 2' T12 (20W)	112	28	2.5%
Total Weighted Average		24	

Measure Life and Incremental Measure Cost

The following table provides the measure life and incremental measure cost (IMC) documented for this measure as well as the source of the data.

Incremental cost is cost difference between the energy efficient equipment and the less efficient option. For lighting measures, the IMC is equal to the full measure cost since the cost of the less efficient option, i.e., not conducting the retrofit, is \$0.

Table 24: Measure Life and Incremental Measure Cost

Measure Category		Value	Source
All	Measure Life	11	DEER
8-Foot Lamp Removal	Incremental Measure Cost	\$25.91	ICF Portfolio Plan
4-Foot Lamp Removal	Incremental Measure Cost	\$25.70	ICF Portfolio Plan
2-Foot or 3-Foot Removal	Incremental Measure Cost	\$25.70	KEMA

High Performance and Reduced Wattage 4-foot T8 Lamps and Ballast	
Measure Description	This measure consists of replacing existing T12 4' lamps and magnetic ballasts with high performance 32W T8 lamps or reduced wattage 28W or 25W lamps and electronic ballasts. Both the lamp and ballast must meet the Consortium for Energy Efficiency (CEE) high performance or reduced wattage T8 specification (www.cee1.org) summarized below.
Units	Per lamp
Base Case Description	T12 lamp and magnetic ballasts
Measure Savings	Source: KEMA
Measure Incremental Cost	Source: AEP Ohio Potential Study
Effective Useful Life	Source: DEER 11 years

This measure consists of replacing existing T12 lamps and magnetic ballasts with high-performance T8 lamps or reduced wattage (28 or 25W) T8 lamps and electronic ballasts. This measure is based on the Consortium for Energy Efficiency (CEE) high-performance T8 or reduced wattage specification (www.cee1.org) and is summarized below. A list of qualified lamps and ballasts can be found at: <http://www.cee1.org>. Both the lamp and ballast must meet the specification to qualify for an incentive. The incentive is calculated based on the number of lamps installed. A manufacturer's specification sheet must accompany the application.

For reduced wattage 4-foot T8 lamps, the nominal wattage must be 28 W ($\geq 2,585$ Lumens) or 25 W ($\geq 2,400$ Lumens) to qualify. The mean system efficacy must be ≥ 90 MLPW, CRI ≥ 80 , and lumen maintenance at 94 percent. Other requirements can be found on the CEE website using the links above.

The table below provides the specification for high performance systems.

Table 25: High-Performance T8 Specifications

Performance Characteristics for Systems				
Mean system efficacy	≥ 90 Mean Lumens per Watt (MLPW) for Instant Start Ballasts			
	≥ 88 MLPW for Programmed Rapid Start Ballasts			
Performance Characteristics for Lamps				
Color Rendering Index (CRI)	≥ 80			
Minimum initial lamp lumens	≥ 3100 Lumens ⁶			
Lamp life	≥ 24,000 hours			
Lumen maintenance or minimum mean lumens	≥ 90% or ≥ 2,900 Mean Lumens			
Performance Characteristics for Ballasts				
Ballast Efficacy Factor (BEF) BEF = (BF x 100) / Ballast Input Watts	Instant-Start Ballast (BEF)			
	Lamp s	Low BF ≤ 0.85	Norm 0.85 < BF ≤ 1.0	High BF ≥ 1.01
	1	> 3.08	> 3.11	NA
	2	> 1.60	> 1.58	>1.55
	3	≥ 1.04	≥ 1.05	≥ 1.04
	4	≥ 0.79	≥ 0.80	≥ 0.77
	Programmed Rapid Start Ballast (BEF)			
	1	≥ 2.84	≥ 2.84	NA
	2	≥ 1.48	≥ 1.47	≥ 1.51
	3	≥ 0.97	≥ 1.00	≥ 1.00
	4	≥ 0.76	≥ 0.75	≥ 0.75
	Ballast Frequency	20 to 33 kHz or ≥ 40 kHz		
Power Factor	≥ 0.90			
Total Harmonic Distortion	≤ 20%			

Measure Savings

Savings are summarized by the following table:

Table 26: Measure Savings for High-Performance or Reduced Wattage 4-foot Lamp and Ballast (per lamp)

Coincident Demand Savings (kW)	Energy Savings (kWh)
0.012	62.0

⁶ For lamps with temperature ≥4500K, 2,950 minimum initial lamp lumens are specified.

Measure Savings Analysis

Annual energy savings and the peak coincident demand savings were calculated using the equations below. The annual operating hours, the coincidence factors, and the interactive effect factors were all derived from the DEER database and shown in the following table. However, DEER values by building type were averaged for the AEP Ohio Program.

Table 27: Factors used for Calculating Lighting Savings

Annual Operating Hours	Demand Interactive Effects	Coincident Diversity Factors	Energy Interactive Effects
4,389	1.19	0.77	1.12

Non-coincident kW reduction = kW of existing equipment - kW of replacement equipment

Energy savings are calculated by applying the annual operating hours and the energy interactive effect, according to the following formula:

$$\text{kWh Reduction} = \text{non-coincident kW savings} * \text{Annual operating hours} * \text{Energy interactive effect}$$

Coincident demand savings are calculated by applying the coincidence factor and the demand interactive effect, according to the following formula:

$$\text{Coincident kW savings} = \text{non-coincident kW savings} * \text{Coincidence Factor} * \text{Demand interactive effect}$$

Baseline and retrofit equipment assumptions are presented in the table below.

Table 28: Baseline and Retrofit Wattages for High-Performance or Reduced Wattage Fixture Retrofits

	T8, 4-foot Configuration	Base Fixture Wattage	Retrofit Lamp Wattage	Retrofit Fixture Wattage	Demand Savings per fixture (kW)	Demand Savings per lamp (kW)	Weight Percentages
High	4-lamp	144	32	108	0.036	0.009	9%
	3-lamp	103	32	83	0.02	0.007	4%
	2-lamp	72	32	54	0.018	0.009	8%
	1-lamp	43	32	28	0.015	0.015	4%
Med	4-lamp	144	28	96	0.048	0.012	15%
	3-lamp	103	28	72	0.031	0.010	10%
	2-lamp	72	28	48	0.024	0.012	15%
	1-lamp	43	28	25	0.018	0.018	10%
Low	4-lamp	144	25	85	0.059	0.015	9%
	3-lamp	103	25	66	0.037	0.012	4%
	2-lamp	72	25	44	0.028	0.014	8%
	1-lamp	43	25	22	0.021	0.021	4%
	Weighted Average					0.0126	

Measure Life and Incremental Measure Cost

The table below provides the measure life and IMC documented for this measure as well as the source of the data. Incremental cost is the cost difference between the energy-efficient equipment and the less efficient option. In this case, the IMC is equal to the full measure cost since cost of the less efficient option is 0.

Table 29: Measure Life and Incremental Measure Cost

	Measure Category	Value	Source
Measure Life	Lamp and Ballast	11	DEER
Incremental Measure Cost	4 Foot Lamp and Ballast	\$13.14	AEP Ohio Potential Study

Reduced Wattage 4-foot Lamp Only	
Measure Description	This measure consists of replacing existing standard T8 4' lamps and electronic ballasts with reduced wattage T8 lamps. The lamp must meet the Consortium for Energy Efficiency (CEE) reduced wattage T8 specification (www.cee1.org). The nominal wattage for 4 foot lamps must be 28W (≥ 2585 Lumens) or 25W (≥ 2400 Lumens) to qualify. The mean system efficacy must be ≥ 90 MLPW, CRI ≥ 80 , and lumen maintenance at 94%. A manufacturer's specification sheet must accompany the application.
Units	Per lamp
Base Case Description	Standard T8 fixtures.
Measure Savings	Source: KEMA
Measure Incremental Cost	Source: ICF Portfolio Plan
Effective Useful Life	Source: KEMA 3 years

Incentives are available when replacing standard 32-Watt T8 lamps with reduced-wattage T8 lamps when an electronic ballast is already present. The lamps must be reduced wattage in accordance with the Consortium for Energy Efficiency (CEE) specification (www.cee1.org). Qualified products can be found at <http://www.cee1.org>. The nominal wattage must be 28 W ($\geq 2,585$ Lumens) or 25 W ($\geq 2,400$ Lumens) to qualify. The mean system efficacy must be ≥ 90 MLPW, CRI ≥ 80 , and lumen maintenance at 94 percent. A manufacturer's specification sheet must accompany the application.

Measure Savings

Savings are summarized by the following table:

Table 30: Measure Savings for Reduced-Wattage 4-foot Lamp Only

Coincident Demand Savings (kW)	Energy Savings (kWh)
0.005	28.8

Measure Savings Analysis

Annual energy savings and the peak coincident demand savings were calculated using the equations below. The annual operating hours, the coincidence factors, and the interactive effect factors were all derived from the DEER database and shown in the next table. However, DEER values by building type were averaged for the AEP Ohio Program.

Table 31: Factors used for Calculating Lighting Savings

Annual Operating Hours	Demand Interactive Effects	Coincident Diversity Factors	Energy Interactive Effects
4,389	1.19	0.77	1.12

Non-coincident kW reduction = kW of existing equipment - kW of replacement equipment

Energy savings are calculated by applying the annual operating hours and the energy interactive effect, according to the following formula:

$$\text{kWh Reduction} = \text{non-coincident kW savings} * \text{Annual operating hours} * \text{Energy interactive effect}$$

Coincident demand savings are calculated by applying the coincidence factor and the demand interactive effect, according to the following formula:

$$\text{Coincident kW savings} = \text{non-coincident kW savings} * \text{Coincidence Factor} * \text{Demand interactive effect}$$

Baseline and retrofit equipment assumptions are presented in the next table.

Table 32: Baseline and Retrofit Wattages for 4-foot T8 Lamp Only

T8 Configuration	Base Lamp Wattage	Base Fixture Wattage	Retrofit Lamp Wattage	Retrofit Fixture Wattage	Demand Savings per fixture (kW)	Demand Savings per lamp (kW)	Weight Percentages
4 ft, 4-lamp	32	112	28	96	0.016	0.004	18%
4 ft, 3-lamp	32	85	28	72	0.013	0.004	13%
4 ft, 2-lamp	32	58	28	48	0.01	0.005	15%
4 ft, 1-lamp	32	32	28	25	0.007	0.007	5%
4 ft, 4-lamp	32	112	25	85	0.027	0.007	18%
4 ft, 3-lamp	32	85	25	66	0.019	0.006	13%
4 ft, 2-lamp	32	58	25	44	0.014	0.007	15%
4 ft, 1-lamp	32	32	25	22	0.01	0.010	5%
Weighted Average						0.006	

Measure Life and Incremental Measure Cost

The following table provides the measure life and IMC documented for this measure as well as the source of the data. Incremental cost is the cost difference between the energy-efficient equipment and the less efficient option. In this case, the IMC is equal to the full measure cost for

lamp and ballast retrofit and incremental for lamp only. The lamp and ballast retrofit is a change in technology.

Table 33: Measure Life and Incremental Measure Cost

	Measure Category	Value	Source
Measure Life	Lamp Only	3	KEMA
Incremental Measure Cost	4 Foot Lamp Only	\$2.10	ICF Portfolio Plan

Reduced Wattage 8-foot	
Measure Description	<p>This measure consists of replacing existing T12 8' lamps and magnetic ballasts with reduced wattage T8 lamps and electronic ballasts. Both the lamp and ballast must meet the Consortium for Energy Efficiency (CEE) high performance or reduced wattage T8 specification (www.cee1.org). Eight foot lamps must have a minimum MLPW of 90 and must have a nominal wattage of less than 57W. A manufacturer's specification sheet must accompany the application.</p> <p>High wattage T8 (59W) can be replaced with reduced wattage lamps without replacing the ballast. The lamps must also meet CEE standards for reduced wattage.</p>
Units	Per lamp
Base Case Description	T12 lamp and magnetic ballasts or high watt T8 fixtures (for reduced wattage lamp only replacements).
Measure Savings	Source: KEMA
Measure Incremental Cost	Source: DEER and ICF Portfolio Plan
Effective Useful Life	Source: KEMA and DEER

This measure consists of replacing existing T12 lamps and magnetic ballasts with reduced wattage lamp and electronic ballast systems. The lamps and ballasts must meet the Consortium for Energy Efficiency (CEE) specification (www.cee1.org). Qualified lamps and ballast products can be found at <http://www.cee1.org>. Incentives are also available when replacing 59-Watt T8 lamps with reduced-wattage T8 lamps when an electronic ballast is already present. Eight-foot lamps must have a minimum MLPW of 90 and must have a nominal wattage of less than 57 W. A manufacturer's specification sheet must accompany the application.

Measure Savings

Savings are summarized by the following table:

Table 34: Measure Savings for Reduced-Wattage 8-foot Lamp and Ballast

Coincident Demand Savings (kW)	Energy Savings (kWh)
0.011	61.4

Table 35: Measure Savings for Reduced-Wattage 8-foot Lamp Only

Coincident Demand Savings (kW)	Energy Savings (kWh)
0.005	24.6

Measure Savings Analysis

Annual energy savings and the peak coincident demand savings were calculated using the equations below. The annual operating hours, the coincidence factors, and the interactive effect factors were all derived from the DEER database and shown in the table below. DEER values by building type were averaged for the AEP Ohio Program.

Table 36: Factors used for Calculating Lighting Savings

Annual Operating Hours	Demand Interactive Effects	Coincident Diversity Factors	Energy Interactive Effects
4,389	1.19	0.77	1.12

Non-coincident kW reduction = kW of existing equipment - kW of replacement equipment

Energy savings are calculated by applying the annual operating hours and the energy interactive effect, according to the following formula:

$$\text{kWh Reduction} = \text{non-coincident kW savings} * \text{Annual operating hours} * \text{Energy interactive effect}$$

Coincident demand savings are calculated by applying the coincidence factor and the demand interactive effect, according to the following formula:

$$\text{Coincident kW savings} = \text{non-coincident kW savings} * \text{Coincidence Factor} * \text{Demand interactive effect}$$

Baseline and retrofit equipment assumptions are presented in the next table.

Table 37: Baseline and Retrofit Wattages for 8-foot

	Configuration	Base Lamp Wattage	Base Fixture Wattage	Retrofit Lamp Wattage	Retrofit Fixture Wattage	Demand Savings per fixture (kW)	Demand Savings per lamp (kW)	Weight Percentages
Lamp and Ballast	8ft, 2 lamp	60	132	57	102	0.016	0.008	50%
	8ft, 1-lamp	60	77	57	60	0.017	0.017	50%
	Weighted Average						0.013	
Lamp Only	8ft, 2 lamp	59	106	57	102	0.004	0.002	50%
	8ft, 1-lamp	59	68	57	60	0.008	0.008	50%
	Weighted Average						0.005	

Measure Life and Incremental Measure Cost

The following table provides the measure life and IMC documented for this measure as well as the source of the data. Incremental cost is the cost difference between the energy-efficient equipment and the less efficient option. In this case, the IMC is equal to the full measure cost for lamp and ballast retrofit and incremental for lamp only. The lamp and ballast retrofit is a change in technology.

Table 38: Measure Life and Incremental Measure Cost

	Measure Category	Value	Source
Measure Life	Lamp and Ballast	11	DEER
Measure Life	Lamp Only	3	KEMA
Incremental Measure Cost	8 Foot Lamp and Ballast	\$36.91	DEER
Incremental Measure Cost	8 Foot Lamp Only	\$5.50	ICF Portfolio Plan

2-foot & 3-foot T8 Lamps and Ballast	
Measure Description	This measure consists of replacing existing T12 2-foot and 3-foot lamps and magnetic ballasts with 17W, 2-foot, and 25W, 3-foot, T8 lamps and electronic ballasts.
Units	Per lamp
Base Case Description	T12 lamps and magnetic ballast
Measure Savings	Source: KEMA
Measure Incremental Cost	Source: PG&E 2006 Work papers
Effective Useful Life	Source: DEER 11 years

This measure consists of replacing existing T12 lamps and magnetic ballasts with T8 lamps and electronic ballasts. The lamp must have a color rendering index (CRI) ≥ 80 and the ballast must have a total harmonic distortion (THD) $\leq 32\%$ at full light output and power factor (PF) ≥ 0.90 . Ballasts must also be warranted against defects for 5 years. The incentive is calculated based on the number of lamps installed. A manufacturer's specification sheet must accompany the application.

Measure Savings

The coincident kW and kWh savings are provided in the following table:

Table 39: Measure Savings for 2-foot and 3-foot Lamp and Ballast (per lamp)

2-foot Lamp fixtures		3-foot Lamp fixtures	
Coincident Demand Savings (kW)	Energy Savings (kWh)	Coincident Demand Savings (kW)	Energy Savings (kWh)
0.010	51.6	0.013	69.5

Measure Savings Analysis

Annual energy savings and the peak coincident demand savings were calculated using the equations below. The annual operating hours, the coincidence factors, and the interactive effect factors were all derived from the DEER database and shown in the following table.

Table 40: Factors used for Calculating Lighting Savings

Annual Operating Hours	Demand Interactive Effects	Coincident Diversity Factors	Energy Interactive Effects
4,389	1.19	0.77	1.12

Non-coincident kW reduction = kW of existing equipment - kW of replacement equipment

Energy savings are calculated by applying the annual operating hours and the energy interactive effect, according to the following formula:

$$\text{kWh Reduction} = \text{non-coincident kW savings} * \text{Annual operating hours} * \text{Energy interactive effect}$$

Coincident demand savings are calculated by applying the coincidence factor and the demand interactive effect, according to the following formula:

$$\text{Coincident kW savings} = \text{non-coincident kW savings} * \text{Coincidence Factor} * \text{Demand interactive effect}$$

Baseline and retrofit equipment assumptions are presented in the tables below. The fixture wattages were collected from PG&E's Non-residential Retrofit Program standard fixture wattage table.

Table 41: Baseline and Retrofit Wattages for 2-foot lamps

T8 Configuration	Base Lamp Wattage	Base Fixture Wattage	Retrofit Lamp Wattage	Retrofit Fixture Wattage	Demand Savings per fixture (kW)	Demand Savings per lamp (kW)	Weight Percentages
2 ft, 4-lamp	20	112	17	61	0.051	0.013	2.5%
2 ft, 3-lamp	20	84	17	47	0.015	0.005	2.5%
2 ft, 2-lamp	20	56	17	33	0.023	0.012	65%
2 ft, 1-lamp	20	28	17	20	0.008	0.008	30%
Weighted Average						0.011	

Table 42: Baseline and Retrofit Wattages for 3-foot lamps

T8 Configuration	Base Lamp Wattage	Base Fixture Wattage	Retrofit Lamp Wattage	Retrofit Fixture Wattage	Demand Savings per fixture (kW)	Demand Savings per lamp (kW)	Weight Percentages
3 ft, 4-lamp	30	152	25	87	0.065	0.0163	2.5%
3 ft, 3-lamp	30	114	25	67	0.047	0.0157	2.5%
3 ft, 2-lamp	30	76	25	46	0.030	0.0150	65%
3 ft, 1-lamp	30	38	25	26	0.012	0.0120	30%
Weighted Average						0.014	

Measure Life and Incremental Measure Cost

The table below provides the measure life and IMC documented for this measure as well as the source of the data. Incremental cost is cost difference between the energy-efficient equipment and the less efficient option. In this case, the IMC is equal to the full measure cost since cost of the less efficient option is \$0.

Table 43: Measure Life and Incremental Measure Cost

	Measure Category	Value	Source
Measure Life	Lamp and Ballast	11	DEER
Measure Life	Lamp Only	3	KEMA
Incremental Measure Cost	2 Foot Lamp and Ballast	\$10.50	PG&E 2006 Work Paper

Incremental Measure Cost	3 Foot Lamp and Ballast	\$21	PG&E 2006 Work Paper
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U-Tube T8 Lamps and Ballast	
Measure Description	This measure consists of replacing existing T12 U-tube lamps and magnetic ballasts with T8 U-tube lamps and electronic ballasts.
Units	Per lamp
Base Case Description	U-tube T12 lamps and magnetic ballast
Measure Savings	Source: KEMA
Measure Incremental Cost	Source: AEP Ohio Potential Study
Effective Useful Life	Source: DEER 11 years

This measure consists of replacing existing U-tube T12 lamps and magnetic ballasts with U-tube T8 lamps and electronic ballasts. The lamp must have a color rendering index (CRI) ≥ 80 and the ballast must have a total harmonic distortion (THD) $\leq 20\%$ at full light output and power factor (PF) ≥ 90 . Ballasts must also be warranted against defect for 5 years. The incentive is calculated based on the number of lamps installed. A manufacturer's specification sheet must accompany the application.

Measure Savings

The coincident kW and kWh savings are in the following table.

Table 44: Measure Savings for U-tube Lamp and Ballast (per lamp)

Coincident Demand Savings (kW)	Energy Savings (kWh)
0.009	46.7

Measure Savings Analysis

Annual energy savings and the peak coincident demand savings were calculated using the equations below. The annual operating hours, the coincidence factors, and the interactive effect factors were all derived from the DEER database and shown in the following table.⁷

⁷ 2005 Database for Energy Efficiency Resources (DEER) Update Study Final Report - Residential and Commercial Non-Weather Sensitive Measures

Table 45: Factors used for Calculating Lighting Savings

Annual Operating Hours	Demand Interactive Effects	Coincident Diversity Factors	Energy Interactive Effects
4,389	1.19	0.77	1.12

Non-coincident kW reduction = kW of existing equipment - kW of replacement equipment

Energy savings are calculated by applying the annual operating hours and the energy interactive effect, according to the following formula:

$$\text{kWh Reduction} = \text{non-coincident kW savings} * \text{Annual operating hours} * \text{Energy interactive effect}$$

Coincident demand savings are calculated by applying the coincidence factor and the demand interactive effect, according to the following formula:

$$\text{Coincident kW savings} = \text{non-coincident kW savings} * \text{Coincidence Factor} * \text{Demand interactive effect}$$

Baseline and retrofit equipment assumptions are presented in the following table. The wattages were collected from PG&E's Non-residential retrofit standard wattages table.

Table 46: Baseline and Retrofit Wattages for U-tube lamps

T8 Configuration	Base Lamp Wattage	Base Fixture Wattage	Retrofit Lamp Wattage	Retrofit Fixture Wattage	Demand Savings per fixture (kW)	Demand Savings per lamp (kW)	Weight Percentages
U-tube, 2 lamp	35	72	32	59	0.013	0.007	50%
U-tube, 1 lamp	35	43	32	31	0.012	0.012	50%
Weighted Average						0.010	

Measure Life and Incremental Measure Cost

The table below provides the measure life and IMC documented for this measure as well as the source of the data. Incremental cost is cost difference between the energy-efficient equipment and the less efficient option. In this case, the IMC is equal to the full measure cost since cost of the less efficient option is \$0. For U-tubes, it is assumed that the cost is the same as a high performance 4-foot T8 lamp (DEER measure ID D03-852).

Table 47: Measure Life and Incremental Measure Cost

	Measure Category	Value	Source
Measure Life	Lamp and Ballast	11	DEER
Measure Life	Lamp Only	3	KEMA
Incremental Measure Cost	U-Tube Lamp and Ballast	\$13.14	AEP Potential Study

Cold Cathode	
Measure Description	All cold cathode fluorescent lamps (CCFLs) must replace incandescent lamps of at least 10 W and not greater than 40 W. Cold cathode lamps may be medium (Edison) or candelabra base. Product must be rated for at least 18,000 average life hours.
Units	Per lamp
Base Case Description	Incandescent
Measure Savings	Source: KEMA, SCE
Measure Incremental Cost	Source: PG&E \$9.68
Effective Useful Life	Source: SCE 5 years

All cold cathode fluorescent lamps (CCFLs) must replace incandescent lamps of at least 10 W and not greater than 40 W. Cold cathode lamps may be medium (Edison) or candelabra base. The product must be rated for at least 18,000 average life hours.

Measure Savings

Baseline and retrofit equipment assumptions are presented in table below. Most lighting retrofits assume an early replacement of existing technologies where the baseline represents the equipment removed. The table shows the wattages used for the savings calculations from SCE and KEMA research of cold cathode manufacturers.

Table 48: Baseline and Retrofit Wattages

Measures⁸	Base Wattage (Watts)	Retrofit Wattage (Watts)	Wattage Reduction (Watt)
Incandescent (15W) -> Cold Cathode FL (5W)	15	5	10
Incandescent (30W) -> Cold Cathode FL (5W)	30	5	25
Incandescent (40W) -> Cold Cathode FL (8W)	40	8	32
Average			22

The following table provides the measure savings using the above non-coincident savings.

⁸ Southern California Edison Company, Cold Cathode Fluorescent Lamp Workpaper WPSCNRLG0063. 2007.

Table 49: Measure Savings

Annual Operating Hours	Demand Interactive Effects	Coincident Diversity Factors	Energy Interactive Effects	Peak kW Savings	kWh Savings
4,321	1.19	0.77	1.12	0.020	108

Measure Savings Analysis

Annual energy savings and the peak coincident demand savings were calculated using the equations below. The annual operating hours, the coincidence factors, and the interactive effect factors were all derived from the DEER database.

Non-coincident kW reduction = kW of existing equipment - kW of replacement equipment

Energy savings are calculated by applying the annual operating hours and the energy interactive effect, according to the following formula:

kWh Reduction = non-coincident kW savings * Annual operating hours * Energy interactive effect

Coincident demand savings are calculated by applying the coincidence factor and the demand interactive effect, according to the following formula:

Coincident kW savings = non-coincident kW savings * Coincidence Factor * Demand interactive effect

Measure Life and Incremental Measure Cost

The following table provides the measure life and IMC documented for this measure as well as the source of the data.

Incremental cost is cost difference between the energy-efficient equipment and the less efficient option. In this case, the IMC is equal to the full measure cost since cost of the less efficient option is \$0..

Table 50: Measure Life and Incremental Measure Cost⁹

	Value	Source
Measure Life	5	SCE WP
Incremental Measure Cost	\$9.68	PG&E WP

⁹ Southern California Edison Company, Cold Cathode Fluorescent Lamp Workpaper WPSCNRLG0063.
2007, Pacific Gas & Electric, Lighting WP.doc, 2006.

Exit Signs	
Measure Description	High-efficiency exit signs must replace or retrofit an existing incandescent exit sign. Electroluminescent, photoluminescent, T1 and light-emitting diode (LED) exit signs are eligible under this category. Non-electrified and remote exit signs are not eligible. All new exit signs or retrofit exit signs must be UL or ETL listed, have a minimum lifetime of 10 years, and have an input wattage ≤ 5 Watts or be ENERGY STAR qualified.
Units	Per Sign
Base Case Description	Incandescent Exit Signs
Measure Savings	Source: ENERGY STAR
Measure Incremental Cost	Source: AEP Ohio Potential Study
Effective Useful Life	Source: DEER 16 years

High-efficiency exit signs must replace or retrofit an existing incandescent exit sign. Electroluminescent, photoluminescent, T1 and light-emitting diode (LED) exit signs are eligible under this category. Non-electrified and remote exit signs are not eligible. All new exit signs or retrofit exit signs must be UL or ETL listed, have a minimum lifetime of 10 years, and have an input wattage ≤ 5 Watts or be ENERGY STAR qualified.

Measure Savings

Baseline and retrofit equipment assumptions are presented in the next table. Most lighting retrofits assume an early replacement of existing technologies where the baseline represents the equipment removed. The table shows the wattages used for the savings calculations.

Table 51: Baseline and Retrofit Wattages

Measure	Base Wattage	Retrofit Wattage	Wattage Reduction
Two Incandescent Bulbs (20W each) -> LED EXIT Sign (5W)	40	5	35

The measure savings use the above non-coincident savings.

Table 52: Exit Sign Savings

Peak kW Savings	kWh Savings
0.042	343.4

Measure Savings Analysis

Annual energy savings and the peak coincident demand savings were calculated using the equations below. The coincident diversity factor is 1.0 since the sign is on all the time. The operating hours are 8,760 hours per year.¹⁰

Table 53: Factors used for Calculating Savings

Annual Operating Hours	Demand Interactive Effects	Coincident Diversity Factors	Energy Interactive Effects
8,760	1.19	1.00	1.12

Non-coincident kW reduction = kW of existing equipment - kW of replacement equipment

Energy savings are calculated by applying the annual operating hours and the energy interactive effect, according to the following formula:

$$\text{kWh Reduction} = \text{non-coincident kW savings} * \text{Annual operating hours} * \text{Energy interactive effect}$$

Coincident demand savings are calculated by applying the coincidence factor and the demand interactive effect, according to the following formula:

$$\text{Coincident kW savings} = \text{non-coincident kW savings} * \text{Coincidence Factor} * \text{Demand interactive effect.}$$

Measure Life and Incremental Measure Cost

The following table provides the measure life and incremental measure cost (IMC) documented for this measure as well as the source of the data.

Incremental cost is cost difference between the energy efficient equipment and the less efficient option. In this case, the IMC is equal to the full measure cost since the cost of the less efficient option, i.e., not conducting the retrofit, is \$0.

¹⁰ 2005 Database for Energy Efficiency Resources (DEER) Update Study Final Report - Residential and Commercial Non-Weather Sensitive Measures

Table 54: Measure Life and Incremental Measure Cost

	Value	Source
Measure Life	16	DEER
Incremental Measure Cost	\$82.54	AEP Ohio Potential Study

Occupancy Sensors	
Measure Description	Passive infrared, ultrasonic detectors and fixture-integrated sensors or sensors with a combination thereof are eligible. All sensors must be hard-wired and control interior lighting fixtures. The incentive is per Watt controlled.
Units	Per Connected Watt
Base Case Description	No Sensor
Measure Savings	Source: DEER
Measure Incremental Cost	Source: DEER
Effective Useful Life	Source: DEER 8 years

Passive infrared, ultrasonic detectors and fixture-integrated sensors or sensors with a combination thereof are eligible. All sensors must be hard-wired and control interior lighting fixtures. The incentive is per Watt controlled.

Measure Savings

The annual operation hours, the coincidence factors, and the interactive effect factors were all derived from the DEER database.

Table 55: Measure Savings for Occupancy Sensor per Connected Watt

Annual Operating Hours	Demand Interactive Effects	Coincident Diversity Factors	Energy Interactive Effects	Peak Watt Savings	kWh Savings
4,389	1.19	0.77	1.12	0.0003	1.385

Measure Savings Analysis

Annual energy savings and the peak coincident demand savings were calculated using the equations below.

Energy savings are calculated by applying the annual operating hours and the energy interactive effect, according to the following formula:

$$\text{kWh Reduction} = \text{Connected wattage}/1000 * \text{Annual operating hours} * \text{Energy interactive effect} * \text{Occupancy Off Rate}$$

Coincident demand savings are calculated by applying the coincidence factor and the demand interactive effect, according to the following formula:

$$\text{Coincident kW savings} = \text{Connected wattage}/1000 * \text{Occupancy Off Rate} * \text{Coincidence Factor} * \text{Demand interactive effect}$$

The baseline for this measure is fixtures that do not include any automatic controls, i.e., manual switches. Since the unit is defined as per connected Watt, the baseline demand is one watt. Demand savings depend on whether areas are high or low occupancy. DEER states that occupancy time off rates are at 20 percent for high-occupancy building types and 50 percent for low-occupancy building types.¹¹ The table below shows the assumed range of occupancy off rates. Calculations here are performed with the 28% average sensor off rate.

Table 56: Occupancy Off Rate

Average Grouping	Occupancy Sensor Off Rate
Office	20%
School (K-12)	20%
College/University	20%
Retail/Service	20%
Restaurant	20%
Hotel/Motel	20%
Medical	20%
Grocery	20%
Warehouse	50%
Light Industry	50%
Heavy Industry	50%
Average	28%

Measure Life and Incremental Measure Cost

The following table provides the measure life and IMC documented for this measure as well as the source of the data.

Incremental cost is cost difference between the energy efficient equipment and the less efficient option. For lighting measures, the IMC is equal to the full measure cost since the cost of the less efficient option, i.e., not conducting the retrofit, is \$0.

¹¹ 2005 Database for Energy Efficiency Resources (DEER) Update Study Final Report - Residential and Commercial Non-Weather Sensitive Measures

Table 57: Measure Life and Incremental Measure Cost

	Value	Source
Measure Life	8	DEER
Incremental Measure Cost	\$0.32	DEER

New T5/T8 Fluorescent Fixtures	
Measure Description	This measure consists of replacing one or more existing fixtures with new fixtures containing T8 or T5 lamps and electronic ballasts. The T8 or T5 lamps must have a color rendering index (CRI) ≥ 80 . The electronic ballast must be high frequency (≥ 20 kHz), UL listed, and warranted against defects for 5 years. Ballasts must have a power factor (PF) ≥ 0.90 . Ballasts for 4-foot lamps must have total harmonic distortion (THD) ≤ 20 percent at full light output. For 2- and 3-foot lamps, ballasts must have THD $\leq 32\%$ at full light output.
Units	Per Watt reduced
Base Case Description	Typically high wattage HID fixtures
Measure Savings	Source: KEMA
Measure Incremental Cost	Source: KEMA
Effective Useful Life	Source: DEER 11 years

This measure consists of replacing one or more existing fixtures with new fixtures containing T8 or T5 lamps and electronic ballasts. The T8 or T5 lamps must have a color rendering index (CRI) ≥ 80 . The electronic ballast must be high frequency (≥ 20 kHz), UL listed, and warranted against defects for 5 years. Ballasts must have a power factor (PF) ≥ 0.90 . Ballasts for 4-foot lamps must have total harmonic distortion (THD) ≤ 20 percent at full light output. For 2- and 3-foot lamps, ballasts must have THD ≤ 32 percent at full light output.

Measure Savings

The annual operating hours, the coincidence factors, and the interactive effect factors were all derived from the DEER database.¹²

Table 58: Measure Savings for New T8/T5 Fluorescent Fixtures per Watt Reduced

Annual Operating Hours	Demand Interactive Effects	Coincident Diversity Factors	Energy Interactive Effects	Peak Watt Savings	kWh Savings
4,389	1.19	0.77	1.12	0.0009	4.9141

¹² 2005 Database for Energy Efficiency Resources (DEER) Update Study Final Report - Residential and Commercial Non-Weather Sensitive Measures

Measure Savings Analysis

Annual energy savings and the peak coincident demand savings were calculated using the equations below.

$$\text{Non-coincident kW reduction} = \text{kW of existing equipment} - \text{kW of replacement equipment}$$

Energy savings are calculated by applying the annual operating hours and the energy interactive effect, according to the following formula:

$\text{kWh Reduction} = \text{no-coincident kW savings} * \text{Annual operating hours} * \text{Energy interactive effect}$
Coincident demand savings are calculated by applying the coincidence factor and the demand interactive effect, according to the following formula:

$$\text{Coincident kW savings} = \text{non-coincident kW savings} * \text{Coincidence Factor} * \text{Demand interactive effect}$$

Baseline and retrofit equipment assumptions are variable. Because we define this measure with the number of watts reduced, the non-coincident demand savings will be one watt by definition.

Measure Life and Incremental Measure Cost

The following table provides the measure life and IMC documented for this measure as well as the source of the data.

Incremental cost is cost difference between the energy efficient equipment and the less efficient option. For lighting measures, the IMC is equal to the full measure cost since the cost of the less efficient option, i.e., not conducting the retrofit, is \$0.

Table 59: Measure Life and Incremental Measure Cost

	Value	Source
Measure Life	11	DEER
Incremental Measure Cost ¹³	\$0.75	KEMA

LED Traffic Signals	
Measure Description	LED traffic signals meeting ENERGY STAR criteria, including arrow signals, that will replace existing incandescent traffic signals. Signals shall have a maximum wattage of 25. Signals must be installed and active. Lights must be hardwired, with the exception of pedestrian hand signals. Yellow lights are not eligible for rebates.
Units	Per Signal
Base Case Description	Incandescent fixtures
Measure Savings	Source: Michigan Statewide Energy Savings Database
Measure Incremental Cost	Source: Michigan Statewide Energy Savings Database
Effective Useful Life	Source: Michigan Statewide Energy Savings Database Traffic Signal: 6 Years Pedestrian Signal: 8 Years

LED traffic signals that meet ENERGY STAR criteria save 80-90 percent of the energy typically consumed by incandescent traffic signals and LED signals generally last 5-10 times longer. Since traffic signals operate 24 hours a day, 365 days a year, the opportunity for energy savings is significant, particularly in the peak demand. LED Traffic signals perform better than incandescent models and are a better value. They also have lower maintenance costs because they need to be replaced less frequently.

Measure Savings

The energy savings vary for red, green and yellow signals. Savings also vary for round lamps, arrows and pedestrian signals. Reviewing details on California, Wisconsin and Texan programs, the savings below are typical.

In general, savings are greater on car traffic signals and cost generally less than for pedestrian signals. These savings include diversity for each lamp type, and represent an average.

Table 60: Measure Savings Traffic and Pedestrian Signals

Signal Type	kW	kWh
Traffic	0.085	275
Pedestrian	0.044	150

Measure Life and Incremental Measure Cost

The following table provides the measure life and IMC documented for this measure as well as the source of the data.

Incremental cost is cost difference between the energy efficient equipment and the less efficient option. For lighting measures, the IMC is equal to the full measure cost since the cost of the less efficient option, i.e., not conducting the retrofit, is \$0.

Table 61: Measure Life and Incremental Measure Cost

	Signal Type	Value	Source
Measure Life	Traffic	6	KEMA
Incremental Measure Cost	Traffic	\$90	KEMA
Measure Life	Pedestrian	8	KEMA
Incremental Measure Cost ¹⁴	Pedestrian	\$140	KEMA

Lighting Density	
Measure Description	Savings for new construction lighting projects will be calculated with lighting density.
Units	Per kW Reduced
Base Case Description	ASHRAE 90.1-2004 Lighting density.
Measure Savings	Source: KEMA
Measure Incremental Cost	Source: NA
Effective Useful Life	Source: DEER 11 Years

This measure applies only to new construction lighting projects and savings are calculated using the ASHRAE 90.1-2004 new construction lighting density as a baseline. The wattages are given on a per square foot basis and vary with business type.

The following table shows the ASHRAE criteria.

Table 62: ASHRAE Building Density Criteria

Building Type	Lighting Power Density (W/ft²)	Building Type	Lighting Power Density (W/ft²)
Automotive	0.9	Motion Picture Theatre	1.2
Convention Center	1.2	Multi-Family	0.7
Court House	1.2	Museum	1.1
Dining: Bar Lounge/Leisure	1.3	Office	1.0
Dining: Cafeteria/Fast Food	1.4	Parking Garage	0.3
Dining: Family	1.6	Penitentiary	1.0
Dormitory	1.0	Performing Arts Theatre	1.6
Exercise Center	1.0	Police/Fire Station	1.0
Gymnasium	1.1	Retail	1.5
Health Care	1.0	School/University	1.2
Hospital	1.2	Sports Arena	1.1

Hotel	1.0	Town Hall	1.1
Library	1.3	Transportation	1.0
Manufacturing Facility	1.3	Warehouse	0.8
Motel	1.0	Workshop.	1.4

Applications must calculate the kW reduction using the above numbers, taking into account the business type as well as the actual building square footage. On a per kW reduced basis, the following table shows the energy and coincident savings.

Table 63: Lighting Density Savings

Annual Operating Hours	Demand Interactive Effects	Coincident Diversity Factors	Energy Interactive Effects	Peak Watt Savings	kWh Savings
4,389	1.19	0.77	1.12	0.916	4,914

Measure Savings Analysis

Annual energy savings and the peak coincident demand savings were calculated using the equations below.

$$\text{Non-coincident kW reduction} = \text{kW of existing equipment} - \text{kW of replacement equipment}$$

Energy savings are calculated by applying the annual operating hours and the energy interactive effect, according to the following formula:

$\text{kWh Reduction} = \text{non-coincident kW savings} * \text{Annual operating hours} * \text{Energy interactive effect}$
Coincident demand savings are calculated by applying the coincidence factor and the demand interactive effect, according to the following formula:

$$\text{Coincident kW savings} = \text{non-coincident kW savings} * \text{Coincidence Factor} * \text{Demand interactive effect}$$

Baseline and retrofit equipment assumptions are variable. Because we define this measure as in the number of watts reduced, the non-coincident demand savings will be one kW by definition.

Measure Life

The following table provides the measure life documented for this measure as well as the source of the data.



Table 64: Measure Life

	Value	Source
Measure Life	11	DEER

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Summary: Application Application electronically filed by Mr. Matthew J Satterwhite on behalf of American Electric Power Service Corporation