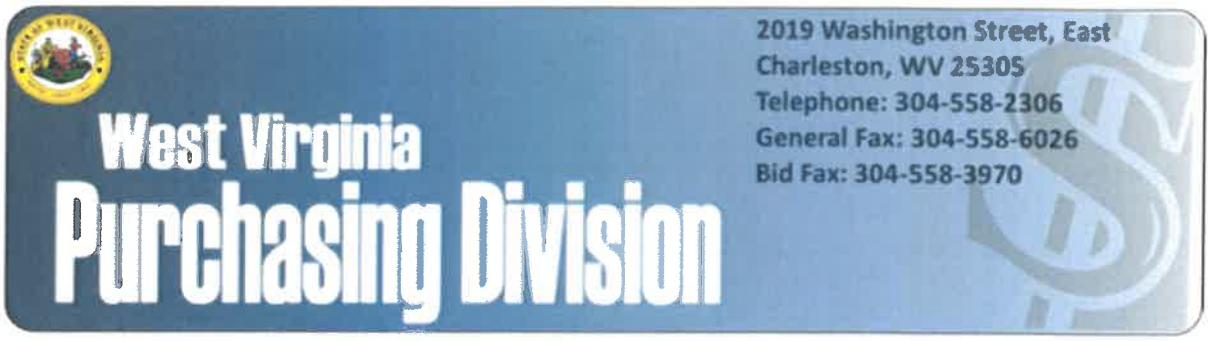
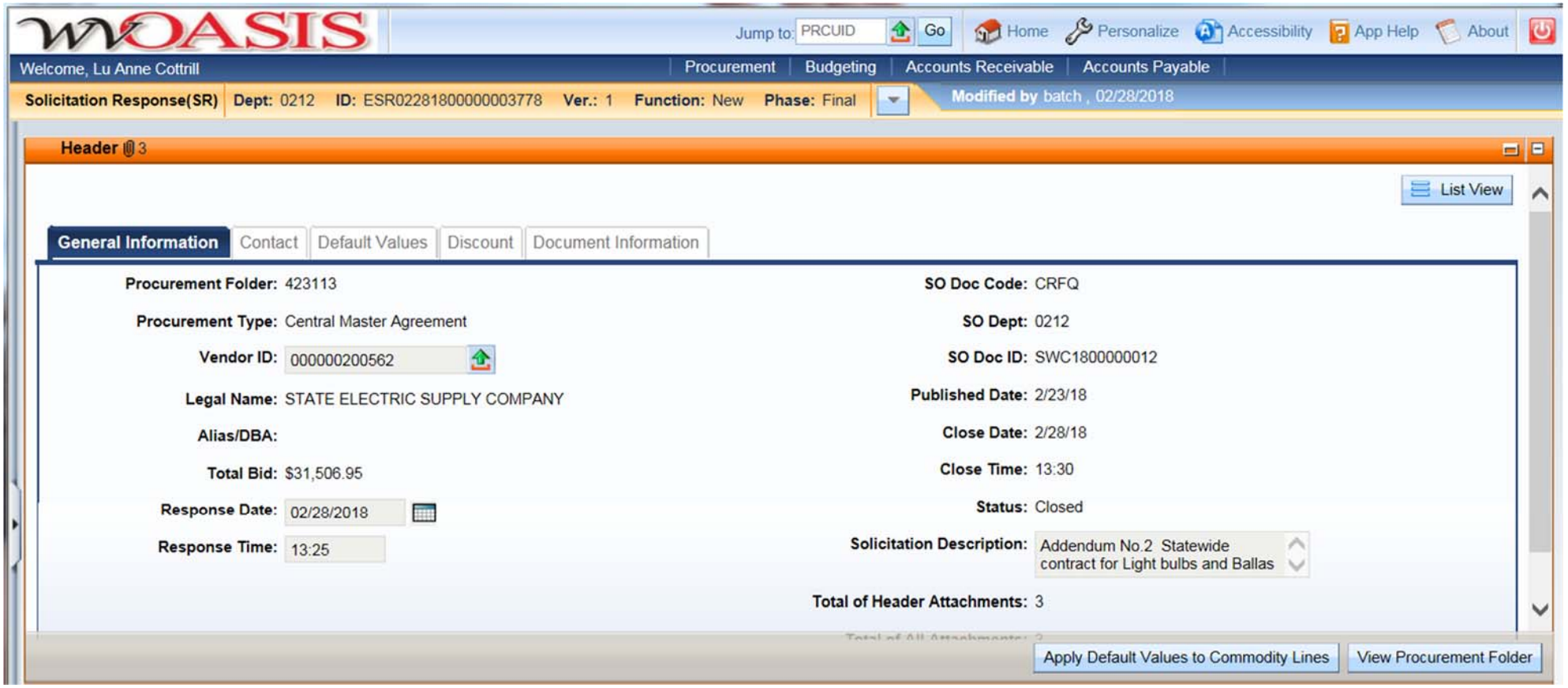


The following documentation is an electronically-submitted vendor response to an advertised solicitation from the *West Virginia Purchasing Bulletin* within the Vendor Self-Service portal at ***wvOASIS.gov***. As part of the State of West Virginia's procurement process, and to maintain the transparency of the bid-opening process, this documentation submitted online is publicly posted by the West Virginia Purchasing Division at ***WVPurchasing.gov*** with any other vendor responses to this solicitation submitted to the Purchasing Division in hard copy format.


wvOASIS
Jump to: PRCUID Go
Home
Personalize
Accessibility
App Help
About
Welcome, Lu Anne Cottrill
Procurement
Budgeting
Accounts Receivable
Accounts Payable
Solicitation Response(SR) Dept: 0212 ID: ESR02281800000003778 Ver.: 1 Function: New Phase: Final
Modified by batch , 02/28/2018
Header 3
List View
General Information
Contact
Default Values
Discount
Document Information
Procurement Folder: 423113
Procurement Type: Central Master Agreement
Vendor ID: 000000200562
Legal Name: STATE ELECTRIC SUPPLY COMPANY
Alias/DBA:
Total Bid: $31,506.95
Response Date: 02/28/2018
Response Time: 13:25
SO Doc Code: CRFQ
SO Dept: 0212
SO Doc ID: SWC1800000012
Published Date: 2/23/18
Close Date: 2/28/18
Close Time: 13:30
Status: Closed
Solicitation Description: Addendum No.2 Statewide contract for Light bulbs and Ballas
Total of Header Attachments: 3
Apply Default Values to Commodity Lines
View Procurement Folder

Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

State of West Virginia
Solicitation Response

Proc Folder : 423113

Solicitation Description : Addendum No.2 Statewide contract for Light bulbs and Ballas

Proc Type : Central Master Agreement

Date issued	Solicitation Closes	Solicitation Response	Version
	2018-02-28 13:30:00	SR 0212 ESR02281800000003778	1

VENDOR

000000200562

STATE ELECTRIC SUPPLY COMPANY

Solicitation Number: CRFQ 0212 SWC1800000012

Total Bid : $31,506.95 **Response Date:** 2018-02-28 **Response Time:** 13:25:51

Comments: State Electric is the only locally WV owner company that can service all the needs of this contract. We have 12 locations to service all of your lighting needs, and well equipped team of lighting specialist.

FOR INFORMATION CONTACT THE BUYER

Melissa Pettrey

(304) 558-0094
melissa.k.pettrey@wv.gov

Signature on File **FEIN #** **DATE**

All offers subject to all terms and conditions contained in this solicitation

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	LIGHT BULBS & BALLAST	1.00000	EA	$31,506.950000	$31,506.95

Comm Code	Manufacturer	Specification	Model #
39100000			

Extended Description : Vendors are to enter their TOTAL BID AMOUNT from Exhibit A Pricing Sheet on this line.

WV-10
Approved / Revised
09/15/17

State of West Virginia

VENDOR PREFERENCE CERTIFICATE

Certification and application is hereby made for Preference in accordance with ***West Virginia Code***, §5A-3-37. (Does not apply to construction contracts). ***West Virginia Code***, §5A-3-37, provides an opportunity for qualifying vendors to request (at the time of bid) preference for their residency status. Such preference is an evaluation method only and will be applied only to the cost bid in accordance with the ***West Virginia Code***. This certificate for application is to be used to request such preference. The Purchasing Division will make the determination of the Vendor Preference, if applicable.

1. ☒ **Application is made for 2.5% vendor preference for the reason checked:**
Bidder is an individual resident vendor and has resided continuously in West Virginia, or bidder is a partnership, association or corporation resident vendor and has maintained its headquarters or principal place of business continuously in West Virginia, for four (4) years immediately preceding the date of this certification; **or,**

☐ Bidder is a resident vendor partnership, association, or corporation with at least eighty percent of ownership interest of bidder held by another entity that meets the applicable four year residency requirement; **or,**

☐ Bidder is a nonresident vendor which has an affiliate or subsidiary which employs a minimum of one hundred state residents and which has maintained its headquarters or principal place of business within West Virginia continuously for the four (4) years immediately preceding the date of this certification; **or,**

2. ☐ **Application is made for 2.5% vendor preference for the reason checked:**
Bidder is a resident vendor who certifies that, during the life of the contract, on average at least 75% of the employees working on the project being bid are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; **or,**

3. ☐ **Application is made for 2.5% vendor preference for the reason checked:**
Bidder is a nonresident vendor that employs a minimum of one hundred state residents, or a nonresident vendor which has an affiliate or subsidiary which maintains its headquarters or principal place of business within West Virginia and employs a minimum of one hundred state residents, and for purposes of producing or distributing the commodities or completing the project which is the subject of the bidder's bid and continuously over the entire term of the project, on average at least seventy-five percent of the bidder's employees or the bidder's affiliate's or subsidiary's employees are residents of West Virginia who have resided in the state continuously for the two immediately preceding years and the vendor's bid; **or,**

4. ☐ **Application is made for 5% vendor preference for the reason checked:**
Bidder meets either the requirement of both subdivisions (1) and (2) or subdivision (1) and (3) as stated above; **or,**

5. ☐ **Application is made for 3.5% vendor preference who is a veteran for the reason checked:**
Bidder is an individual resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard and has resided in West Virginia continuously for the four years immediately preceding the date on which the bid is submitted; **or,**

6. ☐ **Application is made for 3.5% vendor preference who is a veteran for the reason checked:**
Bidder is a resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard, if, for purposes of producing or distributing the commodities or completing the project which is the subject of the vendor's bid and continuously over the entire term of the project, on average at least seventy-five percent of the vendor's employees are residents of West Virginia who have resided in the state continuously for the two immediately preceding years.

7. ☐ **Application is made for preference as a non-resident small, women- and minority-owned business, in accordance with *West Virginia Code* §5A-3-59 and *West Virginia Code of State Rules*.**
Bidder has been or expects to be approved prior to contract award by the Purchasing Division as a certified small, women- and minority-owned business.

Bidder understands if the Secretary of Revenue determines that a Bidder receiving preference has failed to continue to meet the requirements for such preference, the Secretary may order the Director of Purchasing to: (a) rescind the contract or purchase order; or (b) assess a penalty against such Bidder in an amount not to exceed 5% of the bid amount and that such penalty will be paid to the contracting agency or deducted from any unpaid balance on the contract or purchase order.

By submission of this certificate, Bidder agrees to disclose any reasonably requested information to the Purchasing Division and authorizes the Department of Revenue to disclose to the Director of Purchasing appropriate information verifying that Bidder has paid the required business taxes, provided that such information does not contain the amounts of taxes paid nor any other information deemed by the Tax Commissioner to be confidential.

Bidder hereby certifies that this certificate is true and accurate in all respects; and that if a contract is issued to Bidder and if anything contained within this certificate changes during the term of the contract, Bidder will notify the Purchasing Division in writing immediately.

Bidder: State Electric Supply Co **Signed:** [signature]

Date: 2/28/2018 **Title:** Energy Solutions Manager

**Check any combination of preference consideration(s) indicated above, which you are entitled to receive.*

Purchasing Divison
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

State of West Virginia
Request for Quotation
27 — Miscellaneous

Proc Folder: 423113

Doc Description: Addendum No.2 Statewide contract for Light bulbs and Ballas

Proc Type: Central Master Agreement

Date Issued	Solicitation Closes	Solicitation No	Version
2018-02-23	2018-02-28 13:30:00	CRFQ 0212 SWC1800000012	3

BID RECEIVING LOCATION

BID CLERK
DEPARTMENT OF ADMINISTRATION
PURCHASING DIVISION
2019 WASHINGTON ST E
CHARLESTON WV 25305
US

VENDOR

Vendor Name, Address and Telephone Number:

STATE ELECTRIC SUPPLY CO.
2010 2nd Avenue
Huntington, WV 25703

304-528-0292

FOR INFORMATION CONTACT THE BUYER

Melissa Pettrey
(304) 558-0094
melissa.k.pettrey@wv.gov

Signature X **FEIN #** 55 - 0384235 **DATE** 2/28/18

All offers subject to all terms and conditions contained in this solicitation

ADDITIONAL INFORMAITON:

ADDENDUM

Addendum No.2 is issued to publish and distribute the attached information to the vendor community.
****

West Virginia Purchasing Division is soliciting bids on behalf of the State of West Virginia to establish an open-end (Statewide) contract for light bulbs and ballast for all West Virginia Agencies and Political Subdivisions as well as county and city municipalities within the state of West Virginia's 55 counties. Per the bid requirements, specifications, and terms and conditions that are a part of this solicitation and attached hereto.

INVOICE TO	SHIP TO
ALL STATE AGENCIES VARIOUS LOCATIONS AS INDICATED BY ORDER	STATE OF WEST VIRGINIA VARIOUS LOCATIONS AS INDICATED BY ORDER
No City WV99999	No City WV 99999
US	US

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
1	LIGHT BULBS & BALLAST	1.00000	EA	$31,506.95	$31,506.95

Comm Code	Manufacturer	Specification	Model #
39100000			

Extended Description :

Vendors are to enter their TOTAL BID AMOUNT from Exhibit A Pricing Sheet on this line.

$31,506.95

ADDITIONAL TERMS AND CONDITIONS

See attached document(s) for additional Terms and Conditions

SOLICITATION NUMBER: SWC1800000012
Addendum Number: 2

The purpose of this addendum is to modify the solicitation identified as SWC1800000012 ("Solicitation") to reflect the change(s) identified and described below.

Applicable Addendum Category:

[ ] Modify bid opening date and time

[ ] Modify specifications of product or service being sought

[ ] Attachment of vendor questions and responses

[ ] Attachment of pre-bid sign-in sheet

[X] Correction of error

[X] Other

Description of Modification to Solicitation:

1. **To amend the Exhibit A pricing page.**
2. **Bid opening remains 02/28/2018 @ 1:30 P.M. EST**

Additional Documentation: Documentation related to this Addendum (if any) has been included herewith as Attachment A and is specifically incorporated herein by reference.

Terms and Conditions:

1. All provisions of the Solicitation and other addenda not modified herein shall remain in full force and effect.

2. Vendor should acknowledge receipt of all addenda issued for this Solicitation by completing an Addendum Acknowledgment, a copy of which is included herewith. Failure to acknowledge addenda may result in bid disqualification. The addendum acknowledgement should be submitted with the bid to expedite document processing.

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: SWC1800000012

Instructions: Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

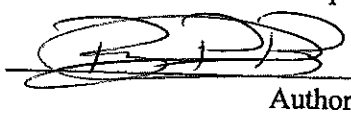
Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

Addendum Numbers Received:
(Check the box next to each addendum received)

[✓] Addendum No. 1	[ ] Addendum No. 6
[✓] Addendum No. 2	[ ] Addendum No. 7
[ ] Addendum No. 3	[ ] Addendum No. 8
[ ] Addendum No. 4	[ ] Addendum No. 9
[ ] Addendum No. 5	[ ] Addendum No. 10

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

STATE ELECTRIC SUPPLY CO.
Company


Authorized Signature

2/28/2018
Date

NOTE: This addendum acknowledgement should be submitted with the bid to expedite document processing.

INSTRUCTIONS TO VENDORS SUBMITTING BIDS

1. REVIEW DOCUMENTS THOROUGHLY: The attached documents contain a solicitation for bids. Please read these instructions and all documents attached in their entirety. These instructions provide critical information about requirements that if overlooked could lead to disqualification of a Vendor's bid. All bids must be submitted in accordance with the provisions contained in these instructions and the Solicitation. Failure to do so may result in disqualification of Vendor's bid.

2. MANDATORY TERMS: The Solicitation may contain mandatory provisions identified by the use of the words "must," "will," and "shall." Failure to comply with a mandatory term in the Solicitation will result in bid disqualification.

3. PREBID MEETING: The item identified below shall apply to this Solicitation.

☑ A pre-bid meeting will not be held prior to bid opening

☐ A **NON-MANDATORY PRE-BID** meeting will be held at the following place and time:

☐ A **MANDATORY PRE-BID** meeting will be held at the following place and time:

All Vendors submitting a bid must attend the mandatory pre-bid meeting. Failure to attend the mandatory pre-bid meeting shall result in disqualification of the Vendor's bid. No one person attending the pre-bid meeting may represent more than one Vendor.

An attendance sheet provided at the pre-bid meeting shall serve as the official document verifying attendance. The State will not accept any other form of proof or documentation to verify attendance. Any person attending the pre-bid meeting on behalf of a Vendor must list on the attendance sheet his or her name and the name of the Vendor he or she is representing.

Additionally, the person attending the pre-bid meeting should include the Vendor's E-Mail address, phone number, and Fax number on the attendance sheet. It is the Vendor's responsibility to locate the attendance sheet and provide the required information. Failure to complete the attendance sheet as required may result in disqualification of Vendor's bid.

All Vendors should arrive prior to the starting time for the pre-bid. Vendors who arrive after the starting time but prior to the end of the pre-bid will be permitted to sign in, but are charged with knowing all matters discussed at the pre-bid.

Questions submitted at least five business days prior to a scheduled pre-bid will be discussed at the pre-bid meeting if possible. Any discussions or answers to questions at the pre-bid meeting are preliminary in nature and are non-binding. Official and binding answers to questions will be published in a written addendum to the Solicitation prior to bid opening.

4. VENDOR QUESTION DEADLINE: Vendors may submit questions relating to this Solicitation to the Purchasing Division. Questions must be submitted in writing. All questions must be submitted on or before the date listed below and to the address listed below in order to be considered. A written response will be published in a Solicitation addendum if a response is possible and appropriate. Non-written discussions, conversations, or questions and answers regarding this Solicitation are preliminary in nature and are nonbinding.

Submitted e-mails should have solicitation number in the subject line.

Question Submission Deadline: 02/14/2018 @ 10:00 A.M. EST

Submit Questions to: Melissa Pettrey, Senior Buyer
2019 Washington Street, East
Charleston, WV 25305
Fax: (304) 558-4115 (Vendors should not use this fax number for bid submission)
Email: melissa.k.pettrey@wv.gov

5. VERBAL COMMUNICATION: Any verbal communication between the Vendor and any State personnel is not binding, including verbal communication at the mandatory pre-bid conference. Only information issued in writing and added to the Solicitation by an official written addendum by the Purchasing Division is binding.

6. BID SUBMISSION: All bids must be submitted electronically through wvOASIS or signed and delivered by the Vendor to the Purchasing Division at the address listed below on or before the date and time of the bid opening. Any bid received by the Purchasing Division staff is considered to be in the possession of the Purchasing Division and will not be returned for any reason. The Purchasing Division will not accept bids, modification of bids, or addendum acknowledgment forms via e-mail. Acceptable delivery methods include electronic submission via wvOASIS, hand delivery, delivery by courier, or facsimile.

The bid delivery address is:
Department of Administration, Purchasing Division
2019 Washington Street East
Charleston, WV 25305-0130

A bid that is not submitted electronically through wvOASIS should contain the information listed below on the face of the envelope or the bid may be rejected by the Purchasing Division.:

SEALED BID:
BUYER: Melissa Pettrey, Senior Buyer
SOLICITATION NO.:
BID OPENING DATE:
BID OPENING TIME:
FAX NUMBER:

The Purchasing Division may prohibit the submission of bids electronically through wvOASIS at its sole discretion. Such a prohibition will be contained and communicated in the wvOASIS system resulting in the Vendor's inability to submit bids through wvOASIS. Submission of a response to an Expression or Interest or Request for Proposal is not permitted in wvOASIS.

For Request For Proposal ("RFP") Responses Only: In the event that Vendor is responding to a request for proposal, the Vendor shall submit one original technical and one original cost proposal plus N/A convenience copies of each to the Purchasing Division at the address shown above. Additionally, the Vendor should identify the bid type as either a technical or cost proposal on the face of each bid envelope submitted in response to a request for proposal as follows:

BID TYPE: (This only applies to CRFP)
☐ Technical
☐ Cost

7. BID OPENING: Bids submitted in response to this Solicitation will be opened at the location identified below on the date and time listed below. Delivery of a bid after the bid opening date and time will result in bid disqualification. For purposes of this Solicitation, a bid is considered delivered when confirmation of delivery is provided by wvOASIS (in the case of electronic submission) or when the bid is time stamped by the official Purchasing Division time clock (in the case of hand delivery).

Bid Opening Date and Time: 02/28/2018 @ 1:30 P.M. EST

Bid Opening Location: Department of Administration, Purchasing Division
2019 Washington Street East
Charleston, WV 25305-0130

8. ADDENDUM ACKNOWLEDGEMENT: Changes or revisions to this Solicitation will be made by an official written addendum issued by the Purchasing Division. Vendor should acknowledge receipt of all addenda issued with this Solicitation by completing an Addendum Acknowledgment Form, a copy of which is included herewith. Failure to acknowledge addenda may result in bid disqualification. The addendum acknowledgement should be submitted with the bid to expedite document processing.

9. BID FORMATTING: Vendor should type or electronically enter the information onto its bid to prevent errors in the evaluation. Failure to type or electronically enter the information may result in bid disqualification.

10. ALTERNATES: Any model, brand, or specification listed in this Solicitation establishes the acceptable level of quality only and is not intended to reflect a preference for, or in any way favor, a particular brand or vendor. Vendors may bid alternates to a listed model or brand provided that the alternate is at least equal to the model or brand and complies with the required specifications. The equality of any alternate being bid shall be determined by the State at its sole discretion. Any Vendor bidding an alternate model or brand should clearly identify the alternate items in its bid and should include manufacturer's specifications, industry literature, and/or any other relevant documentation demonstrating the equality of the alternate items. Failure to provide information for alternate items may be grounds for rejection of a Vendor's bid.

11. EXCEPTIONS AND CLARIFICATIONS: The Solicitation contains the specifications that shall form the basis of a contractual agreement. Vendor shall clearly mark any exceptions, clarifications, or other proposed modifications in its bid. Exceptions to, clarifications of, or modifications of a requirement or term and condition of the Solicitation may result in bid disqualification.

12. COMMUNICATION LIMITATIONS: In accordance with West Virginia Code of State Rules §148-1-6.6, communication with the State of West Virginia or any of its employees regarding this Solicitation during the solicitation, bid, evaluation or award periods, except through the Purchasing Division, is strictly prohibited without prior Purchasing Division approval. Purchasing Division approval for such communication is implied for all agency delegated and exempt purchases.

13. REGISTRATION: Prior to Contract award, the apparent successful Vendor must be properly registered with the West Virginia Purchasing Division and must have paid the $125 fee, if applicable.

14. UNIT PRICE: Unit prices shall prevail in cases of a discrepancy in the Vendor's bid.

15. PREFERENCE: Vendor Preference may only be granted upon written request and only in accordance with the West Virginia Code § 5A-3-37 and the West Virginia Code of State Rules. A Vendor Preference Certificate form has been attached hereto to allow Vendor to apply for the preference. Vendor's failure to submit the Vendor Preference Certificate form with its bid will result in denial of Vendor Preference. Vendor Preference does not apply to construction projects.

16. SMALL, WOMEN-OWNED, OR MINORITY-OWNED BUSINESSES: For any solicitations publicly advertised for bid, in accordance with West Virginia Code §5A-3-37(a)(7) and W. Va. CSR § 148-22-9, any non-resident vendor certified as a small, women-owned, or minority-owned business under W. Va. CSR § 148-22-9 shall be provided the same preference made available to any resident vendor. Any non-resident small, women-owned, or minority-owned business must identify itself as such in writing, must submit that writing to the Purchasing Division with its bid, and must be properly certified under W. Va. CSR § 148-22-9 prior to contract award to receive the preferences made available to resident vendors. Preference for a non-resident small, women-owned, or minority owned business shall be applied in accordance with W. Va. CSR § 148-22-9.

17. WAIVER OF MINOR IRREGULARITIES: The Director reserves the right to waive minor irregularities in bids or specifications in accordance with West Virginia Code of State Rules § 148-1-4.6.

18. ELECTRONIC FILE ACCESS RESTRICTIONS: Vendor must ensure that its submission in wvOASIS can be accessed and viewed by the Purchasing Division staff immediately upon bid opening. The Purchasing Division will consider any file that cannot be immediately accessed and viewed at the time of the bid opening (such as, encrypted files, password protected files, or incompatible files) to be blank or incomplete as context requires, and are therefore unacceptable. A vendor will not be permitted to unencrypt files, remove password protections, or resubmit documents after bid opening to make a file viewable if those documents are required with the bid. A Vendor may be required to provide document passwords or remove access restrictions to allow the Purchasing Division to print or electronically save documents provided that those documents are viewable by the Purchasing Division prior to obtaining the password or removing the access restriction.

19. NON-RESPONSIBLE: The Purchasing Division Director reserves the right to reject the bid of any vendor as Non-Responsible in accordance with W. Va. Code of State Rules § 148-1-5.3, when the Director determines that the vendor submitting the bid does not have the capability to fully perform, or lacks the integrity and reliability to assure good-faith performance."

20. ACCEPTANCE/REJECTION: The State may accept or reject any bid in whole, or in part in accordance with W. Va. Code of State Rules § 148-1-4.5. and § 148-1-6.4.b."

21. YOUR SUBMISSION IS A PUBLIC DOCUMENT: Vendor's entire response to the Solicitation and the resulting Contract are public documents. As public documents, they will be disclosed to the public following the bid/proposal opening or award of the contract, as required by the competitive bidding laws of West Virginia Code §§ 5A-3-1 et seq., 5-22-1 et seq., and 5G-1-1 et seq. and the Freedom of Information Act West Virginia Code §§ 29B-1-1 et seq.

DO NOT SUBMIT MATERIAL YOU CONSIDER TO BE CONFIDENTIAL, A TRADE SECRET, OR OTHERWISE NOT SUBJECT TO PUBLIC DISCLOSURE.

Submission of any bid, proposal, or other document to the Purchasing Division constitutes your explicit consent to the subsequent public disclosure of the bid, proposal, or document. The Purchasing Division will disclose any document labeled "confidential," "proprietary," "trade secret," "private," or labeled with any other claim against public disclosure of the documents, to include any "trade secrets" as defined by West Virginia Code § 47-22-1 et seq. All submissions are subject to public disclosure without notice.

22. INTERESTED PARTY DISCLOSURE: W. Va. Code § 6D-1-2 requires that for contracts with an actual or estimated value of at least $100,000, the vendor must submit to the Purchasing Division a disclosure of interested parties to the contract, prior to contract award. That disclosure must occur on the form prescribed and approved by the WV Ethics Commission. A copy of that form is included with this solicitation or can be obtained from the WV Ethics Commission. "Interested parties" means: (1) A business entity performing work or service pursuant to, or in furtherance of, the applicable contract, including specifically sub-contractors; (2) the person(s) who have an ownership interest equal to or greater than 25% in the business entity performing work or service pursuant to, or in furtherance of, the applicable contract; and (3) the person or business entity, if any, that served as a compensated broker or intermediary to actively facilitate the applicable contract or negotiated the terms of the applicable contract with the state agency: Provided, That subdivision (2) shall be inapplicable if a business entity is a publicly traded company: Provided, however, That subdivision (3) shall not include persons or business entities performing legal services related to the negotiation or drafting of the applicable contract.

GENERAL TERMS AND CONDITIONS:

1. CONTRACTUAL AGREEMENT: Issuance of a Award Document signed by the Purchasing Division Director, or his designee, and approved as to form by the Attorney General's office constitutes acceptance of this Contract made by and between the State of West Virginia and the Vendor. Vendor's signature on its bid signifies Vendor's agreement to be bound by and accept the terms and conditions contained in this Contract.

2. DEFINITIONS: As used in this Solicitation/Contract, the following terms shall have the meanings attributed to them below. Additional definitions may be found in the specifications included with this Solicitation/Contract.

2.1. "Agency" or **"Agencies"** means the agency, board, commission, or other entity of the State of West Virginia that is identified on the first page of the Solicitation or any other public entity seeking to procure goods or services under this Contract.

2.2. "Bid" or **"Proposal"** means the vendors submitted response to this solicitation.

2.3. "Contract" means the binding agreement that is entered into between the State and the Vendor to provide the goods or services requested in the Solicitation.

2.4. "Director" means the Director of the West Virginia Department of Administration, Purchasing Division.

2.5. "Purchasing Division" means the West Virginia Department of Administration, Purchasing Division.

2.6. "Award Document" means the document signed by the Agency and the Purchasing Division, and approved as to form by the Attorney General, that identifies the Vendor as the contract holder.

2.7. "Solicitation" means the official notice of an opportunity to supply the State with goods or services that is published by the Purchasing Division.

2.8. "State" means the State of West Virginia and/or any of its agencies, commissions, boards, etc. as context requires.

2.9. "Vendor" or **"Vendors"** means any entity submitting a bid in response to the Solicitation, the entity that has been selected as the lowest responsible bidder, or the entity that has been awarded the Contract as context requires.

3. CONTRACT TERM; RENEWAL; EXTENSION: The term of this Contract shall be determined in accordance with the category that has been identified as applicable to this Contract below:

☑ **Term Contract**

Initial Contract Term: Initial Contract Term: This Contract becomes effective on UPON AWARD and extends for a period of ONE (1) year(s).

Renewal Term: This Contract may be renewed upon the mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). Any request for renewal should be delivered to the Agency and then submitted to the Purchasing Division thirty (30) days prior to the expiration date of the initial contract term or appropriate renewal term. A Contract renewal shall be in accordance with the terms and conditions of the original contract. Unless otherwise specified below, renewal of this Contract is limited to THREE (3) successive one (1) year periods or multiple renewal periods of less than one year, provided that the multiple renewal periods do not exceed the total number of months available in all renewal years combined. Automatic renewal of this Contract is prohibited. Renewals must be approved by the Vendor, Agency, Purchasing Division and Attorney General's office (Attorney General approval is as to form only)

☐ **Alternate Renewal Term** – This contract may be renewed for _____ successive _____ year periods or shorter periods provided that they do not exceed the total number of months contained in all available renewals. Automatic renewal of this Contract is prohibited. Renewals must be approved by the Vendor, Agency, Purchasing Division and Attorney General's office (Attorney General approval is as to form only)

Delivery Order Limitations: In the event that this contract permits delivery orders, a delivery order may only be issued during the time this Contract is in effect. Any delivery order issued within one year of the expiration of this Contract shall be effective for one year from the date the delivery order is issued. No delivery order may be extended beyond one year after this Contract has expired.

☐ **Fixed Period Contract:** This Contract becomes effective upon Vendor's receipt of the notice to proceed and must be completed within _____ days.

☐ **Fixed Period Contract with Renewals:** This Contract becomes effective upon Vendor's receipt of the notice to proceed and part of the Contract more fully described in the attached specifications must be completed within _____ days. Upon completion of the work covered by the preceding sentence, the vendor agrees that maintenance, monitoring, or warranty services will be provided for _____ year(s) thereafter.

☐ **One Time Purchase:** The term of this Contract shall run from the issuance of the Award Document until all of the goods contracted for have been delivered, but in no event will this Contract extend for more than one fiscal year.

☐ **Other:** See attached.

4. NOTICE TO PROCEED: Vendor shall begin performance of this Contract immediately upon receiving notice to proceed unless otherwise instructed by the Agency. Unless otherwise specified, the fully executed Award Document will be considered notice to proceed.

5. QUANTITIES: The quantities required under this Contract shall be determined in accordance with the category that has been identified as applicable to this Contract below.

☑ **Open End Contract:** Quantities listed in this Solicitation are approximations only, based on estimates supplied by the Agency. It is understood and agreed that the Contract shall cover the quantities actually ordered for delivery during the term of the Contract, whether more or less than the quantities shown.

☐ **Service:** The scope of the service to be provided will be more clearly defined in the specifications included herewith.

☐ **Combined Service and Goods:** The scope of the service and deliverable goods to be provided will be more clearly defined in the specifications included herewith.

☐ **One Time Purchase:** This Contract is for the purchase of a set quantity of goods that are identified in the specifications included herewith. Once those items have been delivered, no additional goods may be procured under this Contract without an appropriate change order approved by the Vendor, Agency, Purchasing Division, and Attorney General's office.

6. EMERGENCY PURCHASES: The Purchasing Division Director may authorize the Agency to purchase goods or services in the open market that Vendor would otherwise provide under this Contract if those goods or services are for immediate or expedited delivery in an emergency. Emergencies shall include, but are not limited to, delays in transportation or an unanticipated increase in the volume of work. An emergency purchase in the open market, approved by the Purchasing Division Director, shall not constitute of breach of this Contract and shall not entitle the Vendor to any form of compensation or damages. This provision does not excuse the State from fulfilling its obligations under a One Time Purchase contract.

7. REQUIRED DOCUMENTS: All of the items checked below must be provided to the Purchasing Division by the Vendor as specified below.

☐ **BID BOND (Construction Only):** Pursuant to the requirements contained in W. Va. Code § 5-22-1(c), All Vendors submitting a bid on a construction project shall furnish a valid bid bond in the amount of five percent (5%) of the total amount of the bid protecting the State of West Virginia. The bid bond must be submitted with the bid.

☐ **PERFORMANCE BOND:** The apparent successful Vendor shall provide a performance bond in the amount of _____. The performance bond must be received by the Purchasing Division prior to Contract award. On construction contracts, the performance bond must be 100% of the Contract value.

☐ **LABOR/MATERIAL PAYMENT BOND:** The apparent successful Vendor shall provide a labor/material payment bond in the amount of 100% of the Contract value. The labor/material payment bond must be delivered to the Purchasing Division prior to Contract award.

In lieu of the Bid Bond, Performance Bond, and Labor/Material Payment Bond, the Vendor may provide certified checks, cashier's checks, or irrevocable letters of credit. Any certified check, cashier's check, or irrevocable letter of credit provided in lieu of a bond must be of the same amount and delivered on the same schedule as the bond it replaces. A letter of credit submitted in lieu of a performance and labor/material payment bond will only be allowed for projects under $100,000. Personal or business checks are not acceptable. Notwithstanding the foregoing, West Virginia Code § 5-22-1 (d) mandates that a vendor provide a performance and labor/material payment bond for construction projects. Accordingly, substitutions for the performance and labor/material payment bonds for construction projects is not permitted.

☐ **MAINTENANCE BOND:** The apparent successful Vendor shall provide a two (2) year maintenance bond covering the roofing system. The maintenance bond must be issued and delivered to the Purchasing Division prior to Contract award.

☐ **LICENSE(S) / CERTIFICATIONS / PERMITS:** In addition to anything required under the Section entitled Licensing, of the General Terms and Conditions, the apparent successful Vendor shall furnish proof of the following licenses, certifications, and/or permits prior to Contract award, in a form acceptable to the Purchasing Division.

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The apparent successful Vendor shall also furnish proof of any additional licenses or certifications contained in the specifications prior to Contract award regardless of whether or not that requirement is listed above.

8. INSURANCE: The apparent successful Vendor shall furnish proof of the insurance identified by a checkmark below prior to Contract award. Subsequent to contract award, and prior to the insurance expiration date, Vendor shall provide the Agency with proof that the insurance mandated herein has been continued. Vendor must also provide Agency with immediate notice of any changes in its insurance policies mandated herein, including but not limited to, policy cancelation, policy reduction, or change in insurers. The insurance coverages identified below must be maintained throughout the life of this contract. The apparent successful Vendor shall also furnish proof of any additional insurance requirements contained in the specifications prior to Contract award regardless of whether or not that insurance requirement is listed in this section.

Vendor must maintain:

☑ **Commercial General Liability Insurance** in at least an amount of: $500,000.00

☑ **Automobile Liability Insurance** in at least an amount of: $500,000.00

☐ **Professional/Malpractice/Errors and Omission Insurance** in at least an amount of: _____

☐ **Commercial Crime and Third Party Fidelity Insurance** in an amount of: _____

☐ **Cyber Liability Insurance** in an amount of: _____

☐ **Builders Risk Insurance** in an amount equal to 100% of the amount of the Contract.

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9. WORKERS' COMPENSATION INSURANCE: The apparent successful Vendor shall comply with laws relating to workers compensation, shall maintain workers' compensation insurance when required, and shall furnish proof of workers' compensation insurance upon request.

10. [Reserved]

11. LIQUIDATED DAMAGES: This clause shall in no way be considered exclusive and shall not limit the State or Agency's right to pursue any other available remedy. Vendor shall pay liquidated damages in the amount specified below or as described in the specifications:

☐ _____ for _____

☐ Liquidated Damages Contained in the Specifications

12. ACCEPTANCE: Vendor's signature on its bid, or on the certification and signature page, constitutes an offer to the State that cannot be unilaterally withdrawn, signifies that the product or service proposed by vendor meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise indicated, and signifies acceptance of the terms and conditions contained in the Solicitation unless otherwise indicated.

13. PRICING: The pricing set forth herein is firm for the life of the Contract, unless specified elsewhere within this Solicitation/Contract by the State. A Vendor's inclusion of price adjustment provisions in its bid, without an express authorization from the State in the Solicitation to do so, may result in bid disqualification.

14. PAYMENT: Payment in advance is prohibited under this Contract. Payment may only be made after the delivery and acceptance of goods or services. The Vendor shall submit invoices, in arrears.

15. PURCHASING CARD ACCEPTANCE: The State of West Virginia currently utilizes a Purchasing Card program, administered under contract by a banking institution, to process payment for goods and services. The Vendor must accept the State of West Virginia's Purchasing Card for payment of all orders under this Contract unless the box below is checked.

☑ Vendor is not required to accept the State of West Virginia's Purchasing Card as payment for all goods and services.

16. TAXES: The Vendor shall pay any applicable sales, use, personal property or any other taxes arising out of this Contract and the transactions contemplated thereby. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.

17. ADDITIONAL FEES: Vendor is not permitted to charge additional fees or assess additional charges that were not either expressly provided for in the solicitation published by the State of West Virginia or included in the unit price or lump sum bid amount that Vendor is required by the solicitation to provide. Including such fees or charges as notes to the solicitation may result in rejection of vendor's bid. Requesting such fees or charges be paid after the contract has been awarded may result in cancellation of the contract.

18. FUNDING: This Contract shall continue for the term stated herein, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise made available, this Contract becomes void and of no effect beginning on July 1 of the fiscal year for which funding has not been appropriated or otherwise made available.

19. CANCELLATION: The Purchasing Division Director reserves the right to cancel this Contract immediately upon written notice to the vendor if the materials or workmanship supplied do not conform to the specifications contained in the Contract. The Purchasing Division Director may also cancel any purchase or Contract upon 30 days written notice to the Vendor in accordance with West Virginia Code of State Rules § 148-1-5.2.b.

20. TIME: Time is of the essence with regard to all matters of time and performance in this Contract.

21. APPLICABLE LAW: This Contract is governed by and interpreted under West Virginia law without giving effect to its choice of law principles. Any information provided in specification manuals, or any other source, verbal or written, which contradicts or violates the West Virginia Constitution, West Virginia Code or West Virginia Code of State Rules is void and of no effect.

22. COMPLIANCE WITH LAWS: Vendor shall comply with all applicable federal, state, and local laws, regulations and ordinances. By submitting a bid, Vendor acknowledges that it has reviewed, understands, and will comply with all applicable laws, regulations, and ordinances.

> **SUBCONTRACTOR COMPLIANCE:** Vendor shall notify all subcontractors providing commodities or services related to this Contract that as subcontractors, they too are required to comply with all applicable laws, regulations, and ordinances. Notification under this provision must occur prior to the performance of any work under the contract by the subcontractor.

23. ARBITRATION: Any references made to arbitration contained in this Contract, Vendor's bid, or in any American Institute of Architects documents pertaining to this Contract are hereby deleted, void, and of no effect.

24. MODIFICATIONS: This writing is the parties' final expression of intent. Notwithstanding anything contained in this Contract to the contrary no modification of this Contract shall be binding without mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). Any change to existing contracts that adds work or changes contract cost, and were not included in the original contract, must be approved by the Purchasing Division and the Attorney General's Office (as to form) prior to the implementation of the change or commencement of work affected by the change.

25. WAIVER: The failure of either party to insist upon a strict performance of any of the terms or provision of this Contract, or to exercise any option, right, or remedy herein contained, shall not be construed as a waiver or a relinquishment for the future of such term, provision, option, right, or remedy, but the same shall continue in full force and effect. Any waiver must be expressly stated in writing and signed by the waiving party.

26. SUBSEQUENT FORMS: The terms and conditions contained in this Contract shall supersede any and all subsequent terms and conditions which may appear on any form documents submitted by Vendor to the Agency or Purchasing Division such as price lists, order forms, invoices, sales agreements, or maintenance agreements, and includes internet websites or other electronic documents. Acceptance or use of Vendor's forms does not constitute acceptance of the terms and conditions contained thereon.

27. ASSIGNMENT: Neither this Contract nor any monies due, or to become due hereunder, may be assigned by the Vendor without the express written consent of the Agency, the Purchasing Division, the Attorney General's office (as to form only), and any other government agency or office that may be required to approve such assignments. Notwithstanding the foregoing, Purchasing Division approval may or may not be required on certain agency delegated or exempt purchases.

28. WARRANTY: The Vendor expressly warrants that the goods and/or services covered by this Contract will: (a) conform to the specifications, drawings, samples, or other description furnished or specified by the Agency; (b) be merchantable and fit for the purpose intended; and (c) be free from defect in material and workmanship.

29. STATE EMPLOYEES: State employees are not permitted to utilize this Contract for personal use and the Vendor is prohibited from permitting or facilitating the same.

30. BANKRUPTCY: In the event the Vendor files for bankruptcy protection, the State of West Virginia may deem this Contract null and void, and terminate this Contract without notice.

31. PRIVACY, SECURITY, AND CONFIDENTIALITY: The Vendor agrees that it will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the Agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the Agency's policies, procedures, and rules. Vendor further agrees to comply with the Confidentiality Policies and Information Security Accountability Requirements, set forth in http://www.state.wv.us/admin/purchase/privacy/default.html.

32. YOUR SUBMISSION IS A PUBLIC DOCUMENT: Vendor's entire response to the Solicitation and the resulting Contract are public documents. As public documents, they will be disclosed to the public following the bid/proposal opening or award of the contract, as required by the competitive bidding laws of West Virginia Code §§ 5A-3-1 et seq., 5-22-1 et seq., and 5G-1-1 et seq. and the Freedom of Information Act West Virginia Code §§ 29B-1-1 et seq.

DO NOT SUBMIT MATERIAL YOU CONSIDER TO BE CONFIDENTIAL, A TRADE SECRET, OR OTHERWISE NOT SUBJECT TO PUBLIC DISCLOSURE.

Submission of any bid, proposal, or other document to the Purchasing Division constitutes your explicit consent to the subsequent public disclosure of the bid, proposal, or document. The Purchasing Division will disclose any document labeled "confidential," "proprietary," "trade secret," "private," or labeled with any other claim against public disclosure of the documents, to include any "trade secrets" as defined by West Virginia Code § 47-22-1 et seq. All submissions are subject to public disclosure without notice.

33. LICENSING: In accordance with West Virginia Code of State Rules § 148-1-6.1.e, Vendor must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or any other state agency or political subdivision. Obligations related to political subdivisions may include, but are not limited to, business licensing, business and occupation taxes, inspection compliance, permitting, etc. Upon request, the Vendor must provide all necessary releases to obtain information to enable the Purchasing Division Director or the Agency to verify that the Vendor is licensed and in good standing with the above entities.

SUBCONTRACTOR COMPLIANCE: Vendor shall notify all subcontractors providing commodities or services related to this Contract that as subcontractors, they too are required to be licensed, in good standing, and up-to-date on all state and local obligations as described in this section. Obligations related to political subdivisions may include, but are not limited to, business licensing, business and occupation taxes, inspection compliance, permitting, etc. Notification under this provision must occur prior to the performance of any work under the contract by the subcontractor.

34. ANTITRUST: In submitting a bid to, signing a contract with, or accepting a Award Document from any agency of the State of West Virginia, the Vendor agrees to convey, sell, assign, or transfer to the State of West Virginia all rights, title, and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the State of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the State of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to Vendor.

35. VENDOR CERTIFICATIONS: By signing its bid or entering into this Contract, Vendor certifies (1) that its bid or offer was made without prior understanding, agreement, or connection with any corporation, firm, limited liability company, partnership, person or entity submitting a bid or offer for the same material, supplies, equipment or services; (2) that its bid or offer is in all respects fair and without collusion or fraud; (3) that this Contract is accepted or entered into without any prior understanding, agreement, or connection to any other entity that could be considered a violation of law; and (4) that it has reviewed this Solicitation in its entirety; understands the requirements, terms and conditions, and other information contained herein.

Vendor's signature on its bid or offer also affirms that neither it nor its representatives have any interest, nor shall acquire any interest, direct or indirect, which would compromise the performance of its services hereunder. Any such interests shall be promptly presented in detail to the Agency. The individual signing this bid or offer on behalf of Vendor certifies that he or she is authorized by the Vendor to execute this bid or offer or any documents related thereto on Vendor's behalf; that he or she is authorized to bind the Vendor in a contractual relationship; and that, to the best of his or her knowledge, the Vendor has properly registered with any State agency that may require registration.

36. VENDOR RELATIONSHIP: The relationship of the Vendor to the State shall be that of an independent contractor and no principal-agent relationship or employer-employee relationship is contemplated or created by this Contract. The Vendor as an independent contractor is solely liable for the acts and omissions of its employees and agents. Vendor shall be responsible for selecting, supervising, and compensating any and all individuals employed pursuant to the terms of this Solicitation and resulting contract. Neither the Vendor, nor any employees or subcontractors of the Vendor, shall be deemed to be employees of the State for any purpose whatsoever. Vendor shall be exclusively responsible for payment of employees and contractors for all wages and salaries, taxes, withholding payments, penalties, fees, fringe benefits, professional liability insurance premiums, contributions to insurance and pension, or other deferred compensation plans, including but not limited to, Workers' Compensation and Social Security obligations, licensing fees, etc. and the filing of all necessary documents, forms, and returns pertinent to all of the foregoing.

Vendor shall hold harmless the State, and shall provide the State and Agency with a defense against any and all claims including, but not limited to, the foregoing payments, withholdings, contributions, taxes, Social Security taxes, and employer income tax returns.

37. INDEMNIFICATION: The Vendor agrees to indemnify, defend, and hold harmless the State and the Agency, their officers, and employees from and against: (1) Any claims or losses for services rendered by any subcontractor, person, or firm performing or supplying services, materials, or supplies in connection with the performance of the Contract; (2) Any claims or losses resulting to any person or entity injured or damaged by the Vendor, its officers, employees, or subcontractors by the publication, translation, reproduction, delivery, performance, use, or disposition of any data used under the Contract in a manner not authorized by the Contract, or by Federal or State statutes or regulations; and (3) Any failure of the Vendor, its officers, employees, or subcontractors to observe State and Federal laws including, but not limited to, labor and wage and hour laws.

38. PURCHASING AFFIDAVIT: In accordance with West Virginia Code § 5-22-1(i), the contracting public entity shall not award a contract for a construction project to any bidder that is known to be in default on any monetary obligation owed to the state or a political subdivision of the state, including, but not limited to, obligations related to payroll taxes, property taxes, sales and use taxes, fire service fees, or other fines or fees. Accordingly, prior to contract award, Vendors are required to sign, notarize, and submit the Purchasing Affidavit to the Purchasing Division affirming under oath that it is not in default on any monetary obligation owed to the state or a political subdivision of the state.

39. ADDITIONAL AGENCY AND LOCAL GOVERNMENT USE: This Contract may be utilized by other agencies, spending units, and political subdivisions of the State of West Virginia; county, municipal, and other local government bodies; and school districts ("Other Government Entities"). Any extension of this Contract to the aforementioned Other Government Entities must be on the same prices, terms, and conditions as those offered and agreed to in this Contract, provided that such extension is in compliance with the applicable laws, rules, and ordinances of the Other Government Entity. If the Vendor does not wish to extend the prices, terms, and conditions of its bid and subsequent contract to the Other Government Entities, the Vendor must clearly indicate such refusal in its bid. A refusal to extend this Contract to the Other Government Entities shall not impact or influence the award of this Contract in any manner.

40. CONFLICT OF INTEREST: Vendor, its officers or members or employees, shall not presently have or acquire an interest, direct or indirect, which would conflict with or compromise the performance of its obligations hereunder. Vendor shall periodically inquire of its officers, members and employees to ensure that a conflict of interest does not arise. Any conflict of interest discovered shall be promptly presented in detail to the Agency.

41. REPORTS: Vendor shall provide the Agency and/or the Purchasing Division with the following reports identified by a checked box below:

☑ Such reports as the Agency and/or the Purchasing Division may request. Requested reports may include, but are not limited to, quantities purchased, agencies utilizing the contract, total contract expenditures by agency, etc.

☑ Quarterly reports detailing the total quantity of purchases in units and dollars, along with a listing of purchases by agency. Quarterly reports should be delivered to the Purchasing Division via email at purchasing.requisitions@wv.gov.

42. BACKGROUND CHECK: In accordance with W. Va. Code § 15-2D-3, the Director of the Division of Protective Services shall require any service provider whose employees are regularly employed on the grounds or in the buildings of the Capitol complex or who have access to sensitive or critical information to submit to a fingerprint-based state and federal background inquiry through the state repository. The service provider is responsible for any costs associated with the fingerprint-based state and federal background inquiry.

After the contract for such services has been approved, but before any such employees are permitted to be on the grounds or in the buildings of the Capitol complex or have access to sensitive or critical information, the service provider shall submit a list of all persons who will be physically present and working at the Capitol complex to the Director of the Division of

Protective Services for purposes of verifying compliance with this provision. The State reserves the right to prohibit a service provider's employees from accessing sensitive or critical information or to be present at the Capitol complex based upon results addressed from a criminal background check.

Service providers should contact the West Virginia Division of Protective Services by phone at (304) 558-9911 for more information.

43. PREFERENCE FOR USE OF DOMESTIC STEEL PRODUCTS: Except when authorized by the Director of the Purchasing Division pursuant to W. Va. Code § 5A-3-56, no contractor may use or supply steel products for a State Contract Project other than those steel products made in the United States. A contractor who uses steel products in violation of this section may be subject to civil penalties pursuant to W. Va. Code § 5A-3-56. As used in this section:

a. "State Contract Project" means any erection or construction of, or any addition to, alteration of or other improvement to any building or structure, including, but not limited to, roads or highways, or the installation of any heating or cooling or ventilating plants or other equipment, or the supply of and materials for such projects, pursuant to a contract with the State of West Virginia for which bids were solicited on or after June 6, 2001.

b. "Steel Products" means products rolled, formed, shaped, drawn, extruded, forged, cast, fabricated or otherwise similarly processed, or processed by a combination of two or more or such operations, from steel made by the open heath, basic oxygen, electric furnace, Bessemer or other steel making process. The Purchasing Division Director may, in writing, authorize the use of foreign steel products if:

c. The cost for each contract item used does not exceed one tenth of one percent (.1%) of the total contract cost or two thousand five hundred dollars ($2,500.00), whichever is greater. For the purposes of this section, the cost is the value of the steel product as delivered to the project; or

d. The Director of the Purchasing Division determines that specified steel materials are not produced in the United States in sufficient quantity or otherwise are not reasonably available to meet contract requirements.

44. PREFERENCE FOR USE OF DOMESTIC ALUMINUM, GLASS, AND STEEL: In Accordance with W. Va. Code § 5-19-1 et seq., and W. Va. CSR § 148-10-1 et seq., for every contract or subcontract, subject to the limitations contained herein, for the construction, reconstruction, alteration, repair, improvement or maintenance of public works or for the purchase of any item of machinery or equipment to be used at sites of public works, only domestic aluminum, glass or steel products shall be supplied unless the spending officer determines, in writing, after the receipt of offers or bids, (1) that the cost of domestic aluminum, glass or steel products is unreasonable or inconsistent with the public interest of the State of West Virginia, (2) that domestic aluminum, glass or steel products are not produced in sufficient quantities to meet the contract requirements, or (3) the available domestic aluminum, glass, or steel do not meet the contract specifications. This provision only applies to public works contracts awarded in an amount more than fifty thousand dollars ($50,000) or public works contracts that require more than ten thousand pounds of steel products.

The cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than twenty percent (20%) of the bid or offered price for foreign made aluminum, glass, or steel products. If the domestic aluminum, glass or steel products to be supplied or produced in a "substantial labor surplus area", as defined by the United States Department of Labor, the cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than thirty percent (30%) of the bid or offered price for foreign made aluminum, glass, or steel products. This preference shall be applied to an item of machinery or equipment, as indicated above, when the item is a single unit of equipment or machinery manufactured primarily of aluminum, glass or steel, is part of a public works contract and has the sole purpose or of being a permanent part of a single public works project. This provision does not apply to equipment or machinery purchased by a spending unit for use by that spending unit and not as part of a single public works project.

All bids and offers including domestic aluminum, glass or steel products that exceed bid or offer prices including foreign aluminum, glass or steel products after application of the preferences provided in this provision may be reduced to a price equal to or lower than the lowest bid or offer price for foreign aluminum, glass or steel products plus the applicable preference. If the reduced bid or offer prices are made in writing and supersede the prior bid or offer prices, all bids or offers, including the reduced bid or offer prices, will be reevaluated in accordance with this rule.

45. INTERESTED PARTY SUPPLEMENTAL DISCLOSURE: W. Va. Code § 6D-1-2 requires that for contracts with an actual or estimated value of at least $100,000, the vendor must submit to the Agency a supplemental disclosure of interested parties reflecting any new or differing interested parties to the contract, which were not included in the original pre-award interested party disclosure, within 30 days following the completion or termination of the contract. A copy of that form is included with this solicitation or can be obtained from the WV Ethics Commission. "Interested parties" means: (1) A business entity performing work or service pursuant to, or in furtherance of, the applicable contract, including specifically sub-contractors; (2) the person(s) who have an ownership interest equal to or greater than 25% in the business entity performing work or service pursuant to, or in furtherance of, the applicable contract; and (3) the person or business entity, if any, that served as a compensated broker or intermediary to actively facilitate the applicable contract or negotiated the terms of the applicable contract with the state agency: Provided, That subdivision (2) shall be inapplicable if a business entity is a publicly traded company: Provided, however, That subdivision (3) shall not include persons or business entities performing legal services related to the negotiation or drafting of the applicable contract. The Agency shall submit a copy of the disclosure to the Ethics Commission within 15 days after receiving the supplemental disclosure of interested parties.

DESIGNATED CONTACT: Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

Ryan Ramsby - Manager of Energy Solutions
(Name, Title)

(Printed Name and Title)
2010 2nd Avenue, Huntington, WV 25703
(Address)
304-528-0292
(Phone Number) / (Fax Number)
Ryan.Ramsby@stateelectric.com
(email address)

CERTIFICATION AND SIGNATURE: By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that I am authorized by the vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

State Electric Supply Co.
(Company)

(Authorized Signature) (Representative Name, Title)

Ryan Ramsby - Manager of Energy Solutions
(Printed Name and Title of Authorized Representative)

2/28/2018
(Date)

304-528-0292
(Phone Number) (Fax Number)

REQUEST FOR QUOTATION
Light18 - Bulbs, and Ballast

SPECIFICATIONS

1. **PURPOSE AND SCOPE:** The West Virginia Purchasing Division is soliciting bids on behalf of the State of West Virginia to establish an Open-End Contract for lights bulbs and ballast for all West Virginia Agencies and Political Subdivisions as well as county and city municipalities within the State of West Virginia's 55 counties.

   The West Virginia Purchasing Division, with this Solicitation and resulting Contract, seeks to encourage the sale and purchase of products that meet its customers' need for healthy, pleasant and ample lighting in the State's offices, worksites and public areas. These products should offer long life and low day-to-day energy-usage costs; guarantee safety to human life and health during operation; and have a minimal impact to the environment at the end of their useful lives.

   This Contract will define a supplier of: Compact Fluorescent Lights (CFL) Fluorescent Bulbs, Metal Halide Bulbs, Light-Emitting Diode (LED) Bulbs, Incandescent Bulbs, Halogen Bulbs, High Pressure Sodium Bulbs, and associated Ballast.

   This Solicitation does not include lighting fixtures. The Contract awarded from this CRFQ shall cover all awarded Product Categories from Vendor's Catalog as submitted with this solicitation.

2. **DEFINITIONS:** The terms listed below shall have the meanings assigned to them below. Additional definitions can be found in section 2 of the General Terms and Conditions.

   2.1 **"Catalog"** means the price list or sales catalog that includes all items that Vendor can and will sell under this Contract, per the Vendor's lowest published Pricelist.

   2.2 **"Catalog Price"** means the lowest price listed for an Eligible Item in Vendor's Catalog. (Ex. A box of 200 bulbs priced at $4.00 per box has a catalog price of $4.00. A crate of bulb boxes priced at $400.00 has a catalog price of $400.00).

   2.3 **"Contract Item or "Contract Items"** means the list of items identified in Section 3.1 below and on the Pricing Pages.

   2.4 **"ANSI"** means American National Standards Institute.

   2.5 **"Color Rendering Index"** means is a quantitative measure of the ability of a light source to reveal the colors of various objects faithfully in comparison with an ideal or

natural light source. https://www.lumens.com/light-bulb-facts/color-rendering-index.html

2.6 **"BALLAST"** means Electronic devices that fluorescent lights use to function. There are three types of lighting ballasts: (1) Magnetic – A device that uses a core and coil assembly transformer to perform the minimum functions required to start and operate the lamp; (2) Hybrid – A magnetic ballast with a few electric components that switch off voltage to the lamp coil once the lamp has started; (3) High frequency electronic – A ballast that operates lamps at frequencies above 20,000 Hz.

2.7 **"Compact Fluorescent Lamp (CFL)"** means A fluorescent lamp with a small diameter glass tube (T5 or less) that is folded, bent, or bridged to create a long discharge path in a small volume. The lamp design generally includes an amalgam and a cold chamber, or a cold spot to control the mercury vapor pressure and light output (ANSI/IES RP-16-10). For purposes of this specification, compact fluorescent lamps include integral electronic ballasts and are equipped with an ANSI standard base.
https://www.energystar.gov/sites/default/files/asset/document/ENERGY%20STAR%20Lamps%20V2%20Revised%20Spec.pdf

2.8 **"Lumen"** is a measure of the total visible light output of a light source.

2.9 **"Discount Percentage"** means the percentage discount that Vendor will apply to all Agency purchases of Eligible Items in a given product category

2.10 **"Discounted Price"** means the price that the Vendor will charge Agencies for the purchase of Eligible Items under this Contract. The Discounted Price is the Catalog Price reduced by the Discount Percentage.

2.11 **"Discounted Unit Price"** means the discounted price of one Unit of an Eligible Item purchased under this Contract. ***The Discounted Unit Price will only be used for evaluation purposes.***

2.12 **"Eligible Item"** means lights, lamps, bulbs, ballast and other related lighting items.

2.13 **"Energy Independence & Security Act of 2007 (EISA)"** means An Act to move the United States toward greater energy independence and security, to increase the production of clean renewable fuels, to protect consumers, to increase the efficiency of products, buildings, and vehicles, to promote research on and deploy greenhouse gas capture and storage options, and to improve the energy performance of the Federal Government, and for other purposes.

2.14 **"EPA"** means the U.S. Environmental Protection Agency

2.15 **"Fluorescent Lamp"** means a low-pressure mercury-vapor gas-discharge lamp that uses fluorescence to produce visible light. An electric current in the gas excites mercury vapor, which produces short-wave ultraviolet light that then causes a phosphor coating on the inside of the lamp to glow. https://en.wikipedia.org/wiki/Fluorescent_lamp

2.16 **"Light-Emitting Diode (LED)"** means an electric light or light bulb for use in lighting fixtures that produces light using light-emitting diodes (LEDs). LED lamps have a lifespan and electrical efficiency which are several times greater than incandescent lamps, and are significantly more efficient than most fluorescent lamps,

2.17 **"High-intensity Discharge Lamp (HID)"** means a type of electrical gas-discharge lamp which produces light by means of an electric arc between tungsten electrodes housed inside a translucent or transparent fused quartz or fused alumina arc tube. [https://en.wikipedia.org/wiki/High-intensity_discharge_lamp]

2.18 **"Metal Halide Lamp"** means A type of HID lamp that is filled with metal halides in addition to the argon and mercury used in mercury vapor lamps.

2.19 **"NEMA"** means the National Electrical Manufacturers Association

2.20 **"PCBs"** means is an organic chlorine compound with the formula $C_{12}H_{10-x}Cl_x$. Polychlorinated biphenyls were once widely deployed as dielectric and coolant fluids in electrical apparatus

2.21 **"Pricing Page"** or **"Pricing Pages"** means the schedule of prices, Discount Percentage, estimated usage, contained in wvOASIS or attached hereto as Exhibit A and used to evaluate the Solicitation responses.

2.22 **"Routine Items"** means Items that are delivered as a result of normal ordering procedures to replace expended supplies or to build up reserve stock.

2.23 **"Solicitation"** means the official notice of an opportunity to supply the State with goods or services that is published by the Purchasing Division.

2.24 **"Watt"** is a measure of the total power output of a light source.

2.25 **"Routine Items"** means items that are delivered as a result of normal ordering procedures to replace expended supplies or to build up reserve stock.

2.26 **"Total Bid Amount"** means the sum of the bid total column on the Pricing Pages shown below the bid total column and identified as the Total Bid Amount.

2.27 **"Unit"** means the smallest measurable amount of an Eligible Item and is identified on the Pricing Pages in the Unit column. The Unit will only be utilized for bid evaluation purposes.

2.28 **"Unit Price"** means the price of an individual unit of an Eligible Item as shown on the Pricing Pages.

2.29 **"Units Provided for Catalog Price"** means the total number of units of an Eligible Item contained in the package advertised for sale in Vendor's Catalog that corresponds with the Catalog Price. (Ex. A box of 200 nuts advertised in vendor's catalog for $4.00 has a Units Provided for Catalog Price of 200. A crate of nuts advertised in Vendor's catalog for $400.00, each containing 100 boxes with 200 nuts per box, yields Units Provided for Catalog Price of 20,000.)

3 GENERAL REQUIREMENTS:

3.1 **Mandatory Eligible Item Requirements:** Eligible Items must meet or exceed the mandatory requirements listed below.

3.1.1 Eligible Items must be OSRAM, Sylvania, General Electric, Philips, or Equal and comply with the following:

3.1.1.1 Eligible Items must be compatible with applicable ANSI product standards.

3.1.1.2 Eligible Items must meet the Energy Star Product Specifications and Requirements for Lamps Version 2.0 (February 2016 and later) **ATTACHMENT "B"**

3.1.1.3 All light bulbs and or ballast shall be certified for the specific type of application (wet, dry, damp, etc.).

3.1.1.4 All light bulbs and or ballast must be of current manufacture and must carry a safety certification by an approved testing laboratory (UL, CE, ETL, etc.)

3.1.1.5 All lamps, ballasts serving the same fixture must be fully compatible, providing full operability of all components without reduction in component performance or service life.

3.1.1.6 Eligible Items must meet the January 2017 NRDC Energy Efficiency Standards. **ATTACHMENT "C"**

3.1.2 COMPACT FLOURESCENT LAMPS (CFL)

3.1.2.1 Must meet Color Rendering Index of a minimum of 82

3.1.2.2 Bulb Primary Application should not be restricted to one function.

3.1.2.3 Should Contribute to Reducing Energy Consumption

3.1.2.4 Lighting Technology – (Fluorescent)

3.1.3 FLUORESCENT LAMPS

3.1.3.1 Must meet Color Rendering Index of a minimum of 60

3.1.3.2 Bulb Primary Application should not be restricted to one function

3.1.3.3 Lighting Technology – (Fluorescent)

3.1.3.4 Should contribute to Reducing Energy Consumption

3.1.4 METAL HALIDE LAMP

3.1.4.1 Must meet Color Rendering Index of a minimum of 65

3.1.4.2 Lighting Technology – (Metal Halide)

3.1.4.3 Bulb Finish Clear

3.1.4.4 Bulb Type - High Output

3.1.5 LED LAMPS

3.1.5.1 Must be a compatible drop in replacement for incandescent or fluorescent lamps with the same base.

3.1.5.2 Must meet Color Rendering Index minimum of 80

3.1.5.3 Should be Energy Star compliant where possible

3.1.5.5 Lighting Technology – (LED)

3.1.6 INCANDESCENT LAMPS

3.1.6.1 Lighting Technology Incandescent

3.1.7 HALOGEN LAMPS

3.1.7.1 Bulb Finish Clear

3.1.7.2 Lighting Technology – (Halogen)

3.1.7.3 Mercury lamps mounted in interior fixtures shall be self-extinguishing in the event of breakage of the outer glass.

3.1.8 HIGH PRESSURE SODIUM

3.1.8.1 Mercury lamps mounted in interior fixtures shall be self-extinguishing in the event of breakage of the outer glass.

3.1.8.2 Bulb Finish Clear

3.1.8.3 Color Rendering Index a minimum of 20

3.1.8.4 Green Environment Attribute Product Contributes to Reducing Energy Consumption.

3.1.9 FLUORESCENT LAMP BALLASTS and HID BALLAST

3.1.9.1 Ballast must be Underwriter Laboratories (UL) approved.

3.1.9.2 Ballast shall not contain PCBs.

3.1.9.3 All ballast shall be Class "A" sound rated.

3.1.9.4 Ballast shall be capable of starting the designated lamp at the minimum temperature established by the lamp manufacture.

3.1.9.5 HID ballast must have a wattage value of 100% of full light output.

4 CONTRACT AWARD, PERCENTAGE DISCOUNT, CATALOG:

4.1 Contract Award: The Contract is intended to provide the Agency with a discounted price on all Eligible Items. The Contract shall be awarded to the Vendor that meets the Solicitation specifications and provides the lowest Total Bid Amount for the Eligible Items listed on the Pricing Pages. Notwithstanding the foregoing, the Purchasing Division reserves the right to award this Contract to multiple Vendors if it deems such action necessary.

4.2 Discount Percentage: Vendor shall quote a single Discount Percentage *per each of the eight (8) Product Category's* that will reduce the lowest price shown in the Catalog for every Eligible Item. The resulting Discounted Price shall be the price Agencies pay for purchases of that Eligible Item under this Contract.

Vendor shall not incorporate Discount Percentages into its Catalog unless the Vendor clearly shows the Catalog Price and then separately lists the applicable Discount Percentage and the Discounted Price for each Eligible Item.

The Discount Percentage and subsequent Discounted Price derived from that discount must take into account any and all fees, charges, or other miscellaneous costs that Vendor may require, including delivery charges as indicated below, because those fees, charges, or other miscellaneous costs will not be paid separately. The Agency shall only pay the appropriate Discounted Unit Price for items purchased under this Contract.

4.3 Pricing Pages: Vendor should complete the Pricing Pages by filling in ***Catalogue Price and Units Provided for Catalogue Price.*** The information requested on the Pricing Pages for each frequently purchased Eligible Item includes the Vendor's Eligible Item manufacturer, the manufacturer's number for each Eligible Item, Catalog Prices, Units Provided for Catalog Price, Unit Prices, Discount Percentage, Discounted Unit Prices, and item total costs. The Vendor should also include the Total Bid Amount. Vendor should complete all columns as failure to complete the Pricing Pages in their entirety may result in Vendor's bid being disqualified.

The Pricing Pages contain a list of frequently purchased items and estimated unit quantity that will be purchased. The estimated unit quantity for each item represents the approximate volume of anticipated purchases only. No future use of the Contract or any individual item is guaranteed or implied.

Notwithstanding anything contained herein, the Purchasing Division may correct errors on the Pricing Pages. Vendors are **strongly encouraged** to complete the Pricing Pages electronically in Microsoft Excel. Doing so will reduce the number of, and the possibility for, calculation errors. The Pricing Pages were created as a Microsoft Excel document and Vendor can download from the wvOASIS Vendor Self-Serve (VSS) website.

The Purchasing Division reserves the right to take Vendor's Pricing Pages and insert the appropriate numbers into the Microsoft Excel spreadsheet if Vendor chooses to complete the Pricing Pages in any other way.

Vendor's who wish to respond to a Centralized Request for Quotation (CRFQ) online may submit information through the State's wvOASIS Vendor Self Service (VSS). Vendors should download the Exhibit "A": Pricing Page that is attached separately to the CRFQ and published to the VSS. Vendors must complete this form with their pricing information and include it as an attachment to their online response before bid opening date and time.

If unable to respond online Vendor must submit the Exhibit "A" Pricing Pages in their entirety with your bid prior to the scheduled bid opening date and time.

4.3.1 Pricing Page Calculations. The Pricing Pages require Vendor to insert its **Catalogue Price**, **Units Provided for Catalogue Price**, and **Single Whole Number Discount Percentage per each Category listed thereon**. ***When inserting Discount per Category at the bottom of the Pricing Page this information will auto populate within the Pricing Page*** That information, along with information that is already included on the Pricing Pages will be used to calculate the Unit Price, Discounted Unit Price, item total cost, and Total Bid Cost. If Vendor completes the Pricing Pages electronically using the Microsoft Excel version from the Purchasing Division, these calculations will be automatically completed.

4.3.1.1 Unit Price Calculation – The Unit Price is calculated by dividing the Catalogue Price by the Units Provided for Catalogue Price.

Example: $10 per box divided by 10 nuts per box equals a Unit Price of $1.

4.3.1.2 Discounted Unit Price – The Discounted Unit Price is calculated by applying the Discount Percentage to the Unit Price

Example: $1 Unit Price reduced by a 10% Discount Percentage equals a $0.90 Discounted Unit Price.

4.3.1.3 Item Total Cost – The item total cost is calculated by multiplying the estimated unit quantity by the Discounted Unit Price.

Example: An estimated unit quantity of 10,000 nuts multiplied by a Discounted Unit Price of $0.90 equals a $9,000 item total cost for that item.

4.3.1.4 **Total Bid Cost** – The Total Bid Cost is calculated by adding the item total cost for every item listed on the Pricing Pages.

Example: Item total costs of $9,000 and $1,000 would equal a Total Bid Cost of $10,000 (assuming that the Pricing Pages contained only two items).

5 Catalog:

5.1 Submission. Vendor must submit its Catalog prior to award of this Contract for evaluation purposes. Vendor shall also mail the Catalog free of charge to any Agency desiring to use this contract. Copies of the Catalog may be requested in an electronic format and should be provided in that format if possible. Vendor's Catalog will be used by Agencies to order Eligible Items under this Contract. Vendor may be required to input its Catalog data into wvOASIS utilizing the format required by wvOASIS. Copies of the Catalog may also be requested in an electronic format. Vendor's Catalog, or data from the Catalog entered into wvOASIS will be used by Agencies to order Eligible Items under this Contract.

Vendor should identify all items listed on the Pricing Pages by circling or highlighting those items in its Catalog and earmarking or tabbing the pages for those items, to assist in the evaluation and verification of the bids and pricing. If any discrepancies exist between the Pricing Pages and the actual price listed in the Catalog, the actual price shall prevail and the Pricing Pages may be corrected by the Purchasing Division buyer for evaluation purposes.

5.1 Catalog Modification. The Purchasing Division may permit Vendor to update its Catalog at each renewal date. Determination of whether or not to allow a Catalog update is at the sole discretion of the Purchasing Division. Any request by Vendor to update its Catalog must include a detailed listing of the following: (1) any Eligible Items being removed, Discounted Unit Prices for those items, Agencies quantity usage of those items, and total spent by Agencies on those items; (2) any Eligible Items being added to the Catalog and the Discounted Unit Price of those items; (3) all changes in the Discounted Unit Price to Eligible Items, estimated usage relating to items that have changed in price, and the total impact of the price change on the State; and (4) justification for updating its Catalog. The Purchasing Division may waive the detailed listing requirement if it finds that doing so is in the best interest of the State. Unless an updated catalog is approved, the Eligible Items available under

this Contract and prices for those items shall remain unchanged during the term of this Contract.

6 ORDERING AND PAYMENT:

6.1 Ordering: Vendor shall accept Agency Delivery Orders (ADO) by regular mail, facsimile, e-mail, or any other written forms of communication. Vendor may, but is not required to, accept on-line orders through a secure internet ordering portal/website. If Vendor has the ability to accept on-line orders, it should include in its response a brief description of how Agencies may utilize the on-line ordering system. Any on-line ordering system must have the capability to restrict prices and available items to conform to the Catalog originally submitted with this RFQ. Vendor shall ensure that its on-line ordering system is properly secured prior to processing Agency orders on-line.

Vendor shall provide the Purchasing Division with access to its internet ordering portal/website, if one will be used under this Contract, to allow the Purchasing Division to ensure that the requirements of this Contract are being met.

6.2 Invoicing and Payment: Vendor shall indicate the discount received on each invoice submitted for payment. Vendor shall accept payment in accordance with the payment procedures of the State of West Virginia. Methods of acceptable payment must include the West Virginia Purchasing Card. Payment in advance is not permitted under this Contract.

6.3 Ordering Procedures: Spending units shall issue a wvOASIS ADO to the vendor for commodities covered by this contract.

7 DELIVERY AND RETURN:

7.1 Delivery Time and Place: Vendor shall deliver standard orders within five (5) calendar days after orders are received. Vendor shall deliver emergency orders within two (2) calendar day after orders are received. Vendor shall ship all orders in accordance with the above schedule and shall not hold orders until a minimum delivery quantity is met. Eligible Items must be delivered to Agency at any West Virginia State agency located within the State.

7.2 Orders in Excess of $100.00 In-State Destination, shall be delivered FOB; Destination when shipped to a single facility location. Orders that total less than $100.00 may be shipped prepaid, with transportation charges added to the invoice as a separate item. *The original bill for transportation must be provided to the Agency at delivery.*

Minimum shipment shall be $100.00 per order.

Agencies may make purchases that fall under the $100.00 limit at a local source if pricing includes delivery and a savings results to avoid the delivery charges. No agency shall issue a series of requisitions to circumvent the $25,000 yearly threshold. Violation of the $25,000 threshold is commonly referred to as "stringing," and is prohibited by law.

All deliveries must be made during normal working hours for the delivery location.

7.3 **Late Delivery:** The Agency placing the order under this Contract must be notified in writing if orders will be delayed for any reason. Any delay in delivery that could cause harm to an Agency will be grounds for cancellation of the delayed order, and/or obtaining the items ordered from a third party. Any Agency seeking to obtain items from a third party under this provision must first obtain approval of the Purchasing Division.

7.4 **Delivery Payment/Risk of Loss:** Standard order delivery shall be F.O.B. destination to the Agency's location. Vendor shall include the cost of standard order delivery charges in its bid pricing/discount and is not permitted to charge the Agency separately for such delivery. The Agency will pay delivery charges on all emergency orders provided that Vendor invoices those delivery costs as a separate charge with the original freight bill attached to the invoice.

7.5 **Return of Unacceptable Items:** Items that Agency deems unacceptable shall be returned to Vendor at Vendor's expense and with no restocking charge. Vendor shall either make arrangements for the return within seven (7) days of being notified that items are unacceptable, or permit the Agency to arrange for the return and reimburse Agency for delivery expenses. If the original packaging cannot be utilized for the return, Vendor will supply the Agency with appropriate return packaging upon request. All returns of unacceptable items shall be F.O.B. the Agency's location. The returned product shall either be replaced, or the Agency shall receive a full credit or refund for the purchase price, at the Agency's discretion.

7.6 **Return Due to Agency Error**: Items ordered in error by the Agency will be returned for credit within 30 days of receipt, F.O.B. Vendor's location. Vendor shall not charge a restocking fee if returned products are in a resalable condition. Items shall be deemed to be in a resalable condition if they are unused and in the original packaging. Any restocking fee for items not in a resalable condition shall be the lower of the Vendor's customary restocking fee or 5% of the total invoiced value of the returned items.

8. VENDOR DEFAULT:

8.1 The following shall be considered a vendor default under this Contract.

8.1.1 Failure to provide Eligible Items in accordance with the requirements contained herein.

8.1.2 Failure to comply with other specifications and requirements contained herein.

8.1.3 Failure to comply with any laws, rules, and ordinances applicable to the Contract Services provided under this Contract.

8.1.4 Failure to remedy deficient performance upon request.

8.2 The following remedies shall be available to Agency upon default.

8.2.1 Immediate cancellation of the Contract.

8.2.2 Immediate cancellation of one or more release orders issued under this Contract.

8.2.3 Any other remedies available in law or equity.

9. MISCELLANEOUS:

9.1 **No Substitutions:** Vendor shall supply only Eligible Items contained in its Catalog submitted in response to the CRFQ or an updated Catalog approved by the Purchasing Division as described above. Vendor shall not supply substitute items.

9.2 **Vendor Supply:** Vendor must carry sufficient inventory of the Eligible Items being offered to fulfill its obligations under this Contract. By signing its bid, Vendor certifies that it can supply the Eligible Items contained in its bid response.

9.3 **Reports:** Vendor shall provide quarterly reports and annual summaries to the Agency showing the Agency's items purchased, quantities of items purchased, and total dollar value of the items purchased. Vendor shall also provide reports, upon request, showing the items purchased during the term of this Contract, the quantity purchased for each of those items, and the total value of purchases for each of those items. Failure to supply such reports may be grounds for cancellation of this Contract.

9.4 Contract Manager: During its performance of this Contract, Vendor must designate and maintain a primary contract manager responsible for overseeing Vendor's responsibilities under this Contract. The Contract manager must be available during normal business hours to address any customer service or other issues related to this Contract. Vendor should list its Contract manager and his or her contact information below.

Contract Manager: Ryan Ramsby

Telephone Number: 304-528-0292

Fax Number: 304-528-0362

Email Address: Ryan.Ramsby@stateelectric.com

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Revised 02/23/2018

VENDORS complete all GREEN shaded fields for Pricing

	Pricing Page Eligible Item Description					Discounted Unit Price Calculation					Bid Total Calculation			
	All references to brand names are for illustration purposes only and vendors may bid the brand listed or an equal product.													
Item #	Product Category	Description	Manufacturer	Item #	Mfr. Model	Catalogue Price	Units Provided for Catalogue Price	Unit Price	Discount Percentage	Discounted Unit Price	Unit (For Calculation Purposes)	Yearly Estimated Unit Qty	Discounted Unit Price	Item Total Cost
1	Compact Flourescent	23 watts Screw-In CFL T3, Medium Screw (E26), 1600 Lumens 4100k Bulb Color Temp.	Lumapro	12T274	12T274	$26.75	1	$26.75	92%	$2.14	each	4	$2.14	$8.56
Vendor submitted or Equal	Compact Flourescent	23 watts Screw-In CFL T3, Medium Screw (E26), 1600 Lumens 4100k Bulb Color Temp.	SYLVANIA	26358	CF23EL/SPIRAL/841									
2	Compact Flourescent	23 watts Screw-In CFL T3, Medium Screw (E26), 1600 Lumens 2700k Bulb Color Temp.	GE Lighting	19RT47	FLE23HT3/2/827	$26.75	1	$26.75	92%	$2.14	each	80	$2.14	$171.20
Vendor submitted or Equal	Compact Flourescent	23 watts Screw-In CFL T3, Medium Screw (E26), 1600 Lumens 2700k Bulb Color Temp.	SYLVANIA	29729	CF23EL/MICRO/827/RP2									
3	Compact Flourescent	32 watts Plug-In CFL, T4 PL, 4-Pin (GX24Q-3), 2400 Lumens 3500K Bulb Color Temp.	GE Lighting	1PHA4	F32TBX/835/A/ECO	$32.99	1	$32.99	92%	$2.64	each	110	$2.64	$290.31
Vendor submitted or Equal	Compact Flourescent	32 watts Plug-In CFL, T4 PL, 4-Pin (GX24Q-3), 2400 Lumens 3500K Bulb Color Temp.	SYLVANIA	20885	CF32DT/E/IN/835/ECO									
4	Compact Flourescent	13.0 watts Screw-In CFL, T2,Medium Screw (E26), 800 Lumen 4100K Bulb Color Temp.	Lumapro	2CUT5	2CUT5	$20.50	1	$20.50	92%	$1.64	each	320	$1.64	$524.80
Vendor submitted or Equal	Compact Flourescent	13.0 watts Screw-In CFL, T2,Medium Screw (E26), 800 Lumen 4100K Bulb Color Temp.	SYLVANIA	26375	CF13EL/SPIRAL/841									
5	Compact Flourescent	23 watts Screw-In CFL, T2, Medium Screw (E26), 1600 Lumen 4100K Bulb Color Temp	Lumapro	2CUU1	2CUU1	$26.75	1	$26.75	92%	$2.14	each	315	$2.14	$674.10
Vendor submitted or Equal	Compact Flourescent	23 watts Screw-In CFL, T2, Medium Screw (E26), 1600 Lumen 4100K Bulb Color Temp	SYLVANIA	29564	CFL23EL/MINITWIST/4100									
6	Compact Flourescent	40 watts Screw-In CFL, T4, Medium Screw (E26), 2400 Lumen 4100K Bulb Color Temp.	Lumapro	2CUU4	2CUU4	$78.00	1	$78.00	92%	$6.24	each	175	$6.24	$1,092.00
Vendor submitted or Equal	Compact Flourescent	40 watts Screw-In CFL, T4, Medium Screw (E26), 2400 Lumen 4100K Bulb Color Temp.	SATCO	S7335	40T4/41									
7	Compact Flourescent	26 wattsPlug-In CFL, T4PL, 2-Pin (G24D-3), 1500 Lume, 2700K Bulb Color Temp.	Lumapro	3EMW2	3EMW2	$24.85	1	$24.85	92%	$1.99	each	105	$1.99	$208.74
Vendor submitted or Equal	Compact Flourescent	26 wattsPlug-In CFL, T4PL, 2-Pin (G24D-3), 1500 Lume, 2700K Bulb Color Temp.	SYLVANIA	21115	CF26DD/841/ECO									
8	Compact Flourescent	13.0 watts Plug-In CFL, T4PL, 4-Pin (2GX7), 800 Lumen, 4100K Bulb Color Temp.	Lumapro	3EMX9	3EMX9	$25.82	1	$25.82	92%	$2.07	each	39	$2.07	$80.56

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VENDORS complete all GREEN shaded fields for Pricing

	Pricing Page Eligible Item Description					Discounted Unit Price Calculation					Bid Total Calculation			
	All references to brand names are for illustration purposes only and vendors may bid the brand listed or an equal product.													
Item #	Product Category	Description	Manufacturer	Item #	Mfr. Model	Catalogue Price	Units Provided for Catalogue Price	Unit Price	Discount Percentage	Discounted Unit Price	Unit (For Calculation Purposes)	Yearly Estimated Unit Qty	Discounted Unit Price	Item Total Cost
Vendor submitted or Equal	Compact Flourescent	13.0 watts Plug-In CFL, T4PL, 4-Pin (2GX7), 800 Lumen, 4100K Bulb Color Temp.	SYLVANIA	20894	CF13DT/E/841/ECO									
9	Compact Flourescent	13.0 watts Screw-In CFL, T2, Medium Screw (E26), 800 Lumen, 6500K Bulb Color Temp	Lumapro	3TFP5	3TFP5	$20.50	1	$20.50	92%	$1.64	each	26	$1.64	$42.64
Vendor submitted or Equal	Compact Flourescent	13.0 watts Screw-In CFL, T2, Medium Screw (E26), 800 Lumen, 6500K Bulb Color Temp	SYLVANIA	26377	CF13EL/SPIRAL/865									
16	Fluorescent Lamps	18 inch 15.0 watts Linear Fluorescent Lamp, T8, Medium Bi-Pin (G13), 825 Lumen, 4100K Bulb color Temp.	GE Lighting	1V173	F15T8/CW	$13.75	1	$13.75	87%	$1.79	each	30	$1.79	$53.63
Vendor submitted or Equal	Fluorescent Lamps	18 inch 15.0 watts Linear Fluorescent Lamp, T8, Medium Bi-Pin (G13), 825 Lumen, 4100K Bulb color Temp.	SYLVANIA	21616	F15T8/CW									
17	Fluorescent Lamps	48 inch 32 watts Linear Fluorescent Lamp, T8, Bi-Pin (G13), 2900 Lumen, 4100K Bulb Color Temp.	GE Lighting	4PL16	F32T8/SPP41/ECO	$10.50	1	$10.50	87%	$1.37	each	5760	$1.37	$7,862.40
Vendor submitted or Equal	Fluorescent Lamps	48 inch 32 watts Linear Fluorescent Lamp, T8, Bi-Pin (G13), 2900 Lumen, 4100K Bulb Color Temp.	SYLVANIA	21781	FO32/841/ECO									
18	Fluorescent Lamps	21-19/32 inch 14.0 waatts Linear Fluorescent Lamp, T5, Miniture Bi-Pin (G5), 1350 Lumen	GE Lighting	5AE13	F14WT5/835/ECO	$13.75	1	$13.75	87%	$1.79	each	80	$1.79	$143.00
Vendor submitted or Equal	Fluorescent Lamps	21-19/32 inch 14.0 waatts Linear Fluorescent Lamp, T5, Miniture Bi-Pin (G5), 1350 Lumen	SYLVANIA	20914	FP14/841/ECO									
19	Fluorescent Lamps	32 watts U-Shapped Fluorescent Llamp, T8, Medium Bi-Pin (G13), 2800 Lumen, 3500K Bulb Color Temp.	Lumapro	5NPL5	5NPL5	$42.03	1	$42.03	87%	$5.46	each	72	$5.46	$393.40
Vendor submitted or Equal	Fluorescent Lamps	32 watts U-Shapped Fluorescent Llamp, T8, Medium Bi-Pin (G13), 2800 Lumen, 3500K Bulb Color Temp.	SYLVANIA	21670	FBO32/835/6/ECO									

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VENDORS complete all GREEN shaded fields for Pricing

	Pricing Page Eligible Item Description					Discounted Unit Price Calculation					Bid Total Calculation			
	All references to brand names are for illustration purposes only and vendors may bid the brand listed or an equal product.													
Item #	Product Category	Description	Manufacturer	Item #	Mfr. Model	Catalogue Price	Units Provided for Catalogue Price	Unit Price	Discount Percentage	Discounted Unit Price	Unit (For Calculation Purposes)	Yearly Estimated Unit Qty	Discounted Unit Price	Item Total Cost
20	Fluorescent Lamps	24 inch, 17.0 watts Linar Fluorescent Lamp, T8, Medium Bi-Pin (G13), 1325 Lumen, 4100K Bulb Color Temp.	GE Lighting	6XT99	F17T8/SP41/ECO	$12.87	1	$12.87	87%	$1.67	each	145	$1.67	$242.60
Vendor submitted or Equal	Fluorescent Lamps	24 inch, 17.0 watts Linar Fluorescent Lamp, T8, Medium Bi-Pin (G13), 1325 Lumen, 4100K Bulb Color Temp.	SYLVANIA	21770	FO17/741/ECO									
21	Fluorescent Lamps	36 inch 25 watts Linear Fluorescent Lamp, T8, Medium Bi-Pin (G13), 2080 Lumen, 4100K Bulb Color Temp.	GE Lighting	6XV06	F25T8/SP41/ECO	$14.75	1	$14.75	87%	$1.92	each	98	$1.92	$187.92
Vendor submitted or Equal	Fluorescent Lamps	36 inch 25 watts Linear Fluorescent Lamp, T8, Medium Bi-Pin (G13), 2080 Lumen, 4100K Bulb Color Temp.	SYLVANIA	21942	FO25/741/ECO									
22	Fluorescent Lamps	36 inch 30 watts Linear Fluorescent Lamp, T8, Medium Bi-Pin (G13), 2150 Lumen, 4100K Bulb Color Temp.	GE Lighting	4V439	F30T8/CW	$17.06	1	$17.06	87%	$2.22	each	19	$2.22	$42.14
Vendor submitted or Equal	Fluorescent Lamps	36 inch 30 watts Linear Fluorescent Lamp, T8, Medium Bi-Pin (G13), 2150 Lumen, 4100K Bulb Color Temp.	SYLVANIA	23116	F30T8/CW									
23	Metal Halide	250 watts Metal Halide HID, BT28, Mogul Screw (EX39), 21,300 Lumen, 4000K Bulb Color Temp.	GE Lighting	2PB28	MPR250/VBU/O	$92.45	1	$92.45	89%	$10.17	each	55	$10.17	$559.32
Vendor submitted or Equal	Metal Halide	250 watts Metal Halide HID, BT28, Mogul Screw (EX39), 21,300 Lumen, 4000K Bulb Color Temp.	SYLVANIA	64032	M250/U/ED28									
24	Metal Halide	1000 watts Metal Halide HID, BT56, Mogul Screw (E39), 4000K Bulb Color Temp.	GE Lighting	2V659	MVR1000/U	$128.72	1	$128.72	89%	$14.16	each	45	$14.16	$637.16
Vendor submitted or Equal	Metal Halide	1000 watts Metal Halide HID, BT56, Mogul Screw (E39), 4000K Bulb Color Temp.	SYLVANIA	64468	M1000/U									
25	Metal Halide	70 watts Metal Halide HID, ED17, Medium Screw (E26), 5600 Lumen, 4200K Bulb Color Temp.	Lumapro	2YGD5	2YGD5	$125.65	1	$125.65	89%	$13.82	each	30	$13.82	$414.65
Vendor submitted or Equal	Metal Halide	70 watts Metal Halide HID, ED17, Medium Screw (E26), 5600 Lumen, 4200K Bulb Color Temp.	SYLVANIA	64547	MP70/U/MED									
26	Metal Halide	1000 watts Metal Halide HID, BT37, Mogul Screw (E39), 110,000 Lumen, 4200K Bulb Color Temp.	Lumapro	2YGE1	2YGE1	$130.55	1	$130.55	89%	$14.36	each	40	$14.36	$574.42
Vendor submitted or Equal	Metal Halide	1000 watts Metal Halide HID, BT37, Mogul Screw (E39), 110,000 Lumen, 4200K Bulb Color Temp.	SYLVANIA	64469	M1000/U/BT37									
27	Metal Halide	174 watts Metal Halide HID, ED28, Mogul Screw (E39), 13,600 Lumen, 4000K Bulb Color Temp.	GE Lighting	4V550	MVR175/U	$95.75	1	$95.75	89%	$10.53	each	120	$10.53	$1,263.90

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Vendor submitted or Equal	Metal Halide	174 watts Metal Halide HID, ED28, Mogul Screw (E39), 13,500 Lumen, 4000K Bulb Color Temp.	SYLVANIA	64030	M175/U/ED28									
28	Metal Halide	400 watts Metal Halide HID, ED37, Mogul Screw (E39), 44,000 Lumen, 4000K Bulb Color Temp	GE Lighting	3JJ96	MVR400/VBU/XHO/PA	$117.65	1	$117.65	89%	$12.94	each	27	$12.94	$349.42
Vendor submitted or Equal	Metal Halide	400 watts Metal Halide HID, ED37, Mogul Screw (E39), 44,000 Lumen, 4000K Bulb Color Temp	SYLVANIA	64036	M400/U/ED37									
29	Metal Halide	175 watts Metaal Halide HID, ED17, Medium Scre (E26), 14400 Lume, 4200K Bulb Color Temp.	Lumapro	2YGE9	2YGE9	$85.75	1	$85.75	89%	$9.43	each	65	$9.43	$613.11
Vendor submitted or Equal	Metal Halide	175 watts Metaal Halide HID, ED17, Medium Scre (E26), 14400 Lume, 4200K Bulb Color Temp.	SYLVANIA	64479	M175/U/MED									
IV														
30	LED	26 watts LED Lamp, PAR38, Medium Screw (E26) 1650 Lumen, 4000K Bulb Color Temp.	GE Lighting	46F247	LED26DP38S840/10	$85.00	1	$85.00	86%	$11.90	each	10	$11.90	$119.00
Vendor submitted or Equal	LED	26 watts LED Lamp, PAR38, Medium Screw (E26) 1650 Lumen, 4000K Bulb Color Temp.	SYLVANIA	79749	025T5HO/L48/FG/850/SUB/GS									
31	LED	6.0 watts LED Lamp, MR16, 2-Pin (GU5.3), 400 Lumen, 2700K Bulb Color Temp.	GE Lighting	45AU71	LED5.5DMR1682735	$25.65	1	$25.65	86%	$3.59	each	14	$3.59	$50.27
Vendor submitted or Equal	LED	6.0 watts LED Lamp, MR16, 2-Pin (GU5.3), 400 Lumen, 2700K Bulb Color Temp.	SYLVANIA	78232	5MR16/DIM/827/NFL25/GU/RP									
32	LED	6.0 watts LED Lamp, MR16, 2-Pin (GU5.3), 400 Lumen, 2700K Bulb Color Temp.	GE Lighting	45AU72	LED5.5DMR1682736	$25.65	1	$25.65	86%	$3.59	each	15	$3.59	$53.87
Vendor submitted or Equal	LED	6.0 watts LED Lamp, MR16, 2-Pin (GU5.3), 400 Lumen, 2700K Bulb Color Temp.	SYLVANIA	78231	5MR16/DIM/827/FL35/GU/RP									
33	LED	17.5 watts LED Lamp, A21, Medium Screw (E26), 1600 Lumen, 2700K Bulb Color Temp.	Lumapro	44ZX56	44ZX56	$40.65	1	$40.65	86%	$5.69	each	14	$5.69	$79.67
Vendor submitted or Equal	LED	17.5 watts LED Lamp, A21, Medium Screw (E26), 1600 Lumen, 2700K Bulb Color Temp.	SYLVANIA	74689	LED16A21DIMO827U									
34	LED	14.0 watts LED Lamp, A21, Medium Screw (E26), 1100 Lumen, 2700K Bulb Color Temp	GE Lighting	32WX12	LED14DA21/827W	$20.56	1	$20.56	86%	$2.88	each	92	$2.88	$264.81
Vendor submitted or Equal	LED	14.0 watts LED Lamp, A21, Medium Screw (E26), 1100 Lumen, 2700K Bulb Color Temp	SYLVANIA	74685	LED12A19DIMO827UB									
35	LED	11.0 watts LED Lamp, A19, Medium Screw (E26), 800 Lumen, 2700K Bulb Color Temp.	GE Lighting	32WX16	LED11DA19/827	$19.65	1	$19.65	86%	$2.75	each	110	$2.75	$302.61

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Vendor submitted or Equal	LED	11.0 watts LED Lamp, A19, Medium Screw (E26), 800 Lumen, 2700K Bulb Color Temp.	SYLVANIA	74436	LED9A19DIMO827U									
V.														
36	Incandescent	40 watts Incandescent Lamp, B10, Candelabra Screw (E12), 370 Lumes, 2500K Bulb Color Temp	GE Lighting	1E337	40BC	$2.50	1	$2.50	80%	$0.50	each	220	$0.50	$110.00
Vendor submitted or Equal	Incandescent	40 watts Incandescent Lamp, B10, Candelabra Screw (E12), 370 Lumes, 2500K Bulb Color Temp	SYLVANIA	13456	40B10C/BL/2PK 120V									
37	Incandescent	25 watts Incandescent Lamp, CA10, Candelabra Screw (E12), 235 Lumens, 2500K Bulb Color Temp	GE Lighting	1E343	25CAC	$2.50	1	$2.50	80%	$0.50	each	75	$0.50	$37.50
Vendor submitted or Equal	Incandescent	25 watts Incandescent Lamp, CA10, Candelabra Screw (E12), 235 Lumens, 2500K Bulb Color Temp	SYLVANIA	13452	25B10C/BL/2PK 120V									
38	Incandescent	40 watts Incandescent Lamp, A15, Medium Screw (E26), 415 Lumen, 2600K Bulb Color Temp.	GE Lighting	5V755	40A15CD	$2.75	1	$2.75	80%	$0.55	each	24	$0.55	$13.20
Vendor submitted or Equal	Incandescent	40 watts Incandescent Lamp, A15, Medium Screw (E26), 415 Lumen, 2600K Bulb Color Temp.	SYLVANIA	10141	40A15/2PK/RP 120V									
39	Incandescent	6.0 watts Incandescent Lamp, S6, Candelabra Screw (E12), 50 Lumen, 2700K Bulb Color Temp.	GE Lighting	4V751	6S6-145V	$1.75	1	$1.75	80%	$0.35	each	24	$0.35	$8.40
Vendor submitted or Equal	Incandescent	6.0 watts Incandescent Lamp, S6, Candelabra Screw (E12), 50 Lumen, 2700K Bulb Color Temp.	SYLVANIA	16938	6S6/CL 130V									
40	Incandescent	40 watts Incadescent Lamp, B13, Medium Screw (E26), 485 Lumen, 2800K Bulb Color Temp.	GE Lighting	3VA55	40BFM/CD2	$2.80	1	$2.80	80%	$0.56	each	250	$0.56	$140.00
Vendor submitted or Equal	Incandescent	40 watts Incadescent Lamp, B13, Medium Screw (E26), 485 Lumen, 2800K Bulb Color Temp.	SYLVANIA	13367	40B13/FAN/BL/2PK 120V									
VI.														
41	Halogen	250 watts Halogen Lamp, T4, Double Contact Bayonet (BA15d), 5000 Lumen, 2950K Bulb Color Temp.	GE Lighting	2V703	Q250CL/DC(ESS)-120V	$26.50	1	$26.50	73%	$7.16	each	25	$7.16	$178.88
Vendor submitted or Equal	Halogen	250 watts Halogen Lamp, T4, Double Contact Bayonet (BA15d), 5000 Lumen, 2950K Bulb Color Temp.	SYLVANIA	58720	250Q/CL/DC(ESS) 120V									
42	Halogen	250 watts Halogen Lamp, T4, Double Contact Bayonet (BA15d), 5000 Lumen, 3000K Bulb Color Temp.	GE Lighting	5V053	Q250CL/DC-130V	$26.50	1	$26.50	73%	$7.16	each	20	$7.16	$143.10

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Vendor submitted or Equal	Halogen	250 watts Halogen Lamp, T4, Double Contact Bayonet (BA15d), 5000 Lumen, 3000K Bulb Color Temp.	SYLVANIA	58720	250Q/CL/DC(ESS) 120V									
VII														
46	High Pressure Sodium	70 watts High Pressure Sodium HID, ED23-1/2, Mogul Screw (E39), 6400 Lumen, 1900K Bulb Color Temp.	GE Lighting	2VAD4	LU70/H/ECO	$61.00	1	$61.00	86%	$8.54	each	40	$8.54	$341.60
Vendor submitted or Equal	High Pressure Sodium	70 watts High Pressure Sodium HID, ED23-1/2, Mogul Screw (E39), 6400 Lumen, 1900K Bulb Color Temp.	SYLVANIA	67512	LU70/ECO									
47	High Pressure Sodium	1000 watts High Pressure Sodium HID, E25, Mogul Screw (E39), 130,000 Lumen, 2100K Bulb Color Temp.	GE Lighting	2V754	LU1000/ECO	$72.35	1	$72.35	86%	$10.13	each	10	$10.13	$101.29
Vendor submitted or Equal	High Pressure Sodium	1000 watts High Pressure Sodium HID, E25, Mogul Screw (E39), 130,000 Lumen, 2100K Bulb Color Temp.	SYLVANIA	67533	LU400/ECO									
48	High Pressure Sodium	150 watts High Pressure Sodium HID, ED17, Medium Screw (E26), 14,500 Lume, 2000K Bulb Color Temp.	Lumapro	2YGF8	2YGF8	$49.65	1	$49.65	86%	$6.95	each	10	$6.95	$69.51
Vendor submitted or Equal	High Pressure Sodium	150 watts High Pressure Sodium HID, ED17, Medium Screw (E26), 14,500 Lume, 2000K Bulb Color Temp.	SYLVANIA	67508	LU150/55/MED									
49	High Pressure Sodium	400 watts High Pressure Sodium HID, ED18, Mogul Screw (E39), 51,000 Lumen, 2100K Bulb Color Temp.	GE Lighting	3APT6	LU400/H/ECO	$70.50	1	$70.50	86%	$9.87	each	28	$9.87	$276.36
Vendor submitted or Equal	High Pressure Sodium	400 watts High Pressure Sodium HID, ED18, Mogul Screw (E39), 51,000 Lumen, 2100K Bulb Color Temp.	SYLVANIA	67533	LU400/ECO									
VII														
51	Ballast	Electronic Ballast, 32 Max. Lamp Watts, 120/277V, Instant Statart, No Dimming	Philips Advance	5KB46	ICN-2M32-MC	$79.75	1	$79.75	89%	$8.77	each	160	$8.77	$1,403.60
Vendor submitted or Equal	Ballast	Electronic Ballast, 32 Max. Lamp Watts, 120/277V, Instant Statart, No Dimming	SYLVANIA	49941	QTP 1x32T8/UNV ISN-SC									
52	Ballast	Electronic Ballast, 32 Max. Lamp Watts, 120/277V, Instant Start, No Dimming	Philips Advance	3HHH4	ICN-1P32-N	$105.46	1	$105.46	89%	$11.60	each	170	$11.60	$1,972.10
Vendor submitted or Equal	Ballast	Electronic Ballast, 32 Max. Lamp Watts, 120/277V, Instant Start, No Dimming	SYLVANIA	49947	QTP 4x32T8/UNV ISN-SC									
53	Ballast	Electronic Ballast, 32 Max. Lamp Watts, 120/277 V, Instant Start, No Dimming	Philips Advance	1VN22	ICN-4P32-N	$101.75	1	$101.75	89%	$11.19	each	100	$11.19	$1,119.25

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Item #	Product Category	Description	Manufacturer	Item #	Mfr. Model	Catalogue Price	Units Provided for Catalogue Price	Unit Price	Discount Percentage	Discounted Unit Price	Unit (For Calculation Purposes)	Yearly Estimated Unit Qty	Discounted Unit Price	Item Total Cost
Vendor submitted or Equal	Ballast	Electronic Ballast, 32 Max. Lamp Watts, 120/277 V, Instant Start, No Dimming	SYLVANIA	49945	QTP 3X32T8/UNV ISN-SC									
54	Ballast	Electronic Ballast, 32 Max. Lamp Watts, 120/277V, Instant Start, No Dimming	Philips Advance	1VN21	ICN-3P32-N	$85.00	1	$85.00	89%	$9.35	each	90	$9.35	$841.50
Vendor submitted or Equal	Ballast	Electronic Ballast, 32 Max. Lamp Watts, 120/277V, Instant Start, No Dimming	Philips Advance		ICN3P32N35I									
55	Ballast	Electronic Ballast, 54 Max. Lamp Watts, 347/480V, Programmed	GE Lighting	26XO12	GE454PS347/480-E	$380.75	1	$380.75	89%	$41.88	each	30	$41.88	$1,256.48
Vendor submitted or Equal	Ballast	Electronic Ballast, 54 Max. Lamp Watts, 347/480V, Programmed	SYLVANIA	51481	X54T5HO/347-480 PSN HT SCL									
56	Ballast	CFL Ballast, 42V, Programmed/Rapid Ballast Start Type	GE Lighting	36J667	GEC242-MVPS-SE	$190.75	1	$190.75	89%	$20.98	each	30	$20.98	$629.48
Vendor submitted or Equal	Ballast	CFL Ballast, 42V, Programmed/Rapid Ballast Start Type	SYLVANIA	51843	QTP2X26/32/42CF/UNV DM									
57	Ballast	High Pressure Sodium HID Ballast Kit, 250 Max. Lamp Watts, 120/208/240/277/480 V, Pulse Ballast Start	Lumapro	1XUF6	1XUF6	$675.65	1	$675.65	89%	$74.32	each	26	$74.32	$1,932.36
Vendor submitted or Equal	Ballast	High Pressure Sodium HID Ballast Kit, 250 Max. Lamp Watts, 120/208/240/277/480 V, Pulse Ballast Start	SYLVANIA	47634	LU250/SUPER5-KIT									
58	Ballast	High Pressure Sodium HID Ballast Kit, 1000 Max. Lamp Watts 120/208/240/277/480V, Pulse Start	Philips Advance	1FYE2	71A8753-001	$1,100.65	1	$1,100.65	89%	$121.07	each	30	$121.07	$3,632.15
Vendor submitted or Equal	Ballast	High Pressure Sodium HID Ballast Kit, 1000 Max. Lamp Watts 120/208/240/277/480V, Pulse Start	SYLVANIA	47659	LU1000/SUPER5-KIT									
												Total Bid Cost		$31,506.95

List of Discount Percentages:
(Use additional sheets if needed for number of discount percentages being offered.)

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	Category	DISCOUNT PERCENTAGE
I	Compact Flourescent Lamps (CFL)	92%
II	Fluorescent Lamps	87%
III	Metal Halide Lamps	89%
IV	LED Lamps	86%
V	Incandescent	80%
VI	Halogen	73%
VII	High Pressure Sodium	86%
VIII	Ballast	89%

VENDOR NAME: STATE ELECTRIC SUPPLY CO. PHONE: 304-528-0292

CONTRACT MANAGER: RYAN RAMSBY (Please print) FAX: 304-528-0362

EMAIL: RYAN.RAMSBY@STATEELECTRIC.COM

AUTHORIZED REPRESENTATIVE: _____ (Signature) 2/28/2018 (Date)

AUTHORIZED REPRESENTATIVE: RYAN RAMSBY

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ENERGY STAR® Program Requirements Product Specification for Lamps (Light Bulbs)

Eligibility Criteria Version 2.0

Following is the Version 2.0 product specification for ENERGY STAR certified Lamps. A product shall meet all of the identified criteria if it is to earn the ENERGY STAR.

To certify a lamp for ENERGY STAR, first determine which requirements in this document are applicable to the specific lamp. ENERGY STAR requirements are specific to lamps classified by the program as omnidirectional, directional, or decorative. This specification is generally organized by the requirements, not by lamp type or by light source technology. Partners are advised to review each section, and take note of exceptions where specific performance criteria need not be evaluated.

1. SPECIFICATION SCOPE & LAMP CLASSIFICATION

1.1. Included Products

The ENERGY STAR Lamps specification ("this specification") scope includes the lamp types intended to replace incandescent lamps as outlined in Table 1. The scope of this specification is limited to lamps with:

- Integrated ballasts and drivers intended to be connected to the electric power grid with the following ANSI standard base types: E26, E26d, E17, E11, E12, G4, G9, GU10, GU24, GU5.3, and GX5.3; and
- Rated nominal operating voltages of 120, 240 or 277 VAC, or 12 or 24 VAC or VDC.

Table 1: Specification Scope and Classification

Lamp Purpose and Performance Description	ANSI Standard Lamp Shape[1]	Non-Standard Lamp Form Factor
Omnidirectional – Lamps intended for general purpose that meet applicable omnidirectional performance requirements in this specification.	A, BT, P, PS, S and T	Self-ballasted compact fluorescent lamps (CFLs) intended to replace ANSI standard incandescent lamps that do not meet Lamp Shape Dimension requirements. The following self-ballasted compact fluorescent lamps are included: • Bare spiral • Bare mini-spiral • Bare twin tube • Bare triple tube • Bare quadruple tube • Covered CFLs • Covered CFLs with reflectors • Induction-driven electrodeless fluorescent lamp
Decorative – Lamps of common decorative shapes meeting applicable decorative performance requirements in this specification.	B, BA, C, CA, DC, F, G, and ST	
Directional – Lamps meeting applicable directional performance requirements in this specification.	R, BR, ER, MR, MRX and PAR	

1.2. Excluded Products:

- Lamps, other than MR and halogen capsule replacements, that operate only on an external (i.e., not integral to the lamp) ballast, driver or transformer, e.g., pin-based fluorescent lamps (linear and compact) or their solid-state replacements.
- LED lamps intended to replace linear fluorescent lamps.
- LED lamps intended to replace pin-based compact fluorescent lamps.
- LED lamps intended to replace high-intensity discharge lamps.
- Lamps powered by an internal power source (e.g., solar-powered cell).

[1] Standard form factor lamps must meet the ANSI standard lamp type dimensional requirements in the specification and may claim wattage and ANSI lamp type equivalency. All solid-state lamps must meet standard lamp dimensional requirements.

- Lamps incorporating power-consuming features in the on or off state which are not related to control of illumination (e.g., audio functions, air fresheners, or cameras).
- Lamp technologies lacking applicable industry standardized methods of measurement.
- Lamps with bases not covered in ANSI standards.
- Zhaga compliant LED light engines.
- LED lamps that could be mistaken for general purpose A-lamp replacements (e.g., a G18.5 or G19 lamp), that do not meet the omnidirectional luminous intensity distribution requirements. This would include decorative lamps that fall within the minimum and maximum diameter of common A-shape lamps (between 41mm and 78mm) with the exception of G16.5 and G25 lamps.

2. EFFECTIVE DATE

The ENERGY STAR Lamps Version 2.0 specification shall take effect January 2, 2017. To qualify for ENERGY STAR, a product model shall meet the ENERGY STAR specification in effect on its date of manufacture. The date of manufacture is specific to each unit and is the exact date on which a unit is considered to be completely assembled.

3. FUTURE SPECIFICATION REVISIONS

EPA reserves the right to change this specification should technological and/or market changes affect its usefulness to consumers, industry, or the environment. In keeping with current policy, revisions to the specification are arrived at through stakeholder discussions. In the event of a specification revision, please note that ENERGY STAR certification is not automatically granted for the life of a product model.

While this document currently refers to industry standards and test procedures for fluorescent and solid-state lighting sources, as new technologies emerge that have equal or better performance to the levels proposed here, consistent with a technology neutral approach, EPA may amend the program requirements by adding additional requirements, methods of measurement and reference documents.

3.1. Considerations for Future Revisions

EPA is committed to continuing to develop performance levels for lamps that account for special features and functionality that benefit consumers. EPA and the U. S. Department of Energy (DOE) actively monitor the activities of lighting standards working groups and regulatory activities that may impact ENERGY STAR specifications. EPA will continue to monitor the market and work with stakeholders to explore and refine methods for evaluating the below features, test methods, and performance criteria.

3.1.1. Luminous intensity distribution requirements for all lamp types

3.1.2. Enhanced requirements for dimmable lamps

3.1.3. Zhaga compliant LED light engines

3.1.4. Industry and DOE test methods in development

3.1.5. Transient Protection

3.1.6. CRI as an allowable product variation

3.1.7. Standby power reduction

3.1.8. Additional lamp shapes and base types.

3.1.9. Product variations.

TABLE OF CONTENTS

4. DEFINITIONS

Active Mode: The state where the energy using product is connected to a mains power source and the primary light-producing function is activated. (Adapted from IEC 62301 Edition 2.0 2011-01)
ANSI: American National Standards Institute.
ASTM: American Society for Testing of Materials.
Beam Angle: The angle, in degrees, between the two opposite directions in which the average intensity is 50% of the center beam intensity as measured in at least two rotational planes, 90° from each other, around and through the beam axis. (ANSI C78.379-2006)
CFL: See Compact Fluorescent Lamp.
CIE: Commission Internationale de l'Eclairage. (International Commission on Illumination)
Color Rendering: Effect of an illuminant on the color appearance of objects by conscious or subconscious comparison with their color appearance under a reference illuminant. (CIE 17.4, ANSI/IES RP-16-10)
Color Rendering Index (CRI): The measured degree of color shift objects undergo when illuminated by a light source as compared with the color of those same objects when illuminated by a reference source of comparable color temperature. (10CFR430.2)
Color Tunable Lamp: For the purpose of this specification, these products allow the end user to alter the color appearance of the light generated by the lamp, including any of the following features:
- **Color Shifting Dimmable (aka Dim-to-Warm)**: A feature where CCT is automatically reduced as the product is dimmed, to simulate the behavior of incandescent lamps.
- **Full-Color-Tunable**: A feature allowing the end user to adjust the light output to create white or colored light. This tuning must include white light that is capable of meeting the specification's color requirements, and can alter the color appearance along the black body curve, and also extend to colors beyond the ANSI defined correlated color temperature ranges (e.g., 2700K and 6500K) outside of the seven step MacAdam ellipse or the ANSI quadrangles.
- **White-Tunable**: A feature allowing the end user to adjust the light output over a range of CCTs. This tuning must include white light that is capable of meeting the specification's color requirements along the black body curve.

Compact Fluorescent Lamp (CFL): A fluorescent lamp with a small diameter glass tube (T5 or less) that is folded, bent, or bridged to create a long discharge path in a small volume. The lamp design generally includes an amalgam and a cold chamber, or a cold spot to control the mercury vapor pressure and light output (ANSI/IES RP-16-10). For purposes of this specification, compact fluorescent lamps include integral electronic ballasts and are equipped with an ANSI standard base.
Connected Lamp: An ENERGY STAR eligible connected lamp includes elements (hardware and software or firmware) or instructions required to enable communication in response to consumer-authorized energy or performance related commands and complies with all requirements for connected lamps in the specification. These elements may reside inside or outside of the base lamp.
Correlated Color Temperature (CCT): The absolute temperature of a blackbody whose chromaticity most nearly resembles that of the light source. (10CFR430.2)
Covered Lamp: A lamp with an integral ballast or driver and a translucent envelope over the light source(s). See Envelope.
Decorative Lamp: A lamp with a candle-like or globe shape envelope including shapes B, BA, C, CA, DC, G and F as defined in ANSI C79.1-2002.For purposes of this specification, lamps with candelabra bases and compact fluorescent lamps with purely decorative outer envelopes including those emulating A shape incandescent bulbs may be tested and evaluated as decorative lamps.
Device Under Test (DUT): An LED lamp under test. (Adapted from IES TM-28-14)
Dimmable Lamp: A lamp that is capable of producing varying levels of light when paired with a suitable control. For the purposes of this specification, the lamp must be capable of reducing light output to 20% (or lower) when paired with a control or dimmer while meeting the associated performance requirements in the specification.
Directional Lamp: ANSI standard PAR and MR lamps having at least 80% light output with a solid angle of π steradians, corresponding to a cone with an angle of 120°, self-ballasted compact fluorescent forms that utilize a reflector, and ANSI standard R, BR and ER shapes.
Envelope: A transparent or translucent enclosure over a light source. An envelope can also consist of a reflector with integral front cover. (Adapted from ANSI C78.357-2010)
FTC: United States Federal Trade Commission.
Field Angle: The angle between the two directions for which the intensity is 10% of the maximum intensity as measured in a plane through the nominal beam centerline. (ANSI/IES RP-16-10)
Flicker: The impression of unsteadiness of visual perception induced by a light stimulus whose luminance or spectral distribution fluctuates with time. (CIE 17.443 e-ILV) This term is for a static observer in a static environment.
Flicker Index: A measure of the cyclic variation in output of a light source taking into account the waveform of the light output. It is the ratio of the area under the light output curve that is above the average light output level to the total area under the light output curve for a single cycle. (ANSI/IES RP-16-10)
GU24 Based Integrated Lamp: A lamp unit that integrates the light source and its ballast or driver. It does not include any replaceable or interchangeable parts, and utilizes the ANSI standardized GU24-base type.
IEC: International Electrotechnical Commission.
IES: Illuminating Engineering Society.
Induction Driven Electrodeless Fluorescent Lamp: A fluorescent lamp that uses electromagnetic induction to generate a discharge current, forming a closed loop inside the tube structure which excites internal gases and converts this into visible

light through phosphor. For purposes of this specification, these lamps include integral electronic ballasts and are equipped with an ANSI standard base, and are also referred to as "induction lamps".
Input Power: The power draw in watts of a ballast or driver and a light source system operating in a normal mode.
Integrated LED Lamp: An integrated assembly comprised of LED packages (components) or LED arrays (modules), LED driver, ANSI standard base and other optical, thermal, mechanical and electrical components. The device is intended to connect directly to the branch circuit through a corresponding ANSI standard lamp-holder (socket). (ANSI/IES RP-16-10)
Labeled Wattage: The highest wattage marked on the lamp and/or lamp packaging. (US DOE)
Lamp: A generic term for a man-made source created to produce optical radiation. By extension, the term is also used to denote sources that radiate in regions of the spectrum adjacent to the visible. (ANSI/IES RP-16-10)
LED: See Light-emitting Diode.
LED Array or Module: An assembly of LED packages (components) or dies on a printed circuit board or substrate, possibly with optical elements and additional thermal, mechanical, and electrical interfaces that are intended to connect to the load side of a LED driver. Power source and ANSI standard base are not incorporated into the device. The device cannot be connected directly to the branch circuit. (ANSI/IES RP-16-10)
LED Driver Case Temperature Measurement Point (TMP_C): A location on an LED driver case, designated by its manufacturer, which will have the highest temperature of any point on the driver case during normal operation.
LED Package: An assembly of one or more LED dies that includes wire bond or other type of electrical connections, possibly with an optical element and thermal, mechanical, and electrical interfaces. Power source and ANSI standardized base are not incorporated into the device. The device cannot be connected directly to the branch circuit. (ANSI/IES RP-16-10)
LED Temperature Measurement Point (TMP_{LED}): A location on an LED package/module/array, designated by its manufacturer, which provides a surrogate temperature measurement location for the actual LED junction. The TMP_{LED} may be a solder joint at the board attachment site, a point on the LED package case, or a location on the board of an LED module or array.
Light-emitting Diode (LED):A p-n junction solid-state device of which the radiated output, either in the infrared region, the visible region, or the ultraviolet region, is a function of the physical construction, material used, and exciting current of the device. (10CFR430.2)
Lumen Maintenance: The lumen output measured at a given time in the life of the lamp and expressed as a percentage of the measured initial lumen output, respectively. Lumen maintenance is the converse of lumen depreciation.
Lumens per Watt (lm/W): The quotient of the total luminous flux emitted by the total light source power input. It is expressed in lm/W. (Adapted from ANSI/IES RP-16-10: "Luminous Efficacy of a Source of Light")
MacAdam Color Ellipse: A space around a chromaticity coordinate that sets the boundary at which a given percentage of people are able to determine that two colors, one with chromaticity coordinates at the center of the ellipse, and one with chromaticity coordinates on the ellipse, are just noticeably different. (Adapted from IES Handbook 10th Edition)
Measured value: The directly measured value from testing equipment for a given unit under test.
Multi-power Lamp: A lamp designed to produce multiple discrete light levels when inserted into a lamp socket controlled by a switching mechanism and is designated on the lamp packaging as being a multi-power lamp, e.g., 3-way lamp.
NEMA: National Electrical Manufacturers Association.
NRTL: Nationally Recognized Testing Laboratory as recognized by OSHA's NRTL Program, which is a part of OSHA's Directorate of Technical Support.
Off Mode: The state where the energy using product is connected to a mains power source and is not providing any standby mode, network mode, or active mode function. (IEC 62301 Edition 2.0 2011-01)
Omnidirectional Lamp: A general service replacement lamp with an ANSI standard base that emits the majority of light produced in an even distribution. See Luminous Intensity Distribution requirement for omnidirectional lamps. These lamps can be standard; having an ANSI standard lamp shape of A, BT, P, PS, S or T, or non-standard, such as a self-ballasted compact fluorescent that utilizes a bare spiral.
OSHA: Occupational Safety & Health Administration.
Percent Flicker: A relative measure of the cyclic variation in output of a light source (percent modulation). It is given by the expression 100(A-B)/(A+B), where A is the maximum and B is the minimum output during a cycle. (IES RP-16-10)
Periodic Frequency: The frequency at which the entire periodic flicker waveform pattern repeats.
Power Factor: The input power in watts divided by the product of RMS input voltage and RMS input current of a ballast or driver.
Rated Lumen Maintenance Life (L_p): The elapsed operating time over which the LED light source will maintain the percentage, p, of its initial light output, e.g., L_{70} (hours): time to 70% lumen maintenance. (IES LM-80-08)
Rated Wattage: The wattage marked on the lamp (referred to as "labeled wattage" by DOE). (10 CFR 430 Appendix W to Subpart B)
Referenced Incandescent Lamp: A traditional incandescent lamp that predates the federal efficiency standards in the 2007 Energy Independence and Security Act.
Reflector: A device used to redirect the flux from a source primarily by the process of reflection. (IES RP-16-10)
Reported value: The value reported for purposes of compliance with DOE (referred to as "represented value" by DOE) and/or ENERGY STAR requirements according to the criteria in each applicable section.
Run-up Time: The time between the application of power to the device and the time when the light output first reaches a specified percentage of stable light output, i.e., 80%, 90%, etc.
Secondary Optics: Materials modifying the distribution of light from, but not integral to a light source, including but not limited to lamp envelopes, reflectors, and total internal reflection optics.

Solid-State Lighting (SSL): The term "solid-state" refers to the fact that light is emitted from a material by a semiconducting process of electron transition from a conduction band to valence band process whether or not the wavelength of this light is converted by additional components.
Standardized Color Ellipse: A MacAdam color ellipse defined by center chromaticity coordinates (CIE x, y) and a measure of certainty for detecting a color difference specified in standard deviation units called steps. (ANSI C78.376-2001)
Standby Mode: The condition in which the energy-using product is connected to a main power source; and offers one or more of the following user-oriented or protective functions: to facilitate the activation or deactivation of other functions (including active mode) by remote switch (including remote control), internal sensor, or timer; or continuous functions, including information or status displays (including clocks) or sensor-based functions. (US DOE)
Stroboscopic Effect: The appearance of multiple, discrete images of moving objects as a result of temporally unstable illumination. The effect may also change the appearance of the objects in their motion. (IEEE Std 1789™-2015) This term is for a static observer in a non-static environment.
Temporal Light Artifact (TLA): An undesired change in visual perception induced by a light stimulus whose luminance or spectral distribution fluctuates with time for an observer in a certain environment. Depending on the details of the fluctuations, TLA consists of flicker and/or stroboscopic effect. (NEMA TLAs-2015)
TMP_C: See LED Driver Case Temperature Measurement Point.
TMP_{LED}: See LED Temperature Measurement Point.

5. TEST CRITERIA

Performance requirements in this specification are determined in part by referencing the performance data of a traditional incandescent lamp (the "referenced incandescent lamp"). Referenced incandescent lamp performance data shall include shape designations appearing in ANSI C79.1-2002 (e.g., A, C, G, MR, PAR etc.), lamp diameter in eighths of an inch (e.g., MR-16 diameter = 16 eighths of an inch), nominal wattage, and beam angle for directional types.

Performance requirements in this specification are also determined by the replacement lamps' type and form factor per Table 1. Lamps claiming equivalency with an ANSI lamp shape on the lamp, its base or packaging, product literature or point-of-purchase materials, either printed or electronic, shall meet all requirements detailed in this specification for ANSI standard lamps.

When testing lamps, the methods of measurement identified for each performance characteristic in the "Methods of Measurement and/or Reference Documents" column of the performance requirements tables presented within this specification shall be used along with the sampling requirements in the calculation of reported values to determine ENERGY STAR certification.

All tests shall be conducted with the lamp connected to a supply circuit of rated frequency. For lamps with multiple operating voltages, the lamp shall be operated at 120 volts throughout testing. If the lamp is not rated for 120 volts, it shall be operated at the highest rated voltage.

For dimmable or multi-power lamps, measurements shall be taken at the highest wattage setting listed for the model, unless otherwise specified. This includes color shifting dimmable (dim-to-warm) lamps unless the lamp can also be tuned to a different chromaticity at full output.

IES LM-65-14 and IES LM-66-14 are applicable to both hot and cold cathode lamps, and induction lamps.

5.1. Testing Color Tunable Lamps

The requirements of this section do not apply to products that only have color shifting dimmable (dim-to-warm) functionality because they are only evaluated at the highest wattage setting.

For full-color-tunable and white-tunable lamps:

- All tests and evaluations included in this specification shall be performed at the most consumptive white light setting covered by this specification[2]; and
- Watts, lumens, chromaticity, and CRI shall be tested and reported for default and most consumptive white light setting covered by this specification.

In order to facilitate compliance testing, the partner shall provide detailed instructions for the control settings or control signals (as applicable) for reaching the default, and most consumptive white light modes as applicable.

[2] 2200K and 2500K nominal CCTs are only applicable to filament style lamps.

6. UNITED STATES FEDERAL REGULATIONS

Various U.S. federal regulations (U.S laws) may apply to lamps covered under the scope of this specification. As a reminder, EPA has included references to the rules and/or rule-making. Partners should consult the appropriate federal agencies regarding compliance with the regulations.

6.1. U.S. Department of Energy (DOE)

The scope of this specification includes bare and covered medium base compact fluorescent lamps which are regulated by the U.S. Department of Energy (DOE). This specification includes references to the Code of Federal Regulations (CFR), such as CFR Title 10 Part 429 and Part 430, as guidance, highlighting efforts by EPA and DOE to align the testing requirements where there is overlap in scope. Any DOE issued guidance for medium base CFLs must be used in determining ratings. (http://www1.eere.energy.gov/guidance/default.aspx?pid=2&spid=1).

For information on the Code of Federal Regulations (CFR), including CFR Title 10 Parts 429 and 430, see DOE website, www.eere.energy.gov/buildings.

6.2. U.S. Federal Trade Commission (FTC)

CFR Title 16 Part 305, see FTC website www.ftc.gov/energy for additional information.

6.3. U.S. Federal Communications Commission (FCC)

CFR Title 47 Parts 15 and 18, see FCC website www.fcc.gov or contact the FCC http://www.fcc.gov/labhelp and submit an inquiry.

7. PRODUCT CERTIFICATION

7.1. Product Variations

Product variations are allowed so long as variations will not negatively impact a lamp's compliance with any performance criteria in this specification.

Variants shall be identical to the tested representative model with the exception of allowed variations listed in Table 2. In addition, variants are permitted to reference the test reports of the tested representative model to satisfy certification requirements with the exception of the required tests outlined in Table 2. The model which the partner expects to have the greatest difficulty meeting the performance requirements outlined in this specification shall be tested ("tested representative model").

The following shall be satisfied for product variations listed below:

7.1.1. The tested representative model and the variant(s) shall have the same rated input voltage(s).

7.1.2. Across a sample of up to five units of a variant, the average of *in situ* temperatures of critical components shall be no greater than 2.5°C above the same average of *in situ* temperatures in a sample of up to five units of the tested representative model. Critical components include (as applicable) the highest temperature LED package/array/module measured at TMP_{LED}, LED driver measured at TMP_C, ballast case temperature at T_C, capacitors and fuses.

7.1.3. For solid-state lamps, variation is not allowed where the *in situ* temperatures measured at each unit's highest temperature or the average of up to 5 unit samples TMP_{LED} is greater than the maximum case temperature tested in the corresponding IES LM-80 report.

7.1.4. OSHA NRTL safety listing or certification report shall be available that includes descriptions of both the tested representative model and variant(s) demonstrating their identical construction except for the allowable variations detailed in Table 2, as applicable.

7.1.5. Test report(s) shall be available from EPA-recognized laboratory(ies) for the tested representative model and the variant(s) demonstrating that variant performance for the following parameters varies by no more than the percent indicated while meeting this specification's requirements:

i. Input current and input wattage: ±10%
ii. Power factor: ±5%
iii. Maximum overall length, except as affected only by variations in lamp base or envelope shape: ±5%
iv. Maximum overall diameter: ±5%

Table 2: Allowable Variations

Lamp Attribute	Allowable Variation	Additional Test Data Required For Each Variant[3]
Heat Sink Paint Color (solid-state only)	Lamp body color/pigment. (Not the type of paint or plastic).	None
Beam Angle (solid-state only)	The dimensions of lamp secondary optics (e.g., lens thickness, refractor patterns). Variation in secondary optical material not allowed.	• Luminous Intensity distribution data • Center Beam Intensity • Color Angular Uniformity
Lamp Base (ANSI base adapter)	Lamp base type (e.g., ANSI E26, GU24, etc.)	None
Envelope Shape (decorative shapes only)	Lamp envelope shape, so long as the envelope material and thickness are unchanged. The surface area and volume of the tested representative model's envelope shall be less than or equal to that of the variant.	None
Envelope Finish (decorative shapes only)	Lamp envelope finish, so long as the envelope material and thickness are unchanged. The surface area and volume of the tested representative model's envelope shall be less than or equal to that of the variant.	• Luminous Efficacy • Light Output • Correlated Color Temperature • Color Rendering
Correlated Color Temperature	This allows sharing of specific test data, as applicable, for CFL and SSL lamps where the only variation is in phosphor: • Lumen Maintenance • Rated Life • Color Maintenance • Electrical Safety • Electrical - Rapid Cycle Stress, Power Factor, Transient Protection, Frequency and Start Time • Dimming Performance– Minimum and Maximum Light Output, Audible Noise, and Flicker • Lamp Shape Dimensions • Lamp Toxics Reduction Only the tested representative model is required to complete lumen maintenance and full rated life testing as applicable.	• Luminous Efficacy • Light Output • Elevated Temperature Light Output Ratio (as applicable) • Center Beam Intensity (as applicable) • Luminous Intensity Distribution (as applicable) • Correlated Color Temperature • Color Rendering • Color Angular Uniformity (SSL only and as applicable) • Run-Up Time (CFLs only)
Lamp Neck	Applicable to PAR30 Long Neck (PAR30L) lamps where the representative model has the shortest MOL, and the only component changed is the neck of the lamp. Changes to heat sink or driver are not allowed.	None

7.2. Solid-State Lumen Maintenance Performance Data

Content and application of IES LM-80 reports for LED lamps shall comply with ENERGY STAR Program Guidance Regarding LED Package, LED Array and LED Module Lumen Maintenance Performance Data Supporting Certification of Lighting Products.

7.3. Temperature Measurements

All temperature measurements including *in situ* measurements (i.e., TMP_{LED}, ballast case, driver case) shall be made in accordance with temperature test methods and apparatus outlined in ANSI/UL 1993.For purposes of thermocouple access, minimally sized holes may be drilled into lamps under test and tightly sealed with flexible sealant. All access holes shall be photographed for repeatability.

7.4. Photographs

Photographs shall be taken of lamp optics, lamp profile and lamp labeling, and shall be maintained in records.

7.5. Significant Digits and Rounding

7.5.1. Measurements shall be recorded at the resolution of the test instrumentation for each unit in the sample set.

[3] All variations listed in Table 2 shall satisfy the requirements in 7.1.1-7.1.5 in addition to the additional test data required in Table 2.

7.5.2. All calculations shall be carried out on a per unit basis with directly measured (unrounded) values.

7.5.3. Compliance with the specification limits shall be evaluated against the reported value for each model.

7.5.4. Rounding is defined as follows:

(i) A fractional number at or above the midpoint between two consecutive decimal places or whole numbers shall be rounded up to the higher of the two decimal places or whole numbers; or

(ii) A fractional number below the midpoint between two consecutive decimal places or whole numbers shall be rounded down to the lower of the two decimal places or whole number.

8. METHODS OF MEASUREMENT AND REFERENCE DOCUMENTS

Organization	Identifier	Description
ANSI/IEEE	C62.41.2-2002	IEEE Recommended Practice on Characterization of Surges in Low Voltage (1000V and Less) AC Power Circuits
ANSI	C78.20:2003	Electric Lamps – A, G, PS and Similar Shapes with E26 Medium Screw Bases
ANSI	C78.21-2011	Electric Lamps – PAR and R Shapes
ANSI	C78.50-2014	Electric Lamps – Assigned LED Lamp Codes
ANSI	C78.79-2014	Electric Lamps – Nomenclature for Envelope Shapes Intended for Use with Electric Lamps
ANSI	C78.23:1995 (R2003)	Incandescent Lamps – Miscellaneous Types
ANSI/ANSLG	C78.357-2010	For Incandescent Lamps: Tungsten Halogen Lamps (non-vehicle)
ANSI	C78.376-2014	Specifications for the Chromaticity of Fluorescent Lamps
ANSI/ANSLG	C78.377-2015	Specifications for the Chromaticity of Solid-state Lighting Products
ANSI	C79.1-2002	Nomenclature for Glass Bulbs Intended for Use with Electric Lamps
ANSI/ANSLG	C81.61-2009	Specifications for Bases (Caps) for Electric Lamps
ANSI	C82.77-10-2014	Harmonic Emission Limits – Related Power Quality Requirements for Lighting Equipment
ANSI/IES	RP-16-10	Nomenclature and Definitions for Illuminating Engineering
ANSI/UL	1993-2012	Standard for Safety of Self-Ballasted Lamps and Lamp Adapters
ANSI/UL	8750-2009	Standard for Light Emitting Diode (LED) Equipment for Use in Lighting Products
ASA	S12.55-2012 / ISO3745:2012	Determination of Sound Power Levels of Noise Sources Using Sound Pressure - Precision Methods Anechoic and Hemi-Anechoic Rooms
CIE	013.3-1995	Method of Measuring and Specifying Color Rendering of Light Sources
CIE	15-2004	Colorimetry
DOE	10 CFR 429	Certification, Compliance, and Enforcement for Consumer Products and Commercial and Industrial Equipment
DOE	10 CFR 430	Energy Conservation Program for Consumer Products
DOE	TBD	Energy Conservation Test Procedures for Compact Fluorescent Lamps
DOE	TBD	Energy Conservation Test Procedures for Integrated Light-Emitting Diode Lamps
IEC	62321 ED.1.0 B:2008	Electrotechnical Products – Determination Of Levels Of Six Regulated Substances (lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls, polybrominated diphenyl ethers)
IEC	62301 Edition 2.0 2011-01	Household electrical appliances - Measurement of standby power
IEEE	1789-2015	Recommended Practices for Modulating Current in High-Brightness LEDs for Mitigating Health Risks to Viewers
IES	LM-20-13	Photometric Testing of Reflector – Type Lamps
IES	LM-54-12	Guide to Lamp Seasoning
IES	LM-65-14	Life Testing of Compact Fluorescent Lamps
IES	LM-66-14	Electrical and Photometric Measurements of Single-Based Fluorescent Lamps
IES	LM-79-08	Electrical and Photometric Measurements of Solid-State Lighting Products
IES	LM-80-08	Measuring Lumen Maintenance of LED Light Sources
IES	LM-82-12	Method for the Characterization of LED Light Engines and Integrated LED Lamps for Electrical and Photometric Properties as a Function of Temperature
IES	LM-84-14	Measuring Luminous Flux and Color Maintenance of LED Lamps, Light Engines, and Luminaires
IES	TM-21-11	Projecting Long Term Lumen Maintenance of LED Light Sources
IES	TM-27-14	Standard Format for the Electronic Transfer of Spectral Data
IES	TM-28-14	Projecting Long-Term Luminous Flux Maintenance of LED Lamps and Luminaires
IES	TM-30-15	Evaluating Light Source Color Rendition
ISO	7574-4:1985	Statistical Methods for Determining and Verifying Stated Noise Emission Values of Machinery and Equipment
NEMA	SSL 7A-2013	Phase Cut Dimming for Solid-State Lighting – Basic Compatibility

9. PHOTOMETRIC PERFORMANCE

9.1. Luminous Efficacy: All Lamps

Lamp Type	ENERGY STAR Requirements		Methods of Measurement and/or Reference Documents	Supplemental Testing Guidance
	Reported values for each lamp model shall meet the applicable requirement in the table below. Additionally eight or more units individually shall meet the requirement.		**Measurement (fluorescent):** 10 CFR Part 430 Appendix W to Subpart B or U.S. Department of Energy Conservation Test Procedures for Compact Fluorescent Lamps (once final)	**Sample Size:** 10 units per model: 5 units tested base-up and 5 units tested base-down unless the manufacturer restricts specific use or position. If position is restricted, all units shall be tested in restricted position.
	Minimum Lamp Efficacy (initial lm/W)		**Measurement (solid-state):** IES LM-79-08 or U.S. Department of Energy Conservation Test Procedure for Integrated Light-Emitting Diode Lamps (once final)	**For CFLs** lamp efficacy testing shall be conducted according to 10 CFR Part 430 Appendix W to Subpart B and sampling per 10 CFR 429.35. The reported value shall be in accordance with 10 CFR 429.
	CRI ≥ 90	CRI < 90		**For LED lamps** all calculations of efficacy values shall be carried out on a per unit basis with directly measured (unrounded) values. No tolerances should be applied and the reported value for the sample shall be the average of the calculated efficacies (initial luminous flux divided by measured wattage) for all units in the sample. The reported value shall be the average of the unit values rounded to the nearest tenth.
Omnidirectional	70	80		
Directional	61	70		
Decorative	65		**Reference Documents for all lamps not covered by DOE:** IES LM-54-12	

9.2. Light Output

Wattage equivalency claims on the lamp, its base or packaging, product literature or point-of-purchase materials, either printed or electronic may not exceed values certified according to the tables below.

<table>
<tr><th>Lamp Type</th><th>ENERGY STAR Requirements</th><th>Methods of Measurement and/or Reference Documents</th><th>Supplemental Testing Guidance</th></tr>
<tr><td>Omnidirectional</td><td>Reported initial light output (in lumens) value for each lamp model shall fall within the range of the referenced incandescent lamp per the table below. Additionally 8 or more units individually shall meet the requirement.[4]
<table>
<tr><th>Rated Wattage of the Referenced Incandescent Lamp (watts)</th><th>Light Output (Lumens)</th></tr>
<tr><td>25</td><td>250–449</td></tr>
<tr><td>40</td><td>450–799</td></tr>
<tr><td>60</td><td>800–1,099</td></tr>
<tr><td>75</td><td>1,100–1,599</td></tr>
<tr><td>100</td><td>1,600–1,999</td></tr>
<tr><td>125</td><td>2,000–2,549</td></tr>
<tr><td>150</td><td>2,550–3,000</td></tr>
<tr><td>200</td><td>3,001–3,999</td></tr>
<tr><td>300</td><td>4,000–6,000</td></tr>
<tr><td>30-60-100
30-70-100
40-60-100</td><td>1,200–1,999</td></tr>
<tr><td>50-100-150</td><td>2,150–3,000</td></tr>
</table>
3-way lamps shall be evaluated for equivalency claims based on tested results at the highest input (i.e., highest light output) setting.</td><td rowspan="3">Measurement (fluorescent):
10 CFR Part 430 Appendix W to Subpart B
or
U.S. Department of Energy Conservation Test Procedures for Compact Fluorescent Lamps (once final)

Measurement (solid-state):
IES LM-79-08
or
U.S. Department of Energy Conservation Test Procedure for Integrated Light-Emitting Diode Lamps (once final)

Reference Documents:
IES LM-54-12

Reference Document for all lamps covered by FTC:
16 CFR § 305.2.</td><td rowspan="3">Sample Size: 10 units per model: 5 units tested base-up and 5 units tested base-down unless the manufacturer restricts specific use or position. If position is restricted, all units shall be tested in restricted position.

For CFL lamps the light output testing shall be conducted according to 10 CFR Part 430 Appendix W to Subpart B and sampling per 10 CFR 429.35. The reported value shall be in accordance with 10 CFR 429.

For LED lamps the reported value shall be the average of the unit measured values rounded to three significant figures. No tolerances shall be applied.</td></tr>
<tr><td>Directional (R, BR and ER)</td><td>Reported lamp initial light output (in lumens) shall be greater than or equal to ten times the incandescent lamp's rated wattage for the following referenced incandescent lamps:
• 65 watt BR30, BR40 and ER40 lamps
• BR30, ER30, BR40 and ER40 lamps ≤ 50 watts
• R20 lamps ≤ 45 watts
• Lamps ≤ 40 watts
• Lamps smaller than 2.25" diameter
For example, a lamp replacing a 25W incandescent shall produce ≥ 250 lumens.

For all other directional lamps not included above, reported lamp light output (in lumens) shall be greater than or equal to the product of the claimed wattage equivalency and the light output multiplier in the table below. Additionally 8 or more units individually shall meet the requirement.
<table>
<tr><th>Rated Wattage of the Referenced Incandescent Lamp (watts)</th><th>Light Output Multiplier</th></tr>
<tr><td>40 – 50 W</td><td>10.5</td></tr>
<tr><td>51 – 66 W</td><td>11.0</td></tr>
<tr><td>67 – 85 W</td><td>12.5</td></tr>
<tr><td>86 – 115 W</td><td>14.0</td></tr>
<tr><td>116 – 155 W</td><td>14.5</td></tr>
<tr><td>156 – 205 W</td><td>15.0</td></tr>
</table></td></tr>
<tr><td>Directional (PAR, MR and MRX)</td><td>Lamp initial light output (in lumens) shall be reported as the average of ten units. For equivalency claims see section 9.4.</td></tr>
</table>

[4]Consistent with FTC and DOE regulations, reported values may be more conservative.

Decorative	Reported lamp initial light output (in lumens) shall fall within the range of the referenced incandescent lamp per the table below. Additionally 8 or more units individually shall meet the requirement.		

Rated Wattage of the Referenced Incandescent Lamp (watts)	Light Output (lumens)	
	Decorative	Globe (G) Shape
10	70–89	--
15	90–149	--
25	150–299	250–349
40	300–499	350–499
60	500–699	500–574
75	--	575–649
100	--	650–1,099
125	--	--
150	--	1,100–1,300

9.3. Elevated Temperature Light Output Ratio: All Directional Lamps

(Exemption: Omnidirectional, decorative, and lamps labeled "not for use in recessed fixtures" or equivalent statement)

Lamp Type	ENERGY STAR Requirements	Methods of Measurement and/or Reference Documents	Supplemental Testing Guidance
All Directional	Lamp shall maintain ≥ 90% of initial light output (total luminous flux) measured at ambient temperature (25°C ±5°C) when tested in the same elevated temperature condition required by the Lumen Maintenance requirement. Calculation of the elevated temperature light output ratio shall be carried out with directly measured (unrounded) values.	**Measurement:** ENERGY STAR Elevated Temperature Light Output Ratio Test or IES LM-82-12	**Sample Size:** One unit tested base-up. The reported value shall be the calculated ratio for the unit rounded to the nearest tenth. To utilize LM-82-12, the partner must designate a temperature measurement point (T_b) for attaching the thermocouple.

9.4. Center Beam Intensity: PAR, MR and MRX Lamps

Wattage equivalency claims on the lamp, its base or packaging, product literature or point-of-purchase materials, either printed or electronic may not exceed values certified. This specification does not support equivalency claims to reference incandescent or halogen products that have not been commercially available.

Lamp Type	ENERGY STAR Requirements	Methods of Measurement and/or Reference Documents	Supplemental Testing Guidance
ANSI Standard PAR, MR and MRX Lamps	Lamp center beam intensity measured value shall be greater than or equal to the center beam intensity value calculated by the ENERGY STAR® Lamp Center Beam Intensity Benchmark Tool for the referenced incandescent lamp. (www.energystar.gov/LampsCBCP) For equivalency claims not supported by this tool, lamp must meet or exceed the measured center beam candlepower (CBCP) of the referenced incandescent or halogen product with the same nominal beam spread.	**Measurement (fluorescent):** IES LM-66-14 **Measurement (solid-state):** IES LM-79-08 **Measurement (incandescent):** IES LM-20-13 **Reference Documents:** IES LM-54-12	**Sample Size:** One new unit. The sample may be the same unit for testing color angular uniformity as applicable. The reported value shall be the measured candela value rounded to the nearest whole number.

9.5. Luminous Intensity Distribution: ANSI Standard Omnidirectional and Decorative

Lamp Type	ENERGY STAR Requirements	Methods of Measurement and/or Reference Documents	Supplemental Testing Guidance
ANSI Standard Omnidirectional Lamps Refer to Section 1.1 for eligible ANSI standard lamp shapes	Lamp luminous intensity distribution shall emulate that of the referenced incandescent lamp as follows: 80% of the luminous intensity measured values (candelas) shall vary by no more than 35% from the average of all measured values in the 0° to 130° zone. All measured values (candelas) in the 0° to 130° zone shall vary by no more than 60% from the average of all measured values in that zone. No less than 5% of total flux (zonal lumens) shall be emitted in the 130° to 180° zone. See Appendix A-1 for illustration.	**Measurement (solid-state):** IES LM-79-08 **Reference Document:** ENERGY STAR Luminous Intensity Distribution Tool	**Sample Size:** One unit. Lamp luminous intensity shall be measured about the lamp (polar) axis, in maximum increments of 22.5° from 0° to at least 180° about the polar axis. Within each vertical plane luminous intensity measurements shall be taken from 0° to 180° at 5° vertical angle increments (maximum).
ANSI Standard Decorative Lamps Refer to Section 1.1 for eligible ANSI standard lamp shapes	Lamp luminous intensity distribution shall emulate that of the referenced incandescent lamp as follows: No less than 5% of total flux (lumens) shall be emitted in the 110° to 180° zone. See Appendix A-2 for illustration.		**Sample Size:** One unit.

9.6. Correlated Color Temperature (CCT): All Lamps

Lamp Type	ENERGY STAR Requirements	Methods of Measurement and/or Reference Documents	Supplemental Testing Guidance
Compact Fluorescent	Reported lamp model light color temperature shall correlate to one of the following nominal CCTs, additionally 9 out of 10 units shall fall within a 7-step MacAdam ellipse or ANSI quadrangle for the designated CCT, per the referenced ANSI document: • 2200K* • 2500K* • 2700K • 3000K • 3500K • 4000/4100K • 5000K • 6500K	**Measurement:** IES LM-66-14 or U.S. Department of Energy Conservation Test Procedures for Compact Fluorescent Lamps (once final) **Calculation:** CIE 15-2004 **Reference Documents:** ANSI C78.376-2014 Sections 2 and 4, and Table 2 IES LM-54-12	**Sample Size:** 10 units per model: 5 units tested base-up and 5 units tested base-down unless the manufacturer restricts specific use or position. If position is restricted, all units shall be tested in restricted position. Measurements shall be taken at the end of 100 hours of seasoning according to IES LM-54-12. Reported CCT shall be the average of the unit measured values rounded to the nearest 100K.
Solid-State		**Measurement:** IES LM-79-08 or U.S. Department of Energy Conservation Test Procedure for Integrated Light-Emitting Diode Lamps (once final) **Calculation:** CIE 15.2004 **Reference Document:** ANSI C78.377-2015	**Sample Size:** 10 units per model: 5 units tested base-up and 5 units tested base-down unless the manufacturer restricts specific use or position. If position is restricted, all units shall be tested in restricted position. Reported CCT shall be the average of the unit measured values rounded to the nearest 100K.

*These nominal CCTs are limited to filament-style lamps and are not eligible for early interim certification.

9.7. Color Rendering: All Lamps

Lamp Type	ENERGY STAR Requirements	Methods of Measurement and/or Reference Documents	Supplemental Testing Guidance
Compact Fluorescent	Lamp shall have a color rendering index (R_a) ≥ 80. The average of units tested shall meet the requirements and no more than 3 units shall have R_a < 77. No unit shall have R_a < 75. Lamp R_9 value shall be reported. Spectral power distribution shall be reported for wavelengths from 380 nm to 780 nm (at a minimum), with an interval not greater than 5 nm.	**Calculation:** CIE 13.3-1995 or U.S. Department of Energy Conservation Test Procedure for Compact Fluorescent Lamps (once final) **Measurement:** IES LM-66-14 or U.S. Department of Energy Conservation Test Procedure for Compact Fluorescent Lamps (once final) **Reference Document:** IES TM-27-14 IES TM-30-15	**Sample Size:** 10 units per model: 5 units tested base-up and 5 units tested base-down unless the manufacturer restricts specific use or position. If position is restricted, all units shall be tested in restricted position. Reported values shall be the average of the unit measured values rounded to the nearest whole number.
Solid-State	Lamp shall have a color rendering index (R_a) ≥ 80. The average of units tested shall meet the requirements and no more than 3 units shall have R_a < 77. No unit shall have R_a < 75. Lamp shall have an R_9 > 0. Spectral power distribution shall be reported for wavelengths from 380 nm to 780 nm (at a minimum), with an interval not greater than 5 nm.	**Calculation:** CIE 13.3-1995 or U.S. Department of Energy Conservation Test Procedure for Integrated Light-Emitting Diode Lamps (once final) **Measurement:** IES LM-79-08 or U.S. Department of Energy Conservation Test Procedure for Integrated Light-Emitting Diode Lamps (once final) **Reference Document:** IES TM-27-14 IES TM-30-15	

9.8. Color Maintenance: All Solid-State Lamps
(Exemption: Compact Fluorescent Lamps)

Lamp Type	ENERGY STAR Requirements	Methods of Measurement and/or Reference Documents	Supplemental Testing Guidance
Solid-State	Lamp change in chromaticity coordinates from 0-hour measurement, at any measurement point required by the specification or reference test method during operation, shall be within a total linear distance of 0.007 on the CIE 1976 u'v' diagram. All units shall meet this requirement.	**Measurement:** IES LM-79-08 IES LM-80-08 (for early interim certification) or IES LM-84-14 in conjunction with U.S. Department of Energy Conservation Test Procedure for Integrated Light-Emitting Diode Lamps (once final) **Reference Document:** ANSI C78.377-2015	**Sample Size:** 10 units per model: 5 units tested base-up and 5 units tested base-down unless the manufacturer restricts specific use or position. If position is restricted, all units shall be tested in restricted position. Reported color maintenance shall be the calculated value for each unit rounded to the nearest significant digit.

9.9. Color Angular Uniformity: Solid-State Directional Lamps
(Exemption: All Other Lamps)

Lamp Type	ENERGY STAR Requirements	Methods of Measurement and/or Reference Documents	Supplemental Testing Guidance
Solid-State Directional	Variation of chromaticity across the beam angle of the lamp shall be within a total linear distance of 0.006 from the weighted average point on the CIE 1976 (u'v') diagram.	**Measurement:** IES LM-79-08 **Reference Document:** ANSI C78.377-2015	**Sample Size:** One unit. The sample may be the same unit for testing Center Beam Intensity, as applicable. Lamp shall be scanned on two planes separated by 90 degrees. Maximum vertical scanning resolution shall be 2° for beam angles less than 15° and 5° for beam angles 15° or greater. Complete luminous intensity distribution data shall be reported.

10. LUMEN MAINTENANCE AND RATED LIFE

Required durations of lumen maintenance and rapid cycle stress testing corresponding to lamp's rated life claim shall be completed. Rated life claims on the lamp, its base or packaging, product literature or point-of-purchase materials, either printed or electronic may not exceed values certified according to this specification. The highest wattage, be it the measured wattage of a single unit sample or the rated wattage for the model, should be used to determine the testing temperature.

10.1. Lumen Maintenance: All Lamps

Lamp Type	ENERGY STAR Requirements	Methods of Measurement and/or Reference Documents	Supplemental Testing Guidance
Compact Fluorescent	Lamp shall maintain ≥ 90% of initial lumen output at 1,000-hours. The reported value shall be the average lumen maintenance of 10 units. All units shall be surviving at 1,000-hours. Lamp shall maintain ≥ 80% of initial lumen output at 40% of rated life. The reported value shall be the average lumen maintenance of ≥ 9 surviving units, and shall meet the requirement for the designated life claim, and no more than 3 units may have lumen maintenance < 75% at 40% of rated life. **Initial Certification:** A product may be certified based on partial life testing, and shall meet all other requirements of the specification as certified by an EPA-recognized Certification Body. Initial certification occurs at 40% of rated life for CFLs and 3,000 hours for LED lamps. A product photo is required to identify the current version of the certified product. **Packaging Review:** Electronic or hard copy labeling and packaging samples are required for the specific model. Packaging must meet all of the requirements identified under the Lifetime and Packaging Requirements. The specific certified model must be distributed within this approved product packaging. **Due Date:** A due date for the final average rated life time test report must be established based on the date the lifetime test began and the rated lifetime of the model. Products that meet the above requirements may be considered certified for ENERGY STAR and may be labeled. **Full Qualification:** The final rated life time test results must be certified within 60 days of completion of the test and must demonstrate that the product meets the rated lifetime claim established during initial certification. **Upgrading the Lifetime of a Certified Product:** The lifetime of a product certified using the procedures above may be increased	**Measurement (fluorescent):** ENERGY STAR Elevated Temperature Life Test IES LM-65-14 IES LM-66-14 10 CFR Part 429 and Part 430 Appendix W to Subpart B as applicable **Reference Documents for all lamps not covered by DOE:** IES LM-54-12	**Sample Size:** 10 units per model: 5 units tested base-up and 5 units tested base-down unless the manufacturer restricts specific use or position. If position is restricted, all units shall be tested in restricted position. If Option A is selected then all 10 lamps may be tested base-up. The sample size for lamps covered by DOE's regulatory program that require elevated temperature life testing as prescribed below shall include sampling and testing in accordance with 10 CFR 430 Appendix W to Subpart B and only 5 units tested at the elevated temperature as prescribe below. Prescribed test time is the total ON time and shall not include the OFF time during lamp cycling. The following shall be tested according to the test standard and operating temperatures outlined below: **For CFLs not covered by DOE's regulatory program,** initial lumen output measurements shall be taken at the end of 100 hours of seasoning according to IES LM-54-12. The reported value shall

Lamp Type/ Wattage	Methods of Measurement and/or Reference Documents	Operating Temperature
Lamps labeled 1) "not for use in totally enclosed luminaires" (or equivalent statement), and 2) "not for use in recessed luminaires" (or equivalent statement) on lamp and lamp packaging	IES LM-65-14; IES LM-66-14 for photometric measurements; 10 CFR Appendix W to Subpart B	Ambient temperature conditions (25°C ±1°C)
Directional lamps ≤20 watts	ENERGY STAR Elevated Temperature Life Test	Option A or B or C at 45°C ±5°C
Directional lamps >20 watts	ENERGY STAR Elevated Temperature Life Test	Option A or B or C at 55°C ±5°C
All other lamps not covered by DOE	ENERGY STAR Elevated Temperature Life Test	Option A or B or C at 45°C ±5°C
Lamps covered by DOE	IES LM-65-14; IES LM-66-14 for photometric measurements; 10 CFR Appendix W to Subpart B	Ambient temperature conditions (25° C ±1°C)

<table>
<tr>
<td></td>
<td>only by demonstrating full compliance with the ENERGY STAR criteria at the new lifetime. Packaging proofs must be reviewed as in the initial certification process.

<table>
<tr><th>Rated Lifetime (hours)</th><th>Early Interim (40% Rated Life) (hours)</th><th>Full Certification (hours)</th></tr>
<tr><td>10,000</td><td>4,000</td><td>10,000</td></tr>
<tr><td>12,000</td><td>4,800</td><td>12,000</td></tr>
<tr><td>15,000</td><td>6,000</td><td>15,000</td></tr>
<tr><td>20,000</td><td>8,000</td><td>20,000</td></tr>
</table>
</td>
<td></td>
<td>be the average of the unit values rounded to the nearest tenth of a percent.

For CFLs covered by DOE's regulatory program (i.e., medium base CFLs without reflectors or 3-way capabilities), the value should be calculated according to the 10 CFR 429.35.

Subsequent to initial certification, it is suggested that initial Rapid Cycle Stress Test be completed in anticipation of final product lifetime. The following tests must be completed: Rapid Cycle Stress Test, Lumen Maintenance, Interim Life and Lifetime Test.</td>
</tr>
<tr>
<td>Solid-State</td>
<td>Lamp shall maintain minimum percentage of 0-hour light output after completion of the 6000-hr test duration per the table(s) below. The reported value shall be the average lumen maintenance of 10 units and shall meet the minimum requirement for the designated lifetime claim in Section 10.2. Lamp may earn optional early interim certification after 3,000 hours, with a rated life claim ≤ 25,000 hours, per the provisions below.

<table>
<tr><th>Maximum Life Claim (hours to L_{70})</th><th>Minimum Lumen Maintenance After Test Duration</th><th>Status After Completion of Test Duration</th></tr>
<tr><td>15,000</td><td>88.7%</td><td rowspan="3">Final certification testing completed.</td></tr>
<tr><td>20,000</td><td>89.9%</td></tr>
<tr><td>25,000</td><td>91.8%</td></tr>
<tr><td>30,000</td><td>93.1%</td><td rowspan="5">Interim certification; continue testing per below.</td></tr>
<tr><td>35,000</td><td>94.1%</td></tr>
<tr><td>40,000</td><td>94.8%</td></tr>
<tr><td>45,000</td><td>95.4%</td></tr>
<tr><td>50,000</td><td>95.8%</td></tr>
</table>
To Qualify For Early Interim Certification After 3,000 Hours: Lamp average lumen maintenance of the 10 units shall meet the minimum percentages of 0-hour light output corresponding to the lamp's life claim per the table below, and shall meet all other requirements in this specification. A lumen maintenance projection calculation using the applicable LM-80-08 test report for the employed LED package/module/array model ("device"), the in situ temperature of highest temperature TMP_{LED}, and the forward drive current applied to each device shall support a rated lumen maintenance life greater than or equal to the lamp rated life value to be claimed on product packaging as determined by IES TM-21-11.

<table>
<tr><th>Maximum Life Claim (hours to L_{70})</th><th>Minimum Lumen Maintenance After 3,000 Hours</th></tr>
<tr><td>15,000</td><td>93.1%</td></tr>
<tr><td>20,000</td><td>94.8%</td></tr>
<tr><td>25,000</td><td>95.8%</td></tr>
</table>
For Extended Lifetime Claims: For lamp life claims >25,000 hours, lamp shall maintain ≥ 91.5% of 0-hour light output after completion of the test</td>
<td>Method of Measurement (lamps):
ENERGY STAR Elevated Temperature Life Test

ENERGY STAR Ambient Temperature Life Test

LED Lumen Maintenance Test Method:
IES LM-80-08

Lumen Maintenance Projection Method:
IES TM-21-11

Reference Document:
ENERGY STAR TM-21 Calculator

Or:

U.S. Department of Energy Conservation Test Procedure for Integrated Light-Emitting Diode Lamps (once final)</td>
<td>Sample Size: 10 units per model: 5 units tested base-up and 5 units tested base-down unless the manufacturer restricts specific use or position. If position is restricted, all units shall be tested in restricted position. If Option A is selected then all 10 lamps may be tested base-up.

The following shall be tested according to the test standard and operating temperatures outlined below:

<table>
<tr><th>Lamp Type/Wattage</th><th>Methods of Measurement and/or Reference Documents*</th><th>Operating Temperature</th></tr>
<tr><td>Lamps labeled 1) "not for use in totally enclosed luminaires" (or equivalent statement), and 2) "not for use in recessed luminaires" (or equivalent statement) on lamp and lamp packaging</td><td>ENERGY STAR Ambient Temperature Life Test</td><td>Between 20°C and 35°C</td></tr>
<tr><td>Directional lamps ≤ 20 watts</td><td>ENERGY STAR Elevated Temperature Life Test</td><td>Option A or B or C at 45°C ±5°C</td></tr>
<tr><td>Directional lamps > 20 watts</td><td>ENERGY STAR Elevated Temperature Life Test</td><td>Option A or B or C at 55°C ±5°C</td></tr>
<tr><td>All other omnidirectional and decorative lamps</td><td>ENERGY STAR Elevated Temperature Life Test</td><td>Option A or B or C at 45°C ±5°C</td></tr>
</table>
*Temperature ranges for applicable lamp types shall remain if the DOE final test method allows.

Testing for early interim and final certification shall be conducted on the same samples, which shall also satisfy the 6,000 hour testing for the rated life requirements (next section).

A 3% tolerance may be applied to all measured luminous flux values (e.g., [luminous flux X 1.03]) except at the 0-hour measurement, if the calculated lumen maintenance value falls to meet the requirement without the tolerance. No other tolerances should be applied.

Lamp Sample Size for Early Interim Certification Temperature Test: One lamp per model for in situ measurement of highest temperature TMP_{LED}.

Device Sample Size for Early Interim Certification: Minimum sample size of 20 units for LED packages, or 10 units for LED arrays or LED modules, for each T_S and drive current combination (refer to IES TM-21-11, Section 4.2).</td>
</tr>
</table>

	duration corresponding to lamp's life claim per the table below. Maximum Life Claim (hours to L_{70}) / Test Duration (hours)* 30,000 / 7,500 35,000 / 8,750 40,000 / 10,000 45,000 / 11,250 50,000 / 12,500 * Prescribed test duration is the total ON time and shall not include the OFF time.		For color tunable lamps, the TM-21-11 projection for all LED sources used shall meet the requirement. Compliance with the above shall be documented with a TM-21 lumen maintenance life projection report as detailed in TM-21, section 7. The report shall be generated using data from the LM-80 test report for the employed LED package/module/array model ("device"), the forward drive current applied to each device, and the *in situ* TMP_{LED} temperature of the hottest device in the lamp. In addition to LM-80 reporting requirements, the following information shall be reported: • Sampling method and sample size (per LM-80 section 4.3) • Test results for each T_s and drive current combination • Description of device including model number and whether device is an LED package, module or array (see Definitions) • ANSI target, and calculated CCT value(s) for each device in sample set • Δ u'v' chromaticity shift value on the CIE 1976 diagram for each device in sample set • A detailed rationale, with supporting data, for application of results to other devices (e.g., LED packages with other CCTs) If units are tested both base-up and base-down, the average of surviving unit measured values shall be calculated for each orientation. If the difference between these averages is: • Greater than 3%, the reported lumen maintenance shall be the lesser of the two averages rounded to the nearest tenth of a percent. • Less than 3%, the reported lumen maintenance shall be the average of all surviving units rounded to the nearest tenth of a percent. If units are tested in one orientation, the average of surviving unit measured values shall be reported rounded to the nearest tenth percent.

10.2. Rated Life: All Lamps

Lamp Type	ENERGY STAR Requirements	Methods of Measurement and/or Reference Documents	Supplemental Testing Guidance
Compact Fluorescent	Lamp shall have a rated life ≥ 10,000 hours. At 40% of rated life 90% of the tested units shall be operational. ≥ 50% of the tested units shall be operational at rated life.	See Section 10.1 Lumen Maintenance Requirements.	**Sample Size:** Same samples used for lumen maintenance testing, see Section 10.1. **For CFLs covered by DOE's regulatory program** (i.e., medium base CFLs without reflectors or 3-way capabilities), the reported value shall be in accordance with 10 CFR 429.35. **For lamps not covered by DOE's regulatory program,** the reported value shall be the rated life in hours.
Solid-State	Omnidirectional and decorative lamps shall have a rated life ≥ 15,000 hours. Directional lamps shall have a rated life ≥ 25,000 hours. All tested units shall be operational at all applicable lumen maintenance measurement points designated in Section 10.1.		

10.3. Rapid Cycle Stress Test: Compact Fluorescent Lamps

Lamp Type	ENERGY STAR Requirements	Method of Measurement and/or Reference Document(s)	Supplemental Testing Guidance
Compact Fluorescent	Lamp, when cycled at 5 minutes on, 5 minutes off, shall survive the lesser number of cycles: one cycle per hour of rated life or 15,000 cycles. At least 5 units shall survive the minimum number of cycles. CFLs with a start time ≤ 100 milliseconds, shall survive cycling once per every two hours of rated life, at 5 minutes on, 5 minutes off.	**Measurement (fluorescent not covered by DOE):** IES LM-65-14 (clauses 4,5,6) **Measurement (fluorescent covered by DOE):** 10 CFR Part 430 Appendix W Subpart B	**Sample Size:** 6 units per model. The samples shall be unique for this test. For dimmable or multi-power lamps, testing shall be conducted at the highest wattage setting listed for the model. The reported value shall be the number of units surviving the minimum number of cycles.

11. ELECTRICAL PERFORMANCE REQUIREMENTS

11.1. Electrical Safety: All Lamps

Lamp Type	ENERGY STAR Requirements	Methods of Measurement and/or Reference Documents	Supplemental Testing Guidance
All Lamps	Lamp shall comply with ANSI/UL 1993-2012 and ANSI/UL 8750-2009 as applicable.	**Reference:** ANSI/UL 1993-2012 ANSI/UL 8750-2009	Connected products must continue to comply with the applicable product safety standards – the addition of the functionality described in Section 12.7 Connected Product Criteria shall not override existing safety protections and functions.

11.2. Power Factor: All Lamps
(Exemption: Lamps ≤ 5 Watts)

Lamp Type	ENERGY STAR Requirements	Methods of Measurement and/or Reference Documents	Supplemental Testing Guidance
Compact Fluorescent	Reported value for each lamp model shall have a reported value ≥ 0.5.	**Measurement:** ANSI C82.77-10-2014 or U.S. Department of Energy Conservation Test Procedures for Compact Fluorescent Lamps (once final)	**Sample Size:** 10 units per model: 5 units tested base-up and 5 units tested base-down unless the manufacturer restricts specific use or position. If position is restricted, all units shall be tested in restricted position. Tested units, including low voltage lamps, shall be operated at rated voltage. The reported value shall be the average measured values of units tested rounded to the nearest tenth.
Solid-State	Omnidirectional lamps with rated/reported input power ≤ 10 watts shall have a reported value ≥ 0.6. All other lamps shall have a reported value ≥ 0.7.	**Measurement:** ANSI C82.77-10-2014 or U.S. Department of Energy Conservation Test Procedure for Integrated Light-Emitting Diode Lamps (once final)	

11.3. Frequency: All Lamps

Lamp Type	ENERGY STAR Requirements	Methods of Measurement and/or Reference Documents	Supplemental Testing Guidance
Compact Fluorescent	Lamp shall have a frequency within 20 to 33 kHz, or ≥40 kHz.		**Sample Size:** One unit per model. For purposes of third-party certification documentation shall not be reviewed when products are certified or during verification testing.
Solid-State	Lamp light output shall have a frequency ≥ 120 Hz.	**Method of Measurement:** None referenced **Reference Document:** IEEE Std 1789™-2015	**Sample Size:** One unit per model. Light output waveform shall be measured with a photodetector with a rise time of 10 microseconds or less, transimpedance amplifier and oscilloscope. Employed equipment models and method of measurement shall be documented. Temporal response, amplification and filtering characteristics of the system shall be suitably designed to capture the photometric waveform. Digitized photometric waveform data and an image of the relative photometric amplitude waveform shall be recorded. Measured data shall be recorded to a digital file with an interval between each measurement no greater than 0.00005 sec (50 microseconds) corresponding to an equipment measurement rate of no less than 20 kHz, and capture at least 1 second of data. For purposes of third-party certification documentation shall not be reviewed when products are certified or during verification testing.

11.4. Start Time: All Lamps

Lamp Type	ENERGY STAR Requirements	Methods of Measurement and/or Reference Documents	Supplemental Testing Guidance
Non-Connected Lamps	Reported value of time for lamp to remain continuously illuminated shall be within 750 milliseconds of application of electrical power.	**Measurement:** ENERGY STAR Start Time Test **Measurement (fluorescent):** U.S. Department of Energy Conservation Test Procedures for Compact Fluorescent Lamps (once final)	**Sample Size:** 3 units per model. The reported value shall be the average of measured unit values tested, rounded to the nearest millisecond.
Connected Lamps	Reported value of time for lamp to remain continuously illuminated shall be within 1 second of application of electrical power.		

11.5. Run-Up Time: All Compact Fluorescent Lamps (Exemption: LED Lamps)

Lamp Type	ENERGY STAR Requirements	Methods of Measurement and/or Reference Documents	Supplemental Testing Guidance
Compact Fluorescent	Reported value of time for lamp to achieve 80% stabilized light output shall be ≤ 45 seconds.	**Measurement:** ENERGY STAR Run-Up Time Test **Reference Documents:** IES LM-54-12	**Sample Size:** 10 units per model: 5 units tested base-up and 5 units tested base-down unless the manufacturer restricts specific use or position. If position is restricted, all units shall be tested in restricted position. Measurements shall be taken at the end of 100 hours of seasoning. The reported value shall be the average measured values of units tested, rounded to the nearest second.

11.6. Transient Protection: All Line Voltage Lamps (Exemption: Low Voltage Lamps)

Lamp Type	ENERGY STAR Requirements	Methods of Measurement and/or Reference Documents	Supplemental Testing Guidance
All Line Voltage Lamps	Lamp shall survive 7 strikes of a 100 kHz ring wave, 2.5 kV level. All units shall be fully operational at the completion of testing.	**Measurement:** ANSI/IEEE C62.41.2-2002, Category A Location.	**Sample Size:** 5 units per model. The sample shall be unique for this test.

11.7. Standby Power Consumption: All Lamps

Source Type	ENERGY STAR Requirements	Methods of Measurement and/or Reference Documents	Supplemental Testing Guidance
All Source Types	Lamps without integral controls shall not draw power in the off mode. Exception: Lamps with integral controls (e.g., motion sensors, photosensors, wireless control, standby mode, or connected functionality) shall consume no more than 0.5 watt in standby mode or network mode. Standby power (if applicable) shall be reported for equipment (outside of the lamp) required for connectivity (e.g., gateways, hubs, and network controllers, excluding equipment typically found in the home such as a Wi-Fi router).	IEC 62301 Edition 2.0 2011-01 Household electrical appliances - Measurement of standby power U.S. Department of Energy Conservation Test Procedures for Compact Fluorescent Lamps (once final) U.S. Department of Energy Conservation Test Procedure for Integrated Light-Emitting Diode Lamps (once final)	**Sample Size:** One unit per model. Laboratory test results shall detail off-state power consumption to the tenth of a watt. This applies to lamps that may have wireless controllability but may not meet all connected criteria as identified in the specification definition for connected lamp and Section 12.7 Connected Product Criteria. If required for connectivity, the lamp manufacturer shall specify one set of representative equipment (outside of the lamp) for which standby power shall be reported.

12. CONTROLS REQUIREMENTS: LAMPS EMPLOYING ANY CONTROL MECHANISM

12.1. Dimming Performance: All Lamps Marketed as Dimmable

Lamps designed for phase cut dimming operation (alterations to the line voltage to the lamp), shall be tested against all dimming performance requirements with a minimum of 5 dimmers from at least 2 different manufacturers. The lamp manufacturer shall specify and report the dimmers used for testing by the manufacturer name, model number and load ratings including current and wattage. EPA's intent is for the dimmers selected to be varied in electrical construction and to represent a wide range of potential consumer situations. For example, a selection of five dimmers might include at least one dimmer specified for use with energy efficient lighting (such as CFL or LED lamps), one that has pre-set levels, one forward-phase dimmer rated 600W, and one reverse-phase dimmer. As an alternative, a lamp designed to be compliant with NEMA SSL 7A may be tested against all dimming performance requirements with a corresponding NEMA SSL 7A compliant dimmer[5]. Lamp manufacturers of low voltage products shall specify and report the transformer(s) to be used for dimming testing by manufacturer name and model number.

Lamps compatible with a non-phase cut control device (e.g., a dimmer that does not alter the line voltage to the lamp, such as wireless controls), shall be tested with the control device(s) and application(s) specified by the partner against all dimming performance requirements. The lamp packaging and online product marketing materials shall call out the controls that can be used with the lamp. An asterisk or similar mark should appear next to the word "dimmable" and point to a statement similar to "only compatible with..." that indicates which dimmers the lamp is compatible with.

The tested minimum light level on dimmers or controls shall be the minimum light level claimed by the manufacturer (or 20% if no minimum is claimed), and the lamp shall meet audible noise requirements at this level. For purposes of third-party certification, maximum light output, minimum light output, flicker and noise levels shall be reported by the partner to the certification body. Partners may elect to provide the certification body with supporting test data and may request that this data be provided to EPA on their behalf. Review of supporting test data is not required for certification or for verification testing. However, EPA reserves the right to request this documentation at any time.

12.2. Maximum Light Output:

Lamp Type	ENERGY STAR Requirements	Methods of Measurement and/or Reference Documents	Supplemental Testing Guidance
All Lamps Marketed As Dimmable	Lamp light output on the maximum setting of a dimmer/control shall not fall below the lamp's baseline light output when operated without a dimmer by more than 20%. 80% of tested lamp/dimmer combinations must meet the requirement.	**Measurement:** ENERGY STAR Recommended Practice - Light Output on a Dimmer	**Sample Size:** 1 lamp per dimmer. See Section 8 of the Recommended Practice - Light Output on a Dimmer, for reporting information.

12.3. Minimum Light Output:

Lamp Type	ENERGY STAR Requirements	Methods of Measurement and/or Reference Documents	Supplemental Testing Guidance
All Lamps Marketed As Dimmable	Lamp light output on a dimmer/control shall be no more than 20% of the maximum light output of the lamp on each tested dimmer/control. 80% of tested lamp/dimmer combinations must meet the requirement.	**Measurement:** ENERGY STAR Recommended Practice - Light Output on a Dimmer	**Sample Size:** 1 lamp per dimmer. See Section 8 of the Recommended Practice - Light Output on a Dimmer, for reporting information.

[5] The compatibility testing pathway of NEMA SSL 7A is available once the marketing guidelines for matching compliant lamps to compliant dimmer types have been set.

12.4. Flicker:

Lamp Type	ENERGY STAR Requirements	Methods of Measurement and/or Reference Documents	Supplemental Testing Guidance
All Lamps Marketed As Dimmable	Lamp average light output periodic frequency, highest percent flicker, and highest flicker index shall be reported.	**Measurement:** ENERGY STAR Recommended Practice - Light Source Flicker	**Sample Size:** 1 lamp per dimmer. See Section 8 of the Recommended Practice - Light Source Flicker, for reporting information.

12.5. Audible Noise:

Lamp Type	ENERGY STAR Requirements	Methods of Measurement and/or Reference Documents	Supplemental Testing Guidance
All Lamps Marketed as Dimmable	Lamp shall not emit noise above 24 dBA at 1 meter or less. 80% of tested lamp/dimmer combinations must meet the requirement.	**Measurement:** ENERGY STAR Test Method - Noise **Reference:** ISO 7574-4:1985, B.2.1 ANSI S12.55-2012/ISO3745:2012	**Sample Size:** 1 lamp per dimmer. Measurement shall be on a single lamp. See Section 8 of the Test Method – Noise, for reporting information. The baseline sound level may be corrected for in accordance with ISO 7574-4:1985, B.2.1. This allows for testing to be performed in chambers that are not fully anechoic. The reported sound level value shall be the loudest measurement of all lamp/dimmer combinations.

12.6. Products with Connected Functionality – Optional

Source Type	ENERGY STAR Requirements	Methods of Measurement and/or Reference Documents	Supplemental Testing Guidance
All source types	Product must continue to comply with the applicable product safety standards – the addition of the functionality shall not override existing safety protections and functions. Product must comply with Section 11.7 Standby Power Consumption. Power consumption (if applicable) shall be reported for equipment (outside of the lamp) required for connectivity (e.g., gateways, hubs, and network controllers, excluding equipment typically found in the home such as a Wi-Fi router).	**Measurement:** None	Test Requirements: Connected products without color tuning capabilities shall be tested at full power for all applicable requirements. Connected products with color tuning capabilities shall be tested under the conditions specified under Section 5.1. Compliance with connected functionality requirements, in Sections 12.7-12.12, shall be demonstrated through examination of product and/or product documentation. If required for connectivity, the lamp manufacturer shall specify one set of representative equipment (outside of the lamp) for which power consumption shall be reported.

12.7. Connected Product Criteria:

To be recognized as connected, a "connected lamp" shall include elements (hardware and software or firmware) or instructions required to enable communication in response to consumer-authorized energy or performance related commands (e.g., instructions for downloading a mobile application, Bluetooth syncing guidance) and shall meet the requirements in Sections 12.8-12.12. These elements may reside inside or outside of the base lamp. For example, a "base lamp" may connect wirelessly via a home gateway or network controller to a cloud service that implements energy estimation functions.

The specific design and implementation of the connected lamp is at the manufacturer's discretion provided it is interoperable with other devices via open communications protocol and enables economical, consumer-authorized third party access to the functionalities provided for in sections 12.9, 12.10 and 12.11. Capabilities of system controller and connected protocol shall be reported as applicable.

12.8. Open Access

The product shall enable connectivity by one of following means:

1. Open-standards communications from the lamp, or
2. Open-standards communications from an external controller, included with the product or available separately.
3. Where no suitable open standards communications method exists (e.g., an IP interface), an available and documented communication method must be used. In these cases, a manufacturer-specific method to implement the functions in sections 12.9, 12.10, and 12.11 shall be published for use with the product.

To enable interconnection with the product; an interface specification, Application Programming Interface (API) or similar documentation shall be made available to interested parties that enables sections 12.9, 12.10 and 12.11 connected functionality, and includes accuracy, units and measurement or estimation interval for Energy Consumption Reporting.

12.9. Energy Consumption Reporting

The lamp, or the gateway device or cloud service connected to it, shall be capable of interconnecting with consumer authorized entities to communicate data representative of its interval energy consumption. It is recommended that data be reported in watt-hours for intervals of 15 minutes; however, representative data may also be reported in alternate units and intervals as specified in the product manufacturer's interface specification or API. If the lamp does not provide power consumption directly in watts, the manufacturer shall make available a method for estimating power consumption, in watts, from the representative data that is provided by the lamp.

12.10. Operational Status Reporting

At a minimum, the lamp, or the gateway device or cloud service connected to it, shall be capable of providing the following information to energy management systems and other consumer authorized devices, services or applications via a communication link: operational status (e.g., on/off).

12.11. Remote Management

The product shall be capable of receiving and responding to energy management system or other consumer authorized remote requests, via devices, services or applications, similar to hard-wired consumer controllable functions.

12.12. Information to Consumers

If additional devices, services, and/or infrastructure are required to activate the product's connected capabilities, prominent labels, or other forms of consumer notifications shall be displayed at the point of purchase and in the product literature. (e.g., "This product has Z-wave control capability and requires interconnection with a Z-wave controller to enable local lighting control.")

13. LAMP TOXICS REDUCTION

13.1. Lamp Toxics Reduction: All Lamps

Lamp Type	ENERGY STAR Requirements	Method of Compliance
All Lamps	Lamps ≤ 23.0 rated watts shall contain ≤ 2.5 milligrams (mg) mercury per lamp. Lamps > 23.0 rated watts shall contain ≤ 3.0 milligrams (mg) mercury per lamp. When present, lamp shall contain restricted levels of the following materials, where the maximum concentration values allowed by weight in homogeneous materials are: • Lead: 0.1% • Cadmium: 0.01% • Hexavalent chromium: 0.1% • Polybrominated biphenyls (PBB): 0.1% • Polybrominated diphenyl ethers (PBDE): 0.1% Exemptions: 1. Copper alloy containing up to 4% lead by weight 2. Lead in high melting temperature type solders (i.e. lead- based alloys containing 85% by weight or more lead) 3. Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g., piezoelectronic devices, or in a glass or ceramic matrix compound 4. Lead in dielectric ceramic in capacitors 5. Lead in white glasses used for optical applications 6. Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages 7. Lead in glass of cathode ray tubes, electronic components and fluorescent tubes 8. Cadmium and its compounds in electrical contacts 9. Cadmium in color-converting II-IV LEDs (< 10 µg Cd per mm2 of light-emitting area) for use in solid state illumination or display systems 10. Lead as an alloying element in aluminum containing up to 0.4% lead by weight 11. Lead and cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses	For purposes of third-party certification, lamp toxics documentation shall not be reviewed when products are initially certified or during verification testing. Instead manufacturer shall maintain documentation on file to demonstrate that certified products meet these requirements. EPA reserves the right to request this documentation at any time. For the purposes of documenting mercury content, the following test procedure shall be used: IEC 62554 Ed 1.0 Sample Preparation for Measurement of Mercury Level in Fluorescent Lamps (2011-08-19). For materials other than mercury, manufacturer may rely on component suppliers to provide certification or declaration documents to show that homogenous materials used in lamps comply with the requirement. Alternatively, manufacturer may have lamp components tested in accordance with IEC 62321 or other appropriate analytical technique to verify that homogenous materials do not exceed the concentration limits of the six regulated substances. Handheld XRF analyzers/scanners may also be used to verify compliance.

14. DIMENSIONAL REQUIREMENTS

14.1. Lamp Shape Dimensions: All ANSI Standard Lamps and GU-24 base Solid-state Lamps

(Exemption: Non-Standard Lamps)

Lamp Type	ENERGY STAR Requirements	Methods of Measurement and/or Reference Documents	Supplemental Testing Guidance
Omnidirectional ANSI Standard Lamps	Lamp shall comply with ANSI minimum overall length (min OAL), maximum overall length (MOL) and maximum lamp diameter values, where they exist.	**Reference Documents:** ANSI C78.20:2003 ANSI C78.23:1995 (R2003)	**Sample Size:** One unit per model. GU24 base lamps may qualify as an allowable variation of an ANSI standard lamp, and shall meet the min OAL and MOL of the ANSI standard lamp. A +5% tolerance may be applied to the measured maximum overall length (MOL) of an omnidirectional lamp if the lamp fails to meet the requirement without the tolerance.
Directional ANSI Standard Lamps	Lamp shall comply with ANSI minimum overall length (min OAL), maximum overall length (MOL) and maximum lamp diameter values, where they exist.	**Reference Documents:** ANSI C78.21-2011 ANSI C78.50-2014 ANSI C78.79-2014	
Decorative ANSI Standard Lamps	Lamp shall comply with ANSI minimum overall length (min OAL), maximum overall length (MOL) and maximum lamp diameter values, where they exist. Where no ANSI maximum lamp space drawing exists, lamp maximum outside diameter shall be within ±15% of the lamp nominal diameter. Globe lamps should be essentially spherical and have a ratio of the maximum overall diameter to maximum overall length (excluding base/cap length per ANSI C81.61) of greater than 0.80.	**Reference Documents:** ANSI C78.23:1995 (R2003)	

15. LAMP LABELING, PACKAGING & WARRANTY REQUIREMENTS

15.1. Lamp Labeling: All Lamps

Lamp Type	ENERGY STAR Requirement
All Lamps	Each of the following shall be printed on the lamp: • ENERGY STAR partner, lamp manufacturer or brand name • Lamp model or retail SKU number consistent with model number or identifying information in the ENERGY STAR listing of certified models • Lamp nominal correlated color temperature including "Kelvin" or "K"* • Rated wattage in watts (lamps not covered by FTC requirements)* • For lamps not covered by FTC requirements, lamp rated lumen output in lumens or lamp nominal beam angle in degrees for applicable products (i.e., MR, MRX). *The lamp correlated color temperature and wattage may be included in the lamp model number and must use "K" or "W" after each respective number.

15.2. Lamp Packaging: All Lamps except as Noted[6]

Criteria	ENERGY STAR Requirement
General	Packaging and marketing claims shall represent the product consistent with its certification.
Model Number	Lamp packaging shall include model number or retail SKU number consistent with model number or identifying information in the ENERGY STAR listing of certified models.
Controls Compatibility	Lamp packaging exterior shall display on the front panel in ≥ 8 point type an indication of the lamp's dimming capability: "dimmable", "for dimmers", "non-dimmable", "do not use with dimmers" or the like. Dimmable lamp packaging shall indicate that the lamp may not be compatible with all dimmers, and shall reference a website providing regularly updated dimmer compatibility information for the lamp model. Lamps that are dimmable with a limited set of controls, e.g., designed for non-phase cut dimmers, that elect to test and list compatibility with the limited set of controls must list all compatible controls on packaging. Lamps that use the SSL7A compatibility testing must use the labeling guidelines for SSL7A complaint products. See Section 12: Dimming. Packaging for lamps not designed for operation with photosensors, motion sensors or timing devices shall indicate in ≥ 8 point type "not compatible with photosensors", "not compatible with timers", "not compatible with motion sensors", "not compatible with photosensors, motion sensors, or timers", or the like.
Application Exceptions	Lamp packaging exterior shall clearly state specific application restrictions (e.g., totally enclosed luminaires, recessed luminaires, insulated ceiling air-tight (ICAT) recessed downlights, damp locations) that would compromise the performance of the lamp and could result in a lamp's noncompliance with the ENERGY STAR specification performance requirements. All application exceptions that appear on the lamp shall also be listed on the lamp package exterior. (≥ 8 point type and/or bold text is recommended.) LED MR Lamps intended for use on Low-Voltage Circuits: Lamp package must state compatibility with low-voltage transformers. Lamp package and product information sheet must include a caution label indicating the lamp may not be compatible with all low-voltage transformers used in existing light fixtures and identifying the Web address (URL) to find up-to-date low-voltage transformer compatibility and appropriate use information. A voltage waveform (AC or DC) for which a low voltage MR lamp does not provide the certified performance shall be considered an application exception which shall be detailed on lamp packaging: "Not intended for AC operation." or "Not intended for operation on AC transformers." or "Not for use with AC transformers." or the like, where "DC" may be substituted for "AC", as applicable.
Restricted Position	If lamp is tested in a limited orientation, lamp packaging shall indicate the performance ratings are based on that orientation as applicable (e.g., base up only).
Minimum Starting/Operating Temperature	Lamp packaging shall state the minimum starting or operating ambient temperature and shall state any other conditions required for reliable starting as designated by the partner.
Warranty	Lamp packaging shall include warranty information see Warranty Requirements Section of this specification.
CCT Descriptor	If packaging includes a color descriptor term, EPA recommends the following corresponding nomenclature as outlined below. • 2200K – Amber Light • 2500K – Sunset Light • 2700K – Soft White • 3000K – Warm White • 3500K – Neutral White • 4000/4100K – Cool White • 5000K – Daylight • 6500K – Daylight

[6] Packaging requirements must appear on the exterior of lamp packaging and except for model number and retail SKU number, packaging requirements may not be on the bottom of lamp packaging. The outermost package of bulk packaged (e.g. multi-packs for retail or commercial sales) lamps facing the intended end user shall meet these requirements.

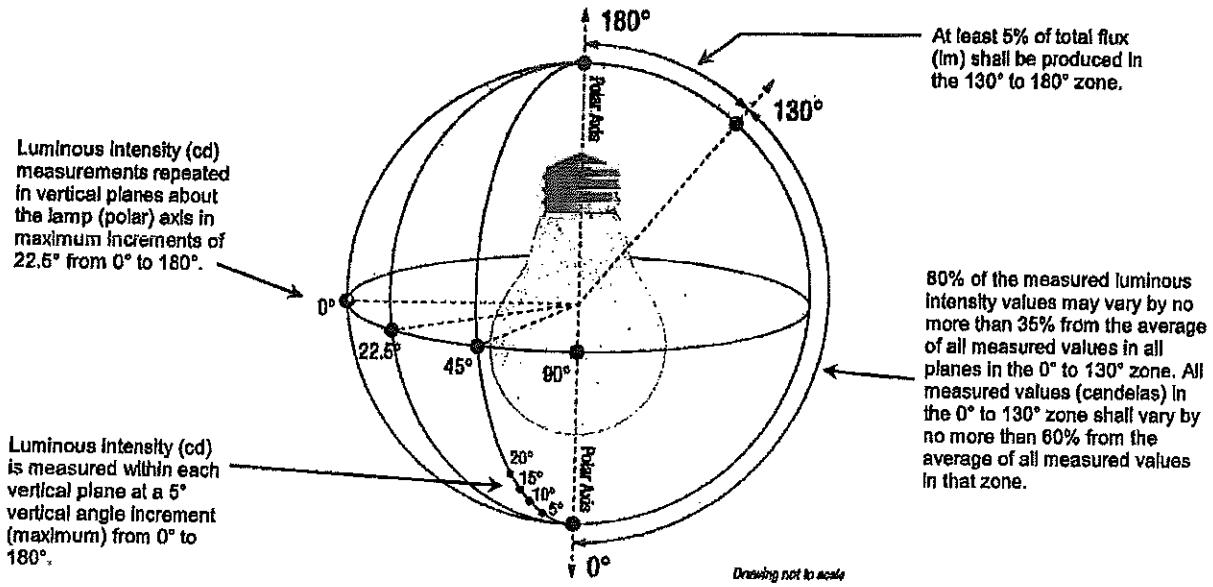
15.3. Warranty: All Lamps

<table>
<tr><th>Criteria</th><th>ENERGY STAR Requirement</th></tr>
<tr><td>Warranty</td><td>Per the table below lamps shall be backed by a minimum warranty corresponding to the lamp life rating and based on continuous operation over the corresponding number of hours per day.
<table>
<tr><th>Lamp Life Rating (Hours)</th><th>Minimum Warranty (Years From Date of Purchase)</th><th>Hours of Use Per Day</th></tr>
<tr><td>< 15,000</td><td>2</td><td>3</td></tr>
<tr><td>≥ 15,000</td><td>3</td><td>3</td></tr>
</table>
Lamp packaging exterior shall state "Warranty" or "Limited Warranty" and the warranty period (in years) per the above table, and provide a phone number or website address for consumer complaint resolution.

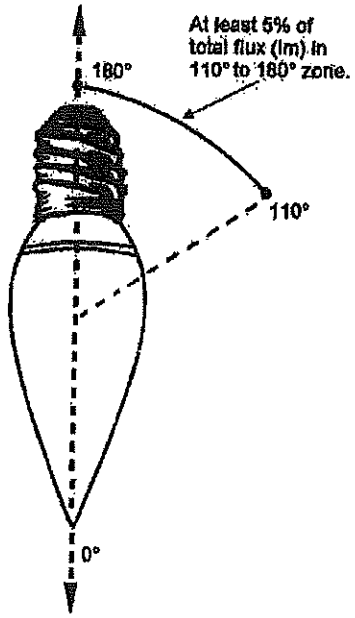
If the complete written warranty is not included within the lamp packaging, it shall be available at a website address provided on the packaging exterior.</td></tr>
</table>

END OF SPECIFICATION

APPENDIX A-1: LUMINOUS INTENSITY DISTRIBUTION DIAGRAM FOR OMNIDIRECTIONAL LAMP



APPENDIX A-2: LUMINOUS INTENSITY DISTRIBUTION DIAGRAM FOR DECORATIVE LAMP



Drawing not to scale

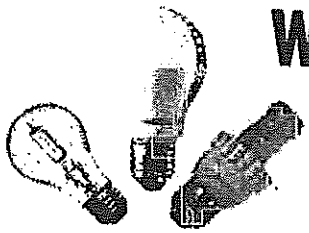
APPENDIX B: CERTIFICATION MILESTONES FOR RATED LIFE TESTING

Example Milestones for Rated Lifetime/Lumen Maintenance			
Lifetime Rating	1st (Early Interim) Certification Milestone[1]	2nd (Interim) Certification Milestone[2]	Full Lifetime Certification
CFL - 10,000 Hrs.	4,000 Hrs. (40% of Life)	-	10,000 Hrs. (100% of Life)[3]
CFL - 12,000 Hrs.	4,800 Hrs. (40% of Life)	-	12,000 Hrs. (100% of Life)[3]
CFL - 15,000 Hrs.	6,000 Hrs. (40% of Life)	-	15,000 Hrs. (100% of Life)[3]
LED - 15,000 Hrs.	3,000 Hrs.	6,000 Hrs.	
LED - 20,000 Hrs.	3,000 Hrs.	6,000 Hrs.	
LED - 25,000 Hrs.	3,000 Hrs.	6,000 Hrs.	
LED - 30,000 Hrs.	-	6,000 Hrs.	7,500 Hrs.
LED - 35,000 Hrs.	-	6,000 Hrs.	8,750 Hrs.
LED - 40,000 Hrs.	-	6,000 Hrs.	10,000 Hrs.
LED - 45,000 Hrs.	-	6,000 Hrs.	11,250 Hrs.
LED - 50,000 Hrs.	-	6,000 Hrs.	12,500 Hrs.

[1] 100% of solid-state lamps and 90% of compact fluorescent must be operational
[2] 100% of solid-state lamps must be operational
[3] 50% of compact fluorescent lamps must be operational

FACT SHEET

NEW LIGHT BULB ENERGY EFFICIENCY STANDARDS WILL SAVE CONSUMERS BILLIONS, REDUCE HARMFUL POLLUTION, AND CREATE JOBS



New energy efficiency standards for light bulbs were part of the Energy Independence and Security Act (EISA) of 2007, which passed Congress on a bipartisan vote with support from the lighting industry. The EISA was signed into law by President George W. Bush, representing the first significant makeover of light bulbs since the days of Thomas Edison. The first tier of standards, phased in between 2012 and 2014, required bulbs to use 25 to 30 percent less energy than old-style incandescent bulbs. A second tier will become effective in 2020, requiring everyday light bulbs—which are called general service lamps (GSLs) in the law—to use about 65 percent less energy than the original incandescent bulbs while delivering the same amount of light.

Once the second tier is fully in effect, the transition to more efficient bulbs will:

- Cut the nation's electricity costs by about $12.5 billion annually, saving every household about $100 a year. A state breakdown of savings is available on Page 2 of http://www.nrdc.org/energy/files/betterbulbs.pdf.
- Avoid the equivalent of 30 new power plants, preventing tens of millions of tons of carbon emissions annually.

WHAT WILL THE NEW STANDARDS DO?

The new standards would ensure that our light bulbs are even more energy efficient. As required by the 2007 law, general service light bulbs must achieve 45 lumens per watt (45 LPW) as of Jan. 1, 2020. (Lumens measure the amount of light a bulb produces and watts measure the power it consumes.) Newly manufactured incandescent bulbs sold in the United States as of that date can use only one-third as much power as the old incandescent; instead of 60 watts, the new bulbs will use 18 watts or less.

As a practical matter, incandescent bulbs will likely be phased out unless a manufacturer can redesign the bulb and bring a qualifying version to the market. Since LED bulbs look and perform the same as incandescents—but last longer and lower energy bills—they will almost certainly become the bulb of choice. More than 1,000 LED models already meet the new standards, but there are no such incandescent bulbs for sale or near commercialization.

WHY ARE THE STANDARDS NEEDED?

Energy efficiency standards have been established for a wide range of products in our homes and businesses, which will save consumers and business owners $63 billion this year. Given the success of these standards, Congress decided in 2007 to require that light bulbs become more efficient through a phased-in process. There are 2 billion or so sockets nationally that still contain an inefficient incandescent or halogen light bulb, illustrating the need for the second tier of efficiency standards. Today's incandescent halogen bulbs, which use four times more power than LED bulbs, represent a large share of the market. But few actions can reduce carbon pollution as cheaply and easily as installing more efficient bulbs. The new standards will set a floor that removes the most inefficient products from the market, helping achieve greater cost savings and emissions reductions.

WHEN WILL THE UPDATED DEFINITIONS AND STANDARDS BE EFFECTIVE?

The new standards are due to go into effect in 2020. In January 2017, DOE published an updated definition for GSLs that details which bulbs will be covered by the regulations and which are exempted. The updated definition was the result of a multi-year process led by DOE that included numerous opportunities for input from manufacturers and other stakeholders. All everyday light bulbs are covered, but speciality bulbs like appliance bulbs for ovens and custom bulbs for projectors are exempted.

For more information, please contact:

nhorowitz@nrdc.org

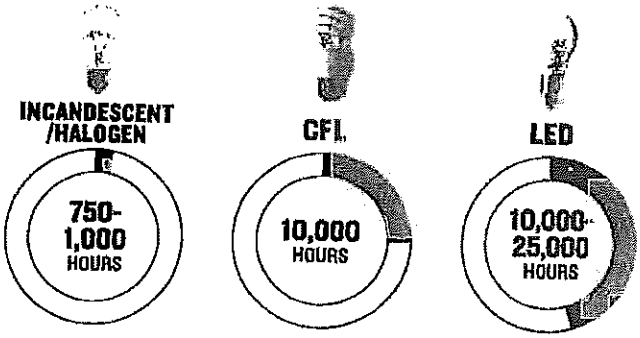
A provision in the law allows California to move up the effective date of the Tier 2 standards to January 1, 2018—two years before the rest of the nation. The European Union established similar regulations phasing out incandescent and halogen lamps in all 28 countries as of July 1, 2018, 18 months ahead of the United States.

DO LED BULBS COST A LOT MORE?

LED bulbs that replace the old 60-watt incandescent bulb cost as little as $2.50 per bulb when purchased in a multi-pack and prices are expected to decrease further as their production increases. While today's incandescent halogen bulbs cost about $1.50 when purchased in a multi-pack, they burn out every year. LED bulbs cost a little more upfront but create big savings after purchase by using four times less energy to deliver the same amount of light and last 10 to 25 times longer. LED bulbs can save consumers $50 to $150 in electricity costs before burning out.

HOW LONG DOES EACH TYPE OF LIGHT BULB LAST?

Most incandescent bulbs—both the old-fashioned and the improved versions—last 750 to 1,000 hours; CFL bulbs, 10,000 hours; and LED bulbs last 10,000 to 25,000 hours. Under typical use of three hours per day, incandescent bulbs last 1 year and LED bulbs stay lit 10 to 25 years.



ARE THE NEW BULBS DIMMABLE?

Most LED bulbs on the market are dimmable, unless stated otherwise on the package.

WILL I BE ABLE TO BUY AN LED FOR EVERY FIXTURE IN MY HOUSE?

Yes, LED bulbs come in every shape and brightness level. These include the everyday pear-shaped bulb similar to old incandescent bulbs, flame-shaped bulbs for chandeliers, reflector lamps for recessed can down lights and track lighting, bulbs for ceiling fans, and three-way lamps.

HOW IS THE LIGHTING QUALITY OF LED BULBS?

Consumers are extremely happy with LED lighting because they are a perfect drop-in replacement for incandescent bulbs as they provide equivalent light, are dimmable, reach full brightness instantly, and last up to 25 times longer. All new light bulb packages list the light output, operating cost, and the type of light produced (indicating whether it is similar to the yellowish white light of an incandescent or a cooler, more bluish white light, which some consumers prefer).

CAN CONSUMERS BUY BULBS THAT MEET THE NEW STANDARDS NOW?

There are more than 1,000 LED models on the market that already meet the Tier 2 standards. They are made by well-known companies like General Electric, Philips, and Sylvania, as well as new companies such as Cree, TCP, and Soraa Lighting. The bulbs are widely available at big box retailers, local hardware stores, and on the Internet.

WHICH LIGHT BULBS CONTAIN MERCURY?

There is no mercury in LED bulbs. CFL bulbs contain extremely low levels of mercury—less than 3 milligrams per bulb—and should be properly recycled.

WHY DO THE LIGHT BULB STANDARDS NEED TO BE ENFORCED?

Some members of Congress are leading an all-out assault on regulation, introducing broad regulatory reform bills that put at risk the tremendous financial gains to consumers, jobs supported through energy efficiency, and U.S. competitiveness.

These threats can take many forms, from measures attached to spending bills that limit the DOE's ability to enforce standards, to authorizing legislation to end energy efficiency standards outright. The perennial spending bill rider sponsored by Representative Michael Burgess (R-Texas) currently restricts the DOE's ability to enforce these lighting energy efficiency standards. However, it has not had an impact on technological progress. The standards have spurred innovation throughout the lighting industry, which invested tens of millions of dollars in research and development and adjusting supply chains to meet the 2012 standards and is gearing up for the 2020 requirements.

Anti-regulatory legislative pursuits can have serious consequences. For example, DOE's inability to enforce the lighting standards leaves the door open for overseas manufacturers to produce inefficient, cheap light bulbs and sell them in the United States, harming American manufacturers and putting U.S. jobs at risk. In addition, many of the benefits of the standards—lower consumer electric bills and avoided power plant pollution—would be reduced. To prevent this, Congress should not renew the rider and should protect the law delivering these dollar savings to consumers.

HOW WILL THE SECOND TIER OF STANDARDS AFFECT U.S. JOBS?

Thousands of U.S. jobs have been created to design, test, and produce the next generation of energy-saving light bulbs. These include Cree's facilities in North Carolina that design and manufacture LED components and bulbs, and Lumileds' plant in California that makes the LEDs that go into light bulbs and car headlights. And even more LED-related jobs are on the way, including a new factory in upstate NY by Soraa, which produces the high-end LED directional lamps favored by retailers. The number of domestic LED jobs dwarfs the few hundred jobs remaining in the United States to produce incandescent and halogen bulbs. (Most incandescent halogen bulbs still sold in America are made in factories in Mexico, China, and Hungary.) There's no reason the improved standards can't lead to even more U.S. jobs.

WV-10
Approved / Revised
09/15/17

State of West Virginia

VENDOR PREFERENCE CERTIFICATE

Certification and application is hereby made for Preference in accordance with ***West Virginia Code***, §5A-3-37. (Does not apply to construction contracts). ***West Virginia Code***, §5A-3-37, provides an opportunity for qualifying vendors to request (at the time of bid) preference for their residency status. Such preference is an evaluation method only and will be applied only to the cost bid in accordance with the ***West Virginia Code***. This certificate for application is to be used to request such preference. The Purchasing Division will make the determination of the Vendor Preference, if applicable.

1. ☒ **Application is made for 2.5% vendor preference for the reason checked:**
Bidder is an individual resident vendor and has resided continuously in West Virginia, or bidder is a partnership, association or corporation resident vendor and has maintained its headquarters or principal place of business continuously in West Virginia, for four (4) years immediately preceding the date of this certification; **or,**

☐ Bidder is a resident vendor partnership, association, or corporation with at least eighty percent of ownership interest of bidder held by another entity that meets the applicable four year residency requirement; **or,**

☐ Bidder is a nonresident vendor which has an affiliate or subsidiary which employs a minimum of one hundred state residents and which has maintained its headquarters or principal place of business within West Virginia continuously for the four (4) years immediately preceding the date of this certification; **or,**

2. ☐ **Application is made for 2.5% vendor preference for the reason checked:**
Bidder is a resident vendor who certifies that, during the life of the contract, on average at least 75% of the employees working on the project being bid are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; **or,**

3. ☐ **Application is made for 2.5% vendor preference for the reason checked:**
Bidder is a nonresident vendor that employs a minimum of one hundred state residents, or a nonresident vendor which has an affiliate or subsidiary which maintains its headquarters or principal place of business within West Virginia and employs a minimum of one hundred state residents, and for purposes of producing or distributing the commodities or completing the project which is the subject of the bidder's bid and continuously over the entire term of the project, on average at least seventy-five percent of the bidder's employees or the bidder's affiliate's or subsidiary's employees are residents of West Virginia who have resided in the state continuously for the two immediately preceding years and the vendor's bid; **or,**

4. ☐ **Application is made for 5% vendor preference for the reason checked:**
Bidder meets either the requirement of both subdivisions (1) and (2) or subdivision (1) and (3) as stated above; **or,**

5. ☐ **Application is made for 3.5% vendor preference who is a veteran for the reason checked:**
Bidder is an individual resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard and has resided in West Virginia continuously for the four years immediately preceding the date on which the bid is submitted; **or,**

6. ☐ **Application is made for 3.5% vendor preference who is a veteran for the reason checked:**
Bidder is a resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard, if, for purposes of producing or distributing the commodities or completing the project which is the subject of the vendor's bid and continuously over the entire term of the project, on average at least seventy-five percent of the vendor's employees are residents of West Virginia who have resided in the state continuously for the two immediately preceding years.

7. ☐ **Application is made for preference as a non-resident small, women- and minority-owned business, in accordance with *West Virginia Code* §5A-3-59 and *West Virginia Code of State Rules*.**
Bidder has been or expects to be approved prior to contract award by the Purchasing Division as a certified small, women- and minority-owned business.

Bidder understands if the Secretary of Revenue determines that a Bidder receiving preference has failed to continue to meet the requirements for such preference, the Secretary may order the Director of Purchasing to: (a) rescind the contract or purchase order; or (b) assess a penalty against such Bidder in an amount not to exceed 5% of the bid amount and that such penalty will be paid to the contracting agency or deducted from any unpaid balance on the contract or purchase order.

By submission of this certificate, Bidder agrees to disclose any reasonably requested information to the Purchasing Division and authorizes the Department of Revenue to disclose to the Director of Purchasing appropriate information verifying that Bidder has paid the required business taxes, provided that such information does not contain the amounts of taxes paid nor any other information deemed by the Tax Commissioner to be confidential.

Bidder hereby certifies that this certificate is true and accurate in all respects; and that if a contract is issued to Bidder and if anything contained within this certificate changes during the term of the contract, Bidder will notify the Purchasing Division in writing immediately.

Bidder: State Electric Supply Co **Signed:** [signature]

Date: 2/28/2018 **Title:** Energy Solutions Manager

**Check any combination of preference consideration(s) indicated above, which you are entitled to receive.*

West Virginia Ethics Commission

Disclosure of Interested Parties to Contracts

Pursuant to *W. Va. Code* § 6D-1-2, a state agency may not enter into a contract, or a series of related contracts, that has/have an actual or estimated value of $100,000 or more until the business entity submits to the contracting state agency a Disclosure of Interested Parties to the applicable contract. In addition, the business entity awarded a contract is obligated to submit a supplemental Disclosure of Interested Parties reflecting any new or differing interested parties to the contract within 30 days following the completion or termination of the applicable contract.

For purposes of complying with these requirements, the following definitions apply:

"Business entity" means any entity recognized by law through which business is conducted, including a sole proprietorship, partnership or corporation.

"Interested party" or *"Interested parties"* means:

(1) A business entity performing work or service pursuant to, or in furtherance of, the applicable contract, including specifically sub-contractors;
(2) the person(s) who have an ownership interest equal to or greater than 25% in the business entity performing work or service pursuant to, or in furtherance of, the applicable contract. (This subdivision does not apply to a publicly traded company); and
(3) the person or business entity, if any, that served as a compensated broker or intermediary to actively facilitate the applicable contract or negotiated the terms of the applicable contract with the state agency. (This subdivision does not apply to persons or business entities performing legal services related to the negotiation or drafting of the applicable contract.)

"State agency" means a board, commission, office, department or other agency in the executive, judicial or legislative branch of state government, including publicly funded institutions of higher education: Provided, that for purposes of W. Va. Code § 6D-1-2, the West Virginia Investment Management Board shall not be deemed a state agency nor subject to the requirements of that provision.

The contracting business entity must complete this form and submit it to the contracting state agency prior to contract award and to complete another form within 30 days of contract completion or termination.

This form was created by the State of West Virginia Ethics Commission, 210 Brooks Street, Suite 300, Charleston, WV 25301-1804. Telephone: (304)558-0664; fax: (304)558-2169; e-mail: ethics@wv.gov; website: www.ethics.wv.gov.

Revised October 7, 2017

West Virginia Ethics Commission

Disclosure of Interested Parties to Contracts

(Required by *W. Va. Code* § 6D-1-2)

Contracting Business Entity: State Electric Supply Co. **Address:** 2010 2nd Ave, Huntington, WV 25703

Authorized Agent: Ryan Ramsby **Address:**

Contract Number: SWVC18000000012 **Contract Description:** Lamps & Ballasts Contract

Governmental agency awarding contract: State of West Virginia

☐ **Check here if this is a Supplemental Disclosure**

List the Names of Interested Parties to the contract which are known or reasonably anticipated by the contracting business entity for each category below *(attach additional pages if necessary)*:

1. **Subcontractors or other entities performing work or service under the Contract**
   ☐ Check here if none, otherwise list entity/individual names below.

2. **Any person or entity who owns 25% or more of contracting entity (not applicable to publicly traded entities)**
   ☐ Check here if none, otherwise list entity/individual names below.

3. **Any person or entity that facilitated, or negotiated the terms of, the applicable contract (excluding legal services related to the negotiation or drafting of the applicable contract)**
   ☐ Check here if none, otherwise list entity/individual names below.

TONDA PEGRAM
Notary Public Official Seal
State of West Virginia
My Comm. Expires Jun 5, 2022
State Electric Supply Co.
PO Box 5397 Huntington WV 25703

Signature: Tonda Pegram Date Signed: 2/28/2018

Notary Verification

State of West Virginia, County of Cabell

I, Ryan Ramsby, the authorized agent of the contracting business entity listed above, being duly sworn, acknowledge that the Disclosure herein is being made under oath and under the penalty of perjury.

Taken, sworn to and subscribed before me this 28th day of February, ____.

Tonda Pegram
Notary Public's Signature

To be completed by State Agency:

Date Received by State Agency:

Date submitted to Ethics Commission:

Governmental agency submitting Disclosure:

Revised October 7, 2017

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

CONSTRUCTION CONTRACTS: Under W. Va. Code § 5-22-1(i), the contracting public entity shall not award a construction contract to any bidder that is known to be in default on any monetary obligation owed to the state or a political subdivision of the state, including, but not limited to, obligations related to payroll taxes, property taxes, sales and use taxes, fire service fees, or other fines or fees.

ALL CONTRACTS: Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

EXCEPTION: The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Employer default" means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

"Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceed five percent of the total contract amount.

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (*W. Va. Code* §61-5-3) that: (1) for construction contracts, the vendor is not in default on any monetary obligation owed to the state or a political subdivision of the state, and (2) for all other contracts, that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

WITNESS THE FOLLOWING SIGNATURE:

Vendor's Name: State Electric Supply Co

Authorized Signature: _____ Date: 2/28/2018

State of West Virginia

County of Cabell, to-wit:

Taken, subscribed, and sworn to before me this 28 day of February, 2018.

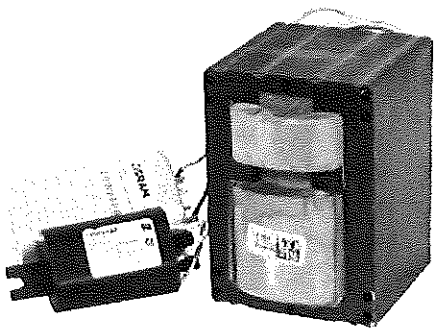
My Commission expires June 05, 2022

AFFIX SEAL HERE

TONDA PEGRAM
Notary Public Official Seal
State of West Virginia
My Comm. Expires Jun 5, 2022
State Electric Supply Co.
PO Box 5397 Huntington WV 25703

NOTARY PUBLIC _____

OR EQUAL SPEC SHEETS



Product Number: 47659

Order Abbreviation: LU1000/SUPER5-KIT

General Description: 120/208/240/277/480V 5-tap magnetic core and coil ballast for 1000W high pressure sodium lamp

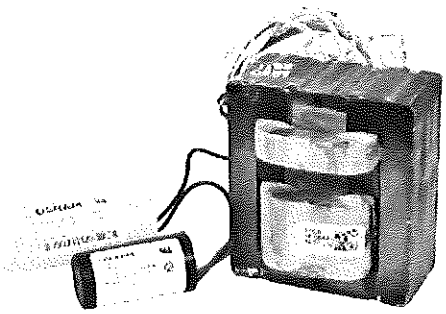
* Full Case Required

Product Information	
Abbrev. With Packaging Info.	LU1000SUPER5KIT 1/CS 1/SKU
ANSI Code	S52
Circuit Type	CWA
Nominal Voltage (V)	120/208/240/277/480V
Number of Lamps	1
Open Circuit Voltage (V)	440
Power Factor	>0.9
Primary Lamp Type	LU1000
Sound Rating	N
Starting Method	PULSE IGNITOR
Starting Temperature - Fahrenheit	-40°F
Starting Temperature - Celsius	-40°C
Total Harmonic Distortion (THD)	<20%
Wiring Method	LEADS
Total Maximum Wattage	1100

New

c UL us

Footnotes
• Product is a kit containing the core & coil, capacitor, ingitor (where required), brackets and mounting hardware • Install in accordance with National Electric Codes • High Voltage Pulse Present on Open Circuit • Ground Ballast Core and Metallic Case of Capacitor and Ignitor • Minimum Starting Temperature: -40F/-40C. • Product contains installation instructions



Product Number: 47634

Order Abbreviation: LU250/SUPER5-KIT

General Description: 120/208/240/277/480V 5-tap magnetic core and coil ballast for 250W high pressure sodium lamp

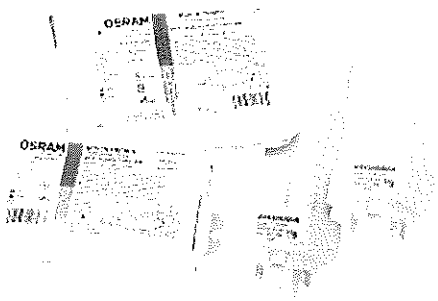
* Full Case Required

Product Information	
Abbrev. With Packaging Info.	LU250SUPER5KIT 1/CS 1/SKU
ANSI Code	S50
Circuit Type	CWA
Nominal Voltage (V)	120/208/240/277/480V
Number of Lamps	1
Open Circuit Voltage (V)	190
Power Factor	>0.9
Primary Lamp Type	LU250
Sound Rating	N
Starting Method	PULSE IGNITOR
Starting Temperature - Fahrenheit	-40°F
Starting Temperature - Celsius	-40°C
Total Harmonic Distortion (THD)	<20%
Wiring Method	LEADS

New

c UL us

Footnotes
• Product is a kit containing the core & coil, capacitor, ingitor (where required), brackets and mounting hardware • Install in accordance with National Electric Codes • High Voltage Pulse Present on Open Circuit • Ground Ballast Core and Metallic Casc of Capacitor and Ignitor • Minimum Starting Temperature: -40F/-40C. • Product contains installation instructions



Product Number: 51843

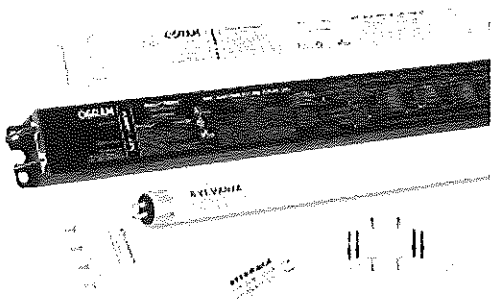
Order Abbreviation: QTP2X26/32/42CF/UNV DM

General Description: Universal voltage programmed rapid start normal ballast factor electronic ballast in metal enclosure dual mount without leads for two 26W, 32W, or 42W CFL lamps.

Product Information	
Abbrev. With Packaging Info.	QTP2X263242CFUNVDM 20/CS 1/SKU
Ballast Factor	1
Ballast Height H (in)	1.3500
Ballast Length L (in)	4.9500
Ballast Width W (in)	2.9300
Circuit Type	SERIES
Family Brand Name	QUICKTRONIC Professional
Input Current (Amps)	0.00
Nominal Voltage (V)	120-277V
Number of Lamps	2
Power Factor	>0.98
Primary Lamp Type	26W DD/E,T/E
Sound Rating	A
Starting Method	PROGRAMMED RAPID START
Starting Temperature - Fahrenheit	-5
Starting Temperature - Celsius	-20
Total Harmonic Distortion (THD)	<10%
Wiring Method	PLUG-IN CONNECTORS
Language Strategy	2

Footnotes

- 70C Max Case Temperature
- 75C Max Case Temperature
- UL Listed Class P, Type 1 Outdoor
- Ground ballast case
- Install in accordance with National Electric Codes
- Complies with FCC 47 CFR Part 18, Non-Consumer
- Class A Sound Rating.
- Input Frequency: 50/60Hz.
- Remote Mounting up to 19 feet (keep red wires short for 1&2 lamp).
- Minimum Starting Temperature: -4F/-20C.
- Remote Mounting up to 19 feet (keep red wires short for 1&2 lamp models).
- ANSI C62.41 cat. B3 Transient Protection.
- Remote mounting - Typically 6ft with suitable ground plane, but varies by model and application. Contact ECS Application Engineering for information on longer applications.



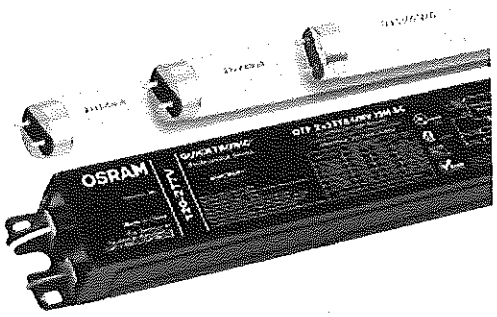
Product Number: 51481

Order Abbreviation: QHE4X54T5HO/347-480 PSN HT SCL

General Description: High efficiency 4 lamp Program Start 347-480V 54W electronic ballast runs 10 per case, runs 4 or 3 lamps

* Full Case Required

Product Information	
Abbrev. With Packaging Info.	QHE4X54T5HO347480PSNHTSCL 10/CS 1/SKU
Ballast Height H (in)	1.8000
Ballast Length L (in)	16.7000
Ballast Width W (in)	1.7000
Input Current (Amps)	0.00
Nominal Voltage (V)	347-480V



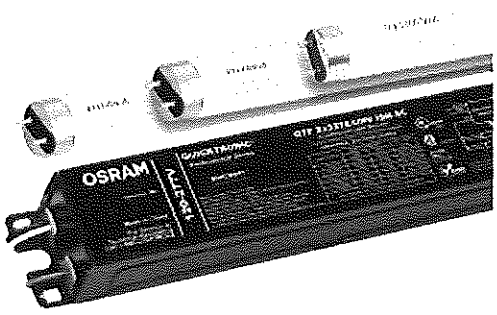
Product Number: 49945

Order Abbreviation: QTP 3x32T8/UNV ISN-SC

General Description: QTP3x32T8UNVISNSC 3-lamp 32wT8 Instant Start electronic ballast, universal voltage, normal ballast factor, 10-pk

Product Information	
Abbrev. With Packaging Info.	QTP3x32T8UNVISNSC 10/CS 1/SKU
Ballast Factor	0.88
Ballast Height H (in)	1.1810
Ballast Length L (in)	9.4690
Ballast Width W (in)	1.6810
Circuit Type	PARALLEL
Family Brand Name	QUICKTRONIC Professional
Input Current (Amps)	0.00
Nominal Voltage (V)	120-277V
Number of Lamps	3
Open Circuit Voltage (V)	<600V
Power Factor	>0.97
Primary Lamp Type	FO32/XP
Sound Rating	A
Starting Method	INSTANT START
Starting Temperature - Fahrenheit	-20
Starting Temperature - Celsius	-29
Total Harmonic Distortion (THD)	<10%
Wiring Method	LEADS
Max Case Temperature	70°C

Footnotes
• Data based on primary lamp types. See LEDVANCE System Performance Guide for data on other lamp combinations. • Remote Mounting up to 18 feet • 70C Max Case Temperature • Complies with FCC 47 CFR Part 18, Non-Consumer • Input Frequency: 50/60Hz. • Minimum starting temperature: -20 F / -29 C



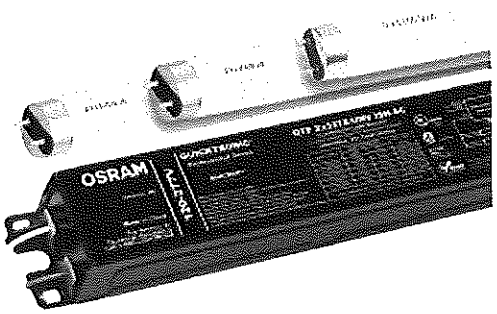
Product Number: 49947

Order Abbreviation: QTP 4x32T8/UNV ISN-SC

General Description: QTP4x32T8UNVISNSC 4-lamp 32wT8 Instant Start electronic ballast, universal voltage, normal ballast factor, 10-pk

Product Information	
Abbrev. With Packaging Info.	QTP4x32T8UNVISNSC 10/CS 1/SKU
Ballast Factor	0.88
Ballast Height H (in)	1.1810
Ballast Length L (in)	9.4690
Ballast Width W (in)	1.6810
Circuit Type	PARALLEL
Family Brand Name	QUICKTRONIC Professional
Input Current (Amps)	0.00
Nominal Voltage (V)	120-277V
Number of Lamps	4
Open Circuit Voltage (V)	<600V
Power Factor	>0.97
Primary Lamp Type	FO32/XP
Sound Rating	A
Starting Method	INSTANT START
Starting Temperature - Fahrenheit	-20
Starting Temperature - Celsius	-29
Total Harmonic Distortion (THD)	<10%
Wiring Method	LEADS
Max Case Temperature	70°C

Footnotes
• Data based on primary lamp types. See LEDVANCE System Performance Guide for data on other lamp combinations. • Remote Mounting up to 18 feet • 70C Max Case Temperature • Complies with FCC 47 CFR Part 18, Non-Consumer • Input Frequency: 50/60Hz. • Minimum starting temperature: -20 F / -29 C



Product Number: 49941

Order Abbreviation: QTP 1x32T8/UNV ISN-SC

General Description: QTP1x32T8UNVISNSC 1-lamp 32wT8 Instant Start electronic ballast, universal voltage, normal ballast factor, 10-pk

Product Information	
Abbrev. With Packaging Info.	QTP1x32T8UNVISNSC 10/CS 1/SKU
Ballast Factor	0.88
Ballast Height H (in)	1.1810
Ballast Length L (in)	9.4690
Ballast Width W (in)	1.6810
Circuit Type	PARALLEL
Family Brand Name	QUICKTRONIC Professional
Input Current (Amps)	0.00
Nominal Voltage (V)	120-277V
Number of Lamps	1
Open Circuit Voltage (V)	<600V
Power Factor	>0.97
Primary Lamp Type	FO32/XP
Sound Rating	A
Starting Method	INSTANT START
Starting Temperature - Fahrenheit	-20
Starting Temperature - Celsius	-29
Total Harmonic Distortion (THD)	<10%
Wiring Method	LEADS
Max Case Temperature	70°C

Footnotes
• Data based on primary lamp types. See LEDVANCE System Performance Guide for data on other lamp combinations. • Remote Mounting up to 18 feet • 70C Max Case Temperature • Complies with FCC 47 CFR Part 18, Non-Consumer • Input Frequency: 50/60Hz. • Minimum starting temperature: -20 F / -29 C

Product Number: 67508

Order Abbreviation: LU150/55/MED

General Description: 150W LUMALUX high pressure sodium HID lamp, E26 based, E17 bulb, universal burn, clear, 2100K

Product Information	
Abbrev. With Packaging Info.	LU15055MED 20/CS 1/SKU
ANSI Code	S55
ANSI Code 2	S55
Approx. Lumens (initial - horizontal)	15800
Approx. Lumens (initial - vertical)	15800
Approx. Lumens (mean - horizontal)	13400
Approx. Lumens (mean - vertical)	13400
Arc Length (in)	1.54
Arc Length (mm)	39
Average Rated Life - Horizontal (hr)	24000
Average Rated Life - (hr)	24000
Avg Rated Life (hrs)	24000+
Base	E26 Medium
Bulb	E17
Color Rendering Index (CRI)	22
Color Temperature/CCT (K)	2100
Diameter (in)	2.126
Diameter (mm)	54.00
Family Brand Name	Lumalux®
Fixture Requirement	O
Hot Restrike Time (min)	1 MIN
Lamp Finish	Clear
Light Center Length - LCL (in)	3.7
Light Center Length - LCL (mm)	93
Maximum Base Temperature - Fahrenheit	410
Maximum Base Temperature - Celsius	210
Maximum Bulb Temperature - Fahrenheit	752
Maximum Bulb Temperature - Celsius	400
Maximum Overall Length - MOL (in)	5.71
Maximum Overall Length - MOL (mm)	138

Nominal Voltage (V)	55.00
Nominal Wattage (W)	150.00
Operating Position	Universal
Warm-up Time (min)	3-4 MINUTES

Footnotes
• Use with 4000V pulse rated sockets only. • 55 Volt lamp. • Mean lumens measured at 50% of average rated life • LU150/100 and LU150/55 lamps are not interchangeable.

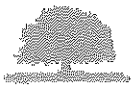
Product Number: 67533

Order Abbreviation: LU400/ECO

General Description: 400W LUMALUX ECOLOGIC high pressure sodium HID lamp, pass Federal TCLP test, E39 based, ET18 bulb, universal burn, clear, 2100K

Product Information	
Abbrev. With Packaging Info.	LU400ECO 20/CS 1/SKU
ANSI Code	S51
ANSI Code 2	S51
Approx. Lumens (initial - horizontal)	50000
Approx. Lumens (initial - vertical)	40300
Approx. Lumens (mean - horizontal)	40300
Approx. Lumens (mean - vertical)	40300
Arc Length (in)	3.19
Arc Length (mm)	81
Average Rated Life - Horizontal (hr)	30000
Average Rated Life - (hr)	30000
Average Rated Life - Vertical (hr)	30000
Avg Rated Life (hrs)	30000+
Base	E39 Mogul
Bulb	ET18
Color Rendering Index (CRI)	22
Color Temperature/CCT (K)	2100
Diameter (in)	2.244
Diameter (mm)	57.00
Family Brand Name	Lumalux® ECO
Fixture Requirement	O
Hot Restrike Time (min)	1 MIN
Lamp Finish	Clear
Light Center Length - LCL (in)	5.75
Light Center Length - LCL (mm)	146
Maximum Base Temperature - Fahrenheit	482
Maximum Base Temperature - Celsius	250
Maximum Bulb Temperature - Fahrenheit	752
Maximum Bulb Temperature - Celsius	400
Maximum Overall Length - MOL (in)	9.75

Maximum Overall Length - MOL (mm)	248
Nominal Voltage (V)	100.00
Nominal Wattage (W)	400.00
Operating Position	Universal
Warm-up Time (min)	3-4 MINUTES



ECOLOGIC

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Footnotes
• Use with 4000V pulse rated sockets only. • Passes Federal TCLP test based on NEMA LL Series Standards. TCLP data available upon request. Disposal regulatioins may vary depending on location. Please check your local and state/provincial regulations. • Mean lumens measured at 50% of average rated life

Product Number: 67512

Order Abbreviation: LU70/ECO

General Description: 70W LUMALUX ECOLOGIC high pressure sodium HID lamp, pass Federal TCLP test, E39 based, ET23.5 bulb, universal burn, clear, 1900K

Product Information	
Abbrev. With Packaging Info.	LU70ECO 20/CS 1/SKU
ANSI Code	S62
ANSI Code 2	S62
Approx. Lumens (initial - horizontal)	6300
Approx. Lumens (initial - vertical)	5500
Approx. Lumens (mean - horizontal)	5500
Approx. Lumens (mean - vertical)	5500
Arc Length (in)	1.09
Arc Length (mm)	27.6
Average Rated Life - Horizontal (hr)	30000
Average Rated Life - (hr)	30000
Avg Rated Life (hrs)	30000+
Base	E39 Mogul
Bulb	ET23.5
Color Rendering Index (CRI)	22
Color Temperature/CCT (K)	1900
Diameter (in)	2.937
Diameter (mm)	74.60
Family Brand Name	Lumalux® ECO
Fixture Requirement	O
Hot Restrike Time (min)	1 MIN
Lamp Finish	Clear
Light Center Length - LCL (in)	5
Light Center Length - LCL (mm)	127
Maximum Base Temperature - Fahrenheit	482
Maximum Base Temperature - Celsius	250
Maximum Bulb Temperature - Fahrenheit	752
Maximum Bulb Temperature - Celsius	400
Maximum Overall Length - MOL (in)	7.75
Maximum Overall Length - MOL (mm)	197

Nominal Voltage (V)	52.00
Nominal Wattage (W)	70.00
Operating Position	Universal
Warm-up Time (min)	3-4 MINUTES

ECOLOGIC

Footnotes
• Use with 4000V pulse rated sockets only. • Passes Federal TCLP test based on NEMA LL Series Standards. TCLP data available upon request. Disposal regulatioins may vary depending on location. Please check your local and state/provincial regulations. • Mean lumens measured at 50% of average rated life

Product Number: 58720

Order Abbreviation: 250Q/CL/DC(ESS) 120V

General Description: Tungsten Halogen Single End SUPER-Q Clear Finish DC Bay 250Watt 120Volt (ESS)

* Full Case Required

Product Information	
Abbrev. With Packaging Info.	250QCLDCESS 120V 12/CS 1/SKU
ANSI Code	ESS
Approx. Lumens	5000
Average Rated Life (hr)	2000
Base	BA15d Double Contact Bayonet
Bulb	T12
Class	C (gas)
Color Rendering Index (CRI)	100
Color Temperature/CCT (K)	2950
Diameter (in)	0.500
Diameter (mm)	12.70
Ecologic	YES
Family Brand Name	SUPER Q®
Filament	CC-8
Lamp Finish	Clear
Light Center Length - LCL (in)	1.625
Light Center Length - LCL (mm)	41.275
Maximum Overall Length - MOL (in)	3.125
Maximum Overall Length - MOL (mm)	79.375
Nominal Voltage (V)	120.00
Nominal Wattage (W)	250.00

Footnotes
• For use where seal temperature does not exceed 650F. • A suitable protective shield, screening technique, or both must be used to protect people and surroundings from the possibility of a lamp shattering and from possible ultraviolet radiation.

Product Number: 13367

Order Abbreviation: 40B13/FAN/BL/2PK 120V

General Description: Incandescent 40W B13 medium base fan lamp 2/SKU 12/Case

* Full Case Required

Product Information	
Abbrev. With Packaging Info.	40B13FANBL2PK 120V 12/CS 2/SKU
Approx. Lumens	455
Average Rated Life (hr)	1500
Base	Medium
Bulb	B13
Class	C (gas)
Diameter (in)	1.614
Diameter (mm)	41.00
Filament	C-9
Lamp Finish	Clear
Maximum Overall Length - MOL (in)	4.625
Maximum Overall Length - MOL (mm)	118
Nominal Voltage (V)	120.00
Nominal Wattage (W)	40.00

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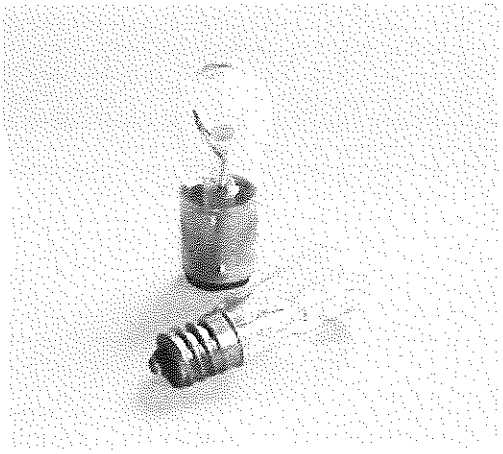


Product Number: 16938

Order Abbreviation: 6S6/CL 130V

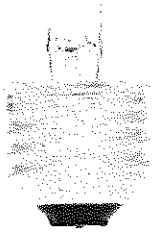
General Description: Incandescent S6 Bulb Shape Indicator Light Clear Finish Candelabra Base 6Watt 130Volt

Product Information	
Abbrev. With Packaging Info.	6S6CL 130V 120/CS 10/SKU
Approx. Lumens	40
Average Rated Life (hr)	1500
Base	Candelabra
Bulb	S6
Class	B (vacuum)
Color Rendering Index (CRI)	100
Color Temperature/CCT (K)	2850
Diameter (in)	0.750
Diameter (mm)	19.05
Filament	C-7A
Lamp Finish	Clear
Light Center Length - LCL (in)	1.438
Light Center Length - LCL (mm)	48
Maximum Overall Length - MOL (in)	1.875
Maximum Overall Length - MOL (mm)	47.625
Nominal Voltage (V)	130.00
Nominal Wattage (W)	6.00

Product Number: 10141

Order Abbreviation: 40A15/2PK/RP 120V

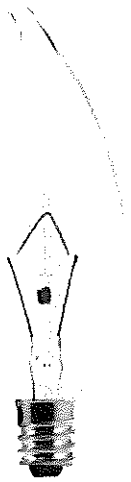
General Description: Incandescent A15 Bulb Shape Appliance Clear Medium Aluminum Base 40Watt 120Volt Retail Pack 24Bulbs Per Case 2Bulbs Per Package



* Full Case Required

Product Information	
Abbrev. With Packaging Info.	40A152PKRP 120V 24/CS 2/SKU
Approx. Lumens	430
Average Rated Life (hr)	1000
Base	Medium
Bulb	A15
Class	C (gas)
Color Rendering Index (CRI)	100
Color Temperature/CCT (K)	2850
Diameter (in)	1.875
Diameter (mm)	47.62
Filament	C-9
Lamp Finish	Clear
Light Center Length - LCL (in)	2.375
Light Center Length - LCL (mm)	60
Maximum Overall Length - MOL (in)	3.500
Maximum Overall Length - MOL (mm)	88.9
Nominal Voltage (V)	120.00
Nominal Wattage (W)	40.00

Footnotes
• Rated for oven use.



Product Number: 13452

Order Abbreviation: 25B10C/BL/2PK 120V

General Description: Incandescent B10 Décor Bulb Shape Clear Finish Candelabra Base 25Watt 120Volt Blister Pack 12Bulbs Per Case 2Bulbs Per Package

* Full Case Required

Product Information	
Abbrev. With Packaging Info.	25B10CBL2PK 120V 12/CS 2/SKU
Average Rated Life (hr)	1500
Base	Candelabra
Bulb	B10
Class	C (gas)
Color Rendering Index (CRI)	100
Color Temperature/CCT (K)	2850
Diameter (in)	1.250
Diameter (mm)	31.75
Filament	C-7A
Lamp Finish	Clear
Maximum Overall Length - MOL (in)	3.875
Maximum Overall Length - MOL (mm)	98.425
Nominal Voltage (V)	120.00
Nominal Wattage (W)	25.00

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Product Number: 13456

Order Abbreviation: 40B10C/BL/2PK 120V

General Description: Incandescent B10 Décor Bulb Shape Clear Finish Candelabra Base 40Watt 120Volt Blister Pack 12Bulbs Per Case 2Bulbs Per Package

* Full Case Required

Product Information	
Abbrev. With Packaging Info.	40B10CBL2PK 120V 12/CS 2/SKU
Average Rated Life (hr)	1500
Base	Candelabra
Bulb	B10
Class	C (gas)
Color Rendering Index (CRI)	100
Color Temperature/CCT (K)	2850
Diameter (in)	1.250
Diameter (mm)	31.75
Filament	C-7A
Lamp Finish	Clear
Maximum Overall Length - MOL (in)	3.875
Maximum Overall Length - MOL (mm)	98.425
Nominal Voltage (V)	120.00
Nominal Wattage (W)	40.00

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Product Number: 74436

Order Abbreviation: LED9A19DIMO827U

General Description: LED A19, 9W, Dimmable, 80CRI, 800 Lumen, 2700K, 15000 life

Product Information	
Life Time (L70)	15000
Operating Temperature (°C)	-20 to 45
Dimming	Yes
Abbrev. With Packaging Info.	LED9A19DIMO827U 6/CS 1/SKU
Average Rated Life (hr)	15000
Base	E26 Medium
Bulb	A19
Family Brand Name	ULTRA
Color Temperature/CCT (K)	2700
Color Rendering Index (CRI)	80
Lumens	800
Approx. Lumens	800
Nominal Voltage (V)	120.00
Nominal Wattage (W)	9.00
Language Strategy	ENGLISH/FRENCH/SPANISH
Ordering Abbreviation	LED9A19DIMO827U
UPC Code	UPC046135744365
Lamp Finish	Frosted

Product Number: 74685

Order Abbreviation: LED12A19DIMO827UB

General Description: LED A19, 12W, Dimmable, 80CRI, 1100 Lumen, 2700K, 15000 life

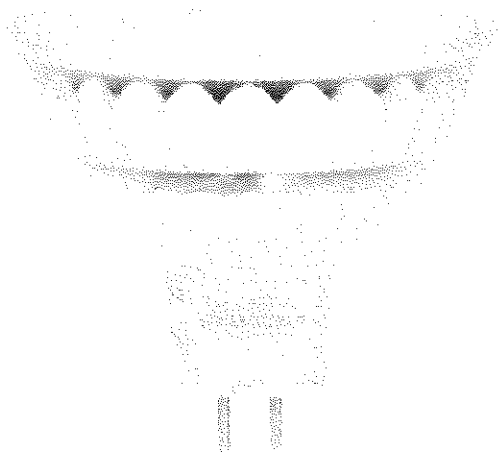
Product Information	
Life Time (L70)	15000
Operating Temperature (°C)	-20 to 45
Dimming	Yes
Abbrev. With Packaging Info.	LED12A19DIMO827UB 6/CS 1/SKU
Average Rated Life (hr)	15000
Base	E26 Medium
Bulb	A19
Family Brand Name	ULTRA
Color Temperature/CCT (K)	2700
Color Rendering Index (CRI)	80
Lumens	1100
Approx. Lumens	1100
Nominal Voltage (V)	120.00
Nominal Wattage (W)	12.00
Language Strategy	ENGLISH/FRENCH/SPANISH
Ordering Abbreviation	LED12A19DIMO827UB
UPC Code	UPC046135746857
Lamp Finish	Frosted

Product Number: 74689

Order Abbreviation: LED16A21DIMO827UB

General Description: LED A21, 16W, Dimmable, 80CRI, 1600 Lumen, 2700K, 15000 life

Product Information	
Life Time (L70)	15000
Operating Temperature (°C)	-20 to 45
Dimming	Yes
Abbrev. With Packaging Info.	LED16A21DIMO827UB 6/CS 1/SKU
Average Rated Life (hr)	15000
Base	E26 Medium
Bulb	A21
Family Brand Name	ULTRA
Color Temperature/CCT (K)	2700
Color Rendering Index (CRI)	80
Lumens	1600
Approx. Lumens	1600
Nominal Voltage (V)	120.00
Nominal Wattage (W)	16.00
Language Strategy	ENGLISH/FRENCH/SPANISH
Ordering Abbreviation	LED16A21DIMO827UB
UPC Code	UPC046135746895
Lamp Finish	Frosted

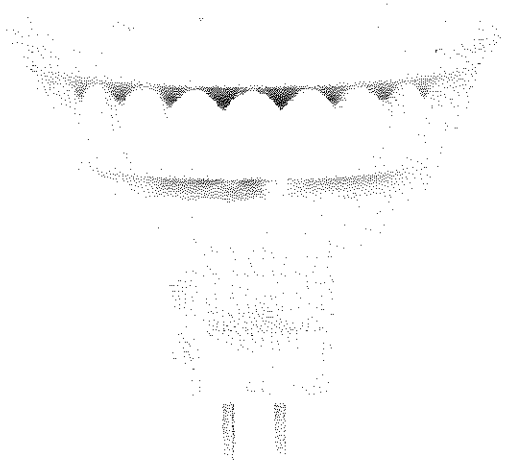


Product Number: 78231

Order Abbreviation: LED5MR16/DIM/827/FL35/GL/RP

General Description: LED MR16, 5W, Dimmable, 81CRI, 350 Lumen, 2700K, 25000 life

Product Information	
Centerbeam Candlepower (cp)	650
Life Time (L70)	25000
Operating Temperature (°C)	-20 to 40
Dimming	Yes
Abbrev. With Packaging Info.	LED5MR16DIM827FL35GLRP 6/CS 1/SKU
Average Rated Life (hr)	25000
Base	GU5.3 Bipin
Bulb	MR16
Family Brand Name	ULTRA
Color Temperature/CCT (K)	2700
Color Rendering Index (CRI)	81
Lumens	350
Approx. Lumens	350
Nominal Voltage (V)	12.00
Nominal Wattage (W)	5.00
Language Strategy	ENGLISH/FRENCH/SPANISH
Ordering Abbreviation	LED5MR16/DIM/827/FL35/GL/RP
UPC Code	UPC046135782312



Product Number: 78232

Order Abbreviation: LED5MR16/DIM/827/NFL25/GL/RP

General Description: LED MR16, 5W, Dimmable, 81CRI, 350 Lumen, 2700K, 25000 life

Product Information	
Centerbeam Candlepower (cp)	975
Life Time (L70)	25000
Operating Temperature (°C)	-20 to 40
Dimming	Yes
Abbrev. With Packaging Info.	LED5MR16DIM827NFL25GLRP 6/CS 1/SKU
Average Rated Life (hr)	25000
Base	GU5.3 Bipin
Bulb	MR16
Family Brand Name	ULTRA
Color Temperature/CCT (K)	2700
Color Rendering Index (CRI)	81
Lumens	350
Approx. Lumens	350
Nominal Voltage (V)	12.00
Nominal Wattage (W)	5.00
Language Strategy	ENGLISH/FRENCH/SPANISH
Ordering Abbreviation	LED5MR16/DIM/827/NFL25/GL/RP
UPC Code	UPC046135782329

Product Number: 79749

Order Abbreviation: LED25T5HO/L48/FG/850/SUB/G6

General Description: 4ft SubstiTUBE LED T5HO, frosted glass, 25W, 82CRI, 3500 Lumen, 5000K, 50000 life

Product Information	
Life Time (L70)	50000
Operating Temperature (°C)	-20 to 50
Dimming	No
Abbrev. With Packaging Info.	LED25T5HOL48FG850SUBG6 10/CS 10/SKU
Average Rated Life (hr)	50000
Base	Miniature Bipin
Bulb	T5
Family Brand Name	SubstiTUBE
Color Temperature/CCT (K)	5000
Color Rendering Index (CRI)	82
Lumens	3500
Approx. Lumens	3500
Nominal Voltage (V)	120.00
Nominal Wattage (W)	25.00
Language Strategy	ENGLISH/FRENCH/SPANISH
Ordering Abbreviation	LED25T5HO/L48/FG/850/SUB/G6
UPC Code	UPC046135797491
Lamp Finish	Frosted

Product Number: 64479

Order Abbreviation: M175/U/MED

General Description: Compact 175W reduced outer jacket, universal burn metal halide lamp, clear

Product Information	
Abbrev. With Packaging Info.	M175UMED 20/CS 1/SKU
ANSI Code	M57/E
ANSI Code 2	M57/E
Approx. Lumens (initial - horizontal)	14400
Approx. Lumens (initial - vertical)	14400
Approx. Lumens (mean - horizontal)	7000
Approx. Lumens (mean - vertical)	7000
Arc Length (in)	1.02
Arc Length (mm)	26
Average Rated Life - Horizontal (hr)	7500
Average Rated Life - (hr)	7500
Average Rated Life - Vertical (hr)	10000
Base	E26 Medium
Bulb	E17
Color Rendering Index (CRI)	65
Color Temperature/CCT (K)	4000
Diameter (in)	2.126
Diameter (mm)	54.00
Family Brand Name	Compact Metalarc®
Fixture Requirement	E
Hot Restrike Time (min)	7-12
Lamp Finish	Clear
Light Center Length - LCL (in)	3.39
Light Center Length - LCL (mm)	86
Maximum Base Temperature - Fahrenheit	410
Maximum Base Temperature - Celsius	210
Maximum Bulb Temperature - Fahrenheit	752
Maximum Bulb Temperature - Celsius	400
Maximum Overall Length - MOL (in)	5.43
Maximum Overall Length - MOL (mm)	138

Nominal Voltage (V)	132.00
Nominal Wattage (W)	175.00
Operating Position	Universal
Warm-up Time (min)	2-4

Footnotes
• E = Lamps classified as E-type are to be used ONLY in suitably enclosed luminaries. See lamp warning.

Product Number: 64036

Order Abbreviation: M400/U/ED37

General Description: 400W METALARC quartz metal halide lamp, E39 base, ED37 bulb, enclosed fixture rated, universal burn, clear, 4000K

Product Information	
Abbrev. With Packaging Info.	M400UED37 6/CS 1/SKU
ANSI Code 2	M59/S
Approx. Lumens (initial - horizontal)	32000
Approx. Lumens (initial - vertical)	36
Approx. Lumens (mean - horizontal)	21
Approx. Lumens (mean - vertical)	24
Arc Length (in)	1.177
Arc Length (mm)	45
Average Rated Life - Horizontal (hr)	15000
Average Rated Life - (hr)	15000
Average Rated Life - Vertical (hr)	20000
Base	E39 Mogul
Bulb	ED37
Color Rendering Index (CRI)	65
Color Temperature/CCT (K)	4000
Diameter (in)	4.606
Diameter (mm)	117
Family Brand Name	Metalarc®
Fixture Requirement	S
Hot Restrike Time (min)	7 - 12
Lamp Finish	Clear
Light Center Length - LCL (in)	5
Light Center Length - LCL (mm)	178
Maximum Base Temperature - Fahrenheit	482
Maximum Base Temperature - Celsius	250
Maximum Bulb Temperature - Fahrenheit	752
Maximum Bulb Temperature - Celsius	400
Maximum Overall Length - MOL (in)	11.5
Maximum Overall Length - MOL (mm)	292
Nominal Voltage (V)	135.00

Nominal Wattage (W)	400.00
Operating Position	Universal
Warm-up Time (min)	2 - 4

Product Number: 64030

Order Abbreviation: M175/U/ED28

General Description: 175W METALARC quartz metal halide lamp, E39 base, ED28 bulb, enclosed fixture rated, universal burn, clear, 4200K

Product Information	
Abbrev. With Packaging Info.	M175UED28 6/CS 1/SKU
ANSI Code	M57/E
ANSI Code 2	M57/E
Approx. Lumens (initial - horizontal)	12800
Approx. Lumens (initial - vertical)	14
Approx. Lumens (mean - horizontal)	9
Approx. Lumens (mean - vertical)	9
Arc Length (in)	1.02
Arc Length (mm)	26
Average Rated Life - Horizontal (hr)	7500
Average Rated Life - (hr)	7500
Average Rated Life - Vertical (hr)	10000
Base	E39 Mogul
Bulb	ED28
Color Rendering Index (CRI)	65
Color Temperature/CCT (K)	4200
Diameter (in)	3.504
Diameter (mm)	89
Family Brand Name	Metalarc®
Fixture Requirement	E
Hot Restrike Time (min)	7 - 12
Lamp Finish	Clear
Light Center Length - LCL (in)	5
Light Center Length - LCL (mm)	127
Maximum Base Temperature - Fahrenheit	482
Maximum Base Temperature - Celsius	250
Maximum Bulb Temperature - Fahrenheit	752
Maximum Bulb Temperature - Celsius	400
Maximum Overall Length - MOL (in)	8.31
Maximum Overall Length - MOL (mm)	211

Nominal Voltage (V)	132.00
Nominal Wattage (W)	175.00
Operating Position	Universal
Warm-up Time (min)	2 - 4

Product Number: 64469

Order Abbreviation: M1000/U/BT37

General Description: 1000W METALARC compact quartz metal halide lamp, reduced outer jacket, E39 base, BT37 bulb, enclosed fixture rated, universal burn, clear, 3800K

Product Information	
Abbrev. With Packaging Info.	M1000UBT37 6/CS 1/SKU
ANSI Code	M47/E
ANSI Code 2	M47/E
Approx. Lumens (initial - horizontal)	100500
Approx. Lumens (initial - vertical)	110000
Approx. Lumens (mean - horizontal)	86000
Approx. Lumens (mean - vertical)	93500
Arc Length (in)	3.58
Arc Length (mm)	91
Average Rated Life - Horizontal (hr)	9000
Average Rated Life - (hr)	9000
Average Rated Life - Vertical (hr)	15000
Base	E39 Mogul
Bulb	BT37
Color Rendering Index (CRI)	65
Color Temperature/CCT (K)	3800
Diameter (in)	4.606
Diameter (mm)	117.00
Family Brand Name	Compact Metalarc®
Fixture Requirement	E
Hot Restrike Time (min)	7-12
Lamp Finish	Clear
Light Center Length - LCL (in)	7
Light Center Length - LCL (mm)	178
Maximum Base Temperature - Fahrenheit	482
Maximum Base Temperature - Celsius	250
Maximum Bulb Temperature - Fahrenheit	806
Maximum Bulb Temperature - Celsius	430
Maximum Overall Length - MOL (in)	11.5
Maximum Overall Length - MOL (mm)	292

Nominal Voltage (V)	263.00
Nominal Wattage (W)	1000.00
Operating Position	Universal
Warm-up Time (min)	2-4

Footnotes
• E = Lamps classified as E-type are to be used ONLY in suitably enclosed luminaries. See lamp warning.

Product Number: 64547

Order Abbreviation: MP70/U/MED

General Description: 70W METALARC PRO-TECH PULSE START quartz metal halide lamp, reduced color shift, MED base, E17 bulb, open fixture rated, universal burn, clear, 3000K

Product Information	
Abbrev. With Packaging Info.	MP70UMED 20/CS 1/SKU
ANSI Code	M98/O
ANSI Code 2	M98/O
Approx. Lumens (initial - horizontal)	5200
Approx. Lumens (initial - vertical)	5200
Approx. Lumens (mean - horizontal)	2750
Approx. Lumens (mean - vertical)	2750
Arc Length (in)	0.37
Arc Length (mm)	9.5
Average Rated Life - Horizontal (hr)	10000
Average Rated Life - (hr)	10000
Average Rated Life - Vertical (hr)	15000
Base	E26 Medium
Bulb	E17
Color Rendering Index (CRI)	75
Color Temperature/CCT (K)	3000
Diameter (in)	2.126
Diameter (mm)	54.00
Family Brand Name	Metalarc Pro-Tech®
Fixture Requirement	O
Hot Restrike Time (min)	5-7
Lamp Finish	Clear
Light Center Length - LCL (in)	3.39
Light Center Length - LCL (mm)	86
Maximum Base Temperature - Fahrenheit	410
Maximum Base Temperature - Celsius	210
Maximum Bulb Temperature - Fahrenheit	752
Maximum Bulb Temperature - Celsius	400
Maximum Overall Length - MOL (in)	5.43
Maximum Overall Length - MOL (mm)	138

Nominal Voltage (V)	85.00
Nominal Wattage (W)	70.00
Operating Position	Universal
Warm-up Time (min)	2-4

Footnotes
• Use with 4000V pulse rated sockets only. • O = Lamps classified as O-type, comply with ANSI standard C78.389 for containment testing and may be used in open luminaries. See lamp warning.

Product Number: 64468

Order Abbreviation: M1000/U

General Description: 1000W METALARC quartz metal halide lamp, E39 base, BT56 bulb, enclosed fixture rated, universal burn, clear, 4000K

Product Information	
Abbrev. With Packaging Info.	M1000U 6/CS 1/SKU
ANSI Code	M47/S
ANSI Code 2	M47/S
Approx. Lumens (initial - horizontal)	107800
Approx. Lumens (initial - vertical)	110000
Approx. Lumens (mean - horizontal)	86000
Approx. Lumens (mean - vertical)	86000
Arc Length (in)	3.58
Arc Length (mm)	91
Average Rated Life - Horizontal (hr)	12000
Average Rated Life - (hr)	12000
Average Rated Life - Vertical (hr)	18000
Base	E39 Mogul
Bulb	BT56
Color Rendering Index (CRI)	65
Color Temperature/CCT (K)	4000
Diameter (in)	7.008
Diameter (mm)	178.00
Family Brand Name	Metalarc®
Fixture Requirement	S
Hot Restrike Time (min)	7-12
Lamp Finish	Clear
Light Center Length - LCL (in)	9.5
Light Center Length - LCL (mm)	241
Maximum Base Temperature - Fahrenheit	482
Maximum Base Temperature - Celsius	250
Maximum Bulb Temperature - Fahrenheit	752
Maximum Bulb Temperature - Celsius	400
Maximum Overall Length - MOL (in)	15.4
Maximum Overall Length - MOL (mm)	391

Nominal Voltage (V)	263.00
Nominal Wattage (W)	1000.00
Operating Position	Universal
Warm-up Time (min)	2-4

Footnotes
• S = When operated within 15 degrees of vertical, this lamp may be operated in an open luminaire provided the installation is not near people or flammable or combustible material, otherwise it must be operated in a suitably enclosed luminaire. See lamp warning.

Product Number: 64032

Order Abbreviation: M250/U/ED28

General Description: 250W METALARC quartz metal halide lamp, E39 base, ED28 bulb, enclosed fixture rated, universal burn, clear, 4200K

Product Information	
Abbrev. With Packaging Info.	M250UED28 6/CS 1/SKU
ANSI Code 2	M58E
Approx. Lumens (initial - horizontal)	20000
Approx. Lumens (initial - vertical)	22
Approx. Lumens (mean - horizontal)	13
Approx. Lumens (mean - vertical)	15
Arc Length (in)	1.35
Arc Length (mm)	35
Average Rated Life - Horizontal (hr)	10000
Average Rated Life - (hr)	10000
Average Rated Life - Vertical (hr)	10000
Base	E39 Mogul
Bulb	ED28
Color Rendering Index (CRI)	65
Color Temperature/CCT (K)	4200
Family Brand Name	Metalarc®
Fixture Requirement	E
Hot Restrike Time (min)	7 - 12
Lamp Finish	Clear
Light Center Length - LCL (in)	5
Light Center Length - LCL (mm)	127
Maximum Base Temperature - Fahrenheit	482
Maximum Base Temperature - Celsius	250
Maximum Bulb Temperature - Fahrenheit	752
Maximum Bulb Temperature - Celsius	400
Maximum Overall Length - MOL (in)	8.31
Maximum Overall Length - MOL (mm)	211
Nominal Wattage (W)	250.00
Operating Position	Universal
Warm-up Time (min)	2 - 4

Product Number: 23116

Order Abbreviation: F30T8/CW

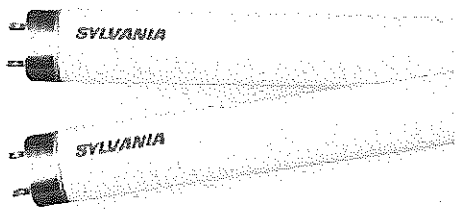
General Description: 30W, T8 preheat fluorescent lamp, Cool White phosphor, 4200K color temperature, 60 CRI. 7500 Avg rated life at 3 hrs/start

* Full Case Required

Product Information	
Abbrev. With Packaging Info.	F30T8CW 24/CS 1/SKU
Actual Length (in)	35.780
Actual Length (mm)	908.81
Average Rated Life (hr)	7500
Base	Medium Bipin
Bulb	T8
Color Rendering Index (CRI)	60
Color Temperature/CCT (K)	4200
Diameter (in)	1.094
Diameter (mm)	27.80
Industry Standards	ANSI C78.81 - 2001
Initial Lumens at 25C	2180
Mean Lumens at 25C	1897
Nominal Length (in)	36.000
Nominal Length (mm)	914.40
Nominal Wattage (W)	30.00

Footnotes

- Approximate initial lumens after 100 hours operation.
- The life ratings of fluorescent lamps are based on 3 hr. operating cycles under specified conditions and with ballast meeting ANSI specifications. If operating cycle is increased, there will be a corresponding increase in the average hours life.
- Minimum starting temperature is a function of the ballast; consult the ballast manufacturer.
- Preheat lamp, starter required.
- Mean lumens are measured at 40% of average rated lamp life.
- The distance between any parts of the lamp and any conductive surface of the luminaire should not be less than 3 mm (applies to all high frequency ballasted systems).
- The lamp should not be in contact with any surface of the luminaire (applies to either high frequency or 60Hz ballasted systems).



Product Number: 21942

Order Abbreviation: FO25/741/ECO

General Description: 25W, 36" MOL, T8 OCTRON fluorescent lamp, 4100K color temperature, rare earth phosphor, 75 CRI, suitable for IS or RS operation, ECOLOGIC

Product Information	
Abbrev. With Packaging Info.	FO25741ECO 30/CS 1/SKU
Actual Length (in)	35.748
Actual Length (mm)	908.00
Average Rated Life (hr)	30000
Base	Medium Bipin
Bulb	T8
Color Rendering Index (CRI)	75
Color Temperature/CCT (K)	4100
Diameter (in)	1.098
Diameter (mm)	27.90
Family Brand Name	Octron® 700, Ecologic
Industry Standards	ANSI C78.81 - 2001
Initial Lumens at 25C	1950
Mean Lumens at 25C	1755
Nominal Length (in)	36.000
Nominal Length (mm)	914.40
Nominal Wattage (W)	25.00
Life at 3 hrs./start on IS ballasts	24000
Life at 12 hrs./start on IS ballasts	28000
Life at 3 hrs./start on PRS ballasts	30000
Life at 12 hrs./start on PRS ballasts	35000

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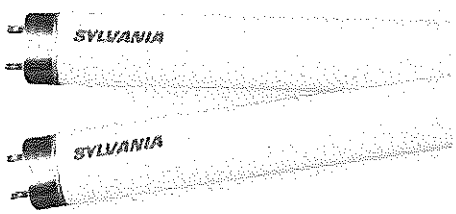
Footnotes

- Approximate initial lumens after 100 hours operation.
- The life ratings of fluorescent lamps are based on 3 hr. operating cycles under specified conditions and with ballast meeting ANSI specifications. If operating cycle is increased, there will be a corresponding increase in the average hours life.
- Minimum starting temperature is a function of the ballast; consult the ballast manufacturer.

- OCTRON lamps should be operated only with magnetic rapid start ballasts designed to operate 265 mA, T-8 lamps or high frequency (electronic) ballasts that are either instant start, or rapid start, or programmed rapid start specifically designed to operate T8 lamps. OCTRON lamps may be operated on instant start or programmed rapid start ballasts with ballast factors ranging from a minimum of 0.71 to a maximum of 1.20 at the nominal ballast input voltage (see ballast specs for details). When OCTRON lamps are operated in the instant start mode, the two contacts (bi-pin lamps) of each rapid start lampholder/socket should be connected to each other or use "shunted" circle I lampholders/sockets for instant start bi-pin lamps. Always disconnect power before servicing installations and wire per the ballast schematics and National Electric Code.
- SYLVANIA ECOLOGIC fluorescent lamps are designed to pass the Federal Toxic Characteristic Leaching Procedure (TCLP) criteria for classification as non-hazardous waste in most states. TCLP test results are available upon request. Lamp disposal regulations may vary, check your local & state regulations. For more information, please visit www.lamprecycle.org
- Mean lumens are measured at 40% of average rated lamp life.
- The distance between any parts of the lamp and any conductive surface of the luminaire should not be less than 3 mm (applies to all high frequency ballasted systems).
- The lamp should not be in contact with any surface of the luminaire (applies to either high frequency or 60Hz ballasted systems).



Product Number: 21770

Order Abbreviation: FO17/741/ECO

General Description: 17W, 24" MOL, T8 OCTRON fluorescent lamp, 4100K color temperature, rare earth phosphor, 75 CRI, suitable for IS or RS operation, ECOLOGIC

Product Information	
Abbrev. With Packaging Info.	FO17741ECO 30/CS 1/SKU
Actual Length (in)	23.780
Actual Length (mm)	604.01
Average Rated Life (hr)	30000
Base	Medium Bipin
Bulb	T8
Color Rendering Index (CRI)	75
Color Temperature/CCT (K)	4100
Diameter (in)	1.098
Diameter (mm)	27.90
Family Brand Name	Octron® 700, Ecologic
Industry Standards	ANSI C78.81 - 2001
Initial Lumens at 25C	1300
Mean Lumens at 25C	1170
Nominal Length (in)	24.000
Nominal Length (mm)	609.60
Nominal Wattage (W)	17.00
Life at 3 hrs./start on IS ballasts	24000
Life at 12 hrs./start on IS ballasts	28000
Life at 3 hrs./start on PRS ballasts	30000
Life at 12 hrs./start on PRS ballasts	35000

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Footnotes

- Approximate initial lumens after 100 hours operation.
- The life ratings of fluorescent lamps are based on 3 hr. operating cycles under specified conditions and with ballast meeting ANSI specifications. If operating cycle is increased, there will be a corresponding increase in the average hours life.
- Minimum starting temperature is a function of the ballast; consult the ballast manufacturer.

- OCTRON lamps should be operated only with magnetic rapid start ballasts designed to operate 265 mA, T-8 lamps or high frequency (electronic) ballasts that are either instant start, or rapid start, or programmed rapid start specifically designed to operate T8 lamps. OCTRON lamps may be operated on instant start or programmed rapid start ballasts with ballast factors ranging from a minimum of 0.71 to a maximum of 1.20 at the nominal ballast input voltage (see ballast specs for details). When OCTRON lamps are operated in the instant start mode, the two contacts (bi-pin lamps) of each rapid start lampholder/socket should be connected to each other or use "shunted" circle I lampholders/sockets for instant start bi-pin lamps. Always disconnect power before servicing installations and wire per the ballast schematics and National Electric Code.
- SYLVANIA ECOLOGIC fluorescent lamps are designed to pass the Federal Toxic Characteristic Leaching Procedure (TCLP) criteria for classification as non-hazardous waste in most states. TCLP test results are available upon request. Lamp disposal regulations may vary, check your local & state regulations. For more information, please visit www.lamprecycle.org
- Mean lumens are measured at 40% of average rated lamp life.
- The distance between any parts of the lamp and any conductive surface of the luminaire should not be less than 3 mm (applies to all high frequency ballasted systems).
- The lamp should not be in contact with any surface of the luminaire (applies to either high frequency or 60Hz ballasted systems).

Base	Medium Bipin
Bulb	T8
Color Rendering Index (CRI)	82
Color Temperature/CCT (K)	3500
Family Brand Name	OCTRON® Curvalume Ecologic®
Initial Lumens at 25C	2850
Nominal Voltage (V)	137.00
Nominal Wattage (W)	32.00

ECOLOGIC

Footnotes

- Approximate initial lumens after 100 hours operation.
- The life ratings of fluorescent lamps are based on 3 hr. operating cycles under specified conditions and with ballast meeting ANSI specifications. If operating cycle is increased, there will be a corresponding increase in the average hours life.
- The life rating of OCTRON Curvalume lamps operated on magnetic rapid start ballasts is 20,000 hours. The life rating of OCTRON Curvalume lamps operated on instant start electronic ballasts is 15,000 hours.
- Minimum starting temperature is a function of the ballast; consult the ballast manufacturer.
- OCTRON lamps should be operated only with magnetic rapid start ballasts designed to operate 265 mA, T-8 lamps or high frequency (electronic) ballasts that are either instant start, or rapid start, or programmed rapid start specifically designed to operate T8 lamps. OCTRON lamps may be operated on instant start or programmed rapid start ballasts with ballast factors ranging from a minimum of 0.71 to a maximum of 1.20 at the nominal ballast input voltage (see ballast specs for details). When OCTRON lamps are operated in the instant start mode, the two contacts (bi-pin lamps) of each rapid start lampholder/socket should be connected to each other or use "shunted" circle I lampholders/sockets for instant start bi-pin lamps. Always disconnect power before servicing installations and wire per the ballast schematics and National Electric Code.
- Approximate length of OCTRON CURVALUME lamps is measured from base face to outside of glass bend.
- SYLVANIA ECOLOGIC fluorescent lamps are designed to pass the Federal Toxic Characteristic Leaching Procedure (TCLP) criteria for classification as non-hazardous waste in most states. TCLP test results are available upon request. Lamp disposal regulations may vary, check your local & state regulations. For more information, please visit www.lamprecycle.org
- Mean lumens are measured at 40% of average rated lamp life.
- The distance between any parts of the lamp and any conductive surface of the luminaire should not be less than 3 mm (applies to all high frequency ballasted systems).

Product Number: 21670

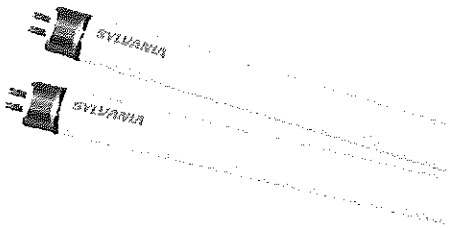
Order Abbreviation: FBO32/835/6/ECO

General Description: 32W, 22.5" MOL, T8 OCTRON Curvalume fluorescent lamp, 6" leg spacing, 3500K color temperature, rare earth phoshor, 82 CRI, suitable for IS or RS operation, ECOLOGIC

* Full Case Required

Product Information	
Abbrev. With Packaging Info.	FBO328356ECO 16/CS 1/SKU
Average Rated Life (hr)	20000

- The lamp should not be in contact with any surface of the luminaire (applies to either high frequency or 60Hz ballasted systems).



Product Number: 20914

Order Abbreviation: FP14/841/ECO

General Description: 14W, T5 PENTRON fluorescent lamp, 4100K color temperature, rare earth phosphor, 85 CRI, ECOLOGIC

Product Information	
Abbrev. With Packaging Info.	FP14841ECO 40/CS 1/SKU
Actual Length (in)	22.173
Actual Length (mm)	563.19
Average Rated Life (hr)	25000
Base	Miniature Bipin
Bulb	T5
Color Temperature/CCT (K)	4100
Diameter (in)	0.669
Diameter (mm)	17.00
Family Brand Name	PENTRON® ECO®
Initial Lumens at 25C	1200
Initial Lumens at 35C	1350
Mean Lumens at 25C	1116
Mean Lumens at 35C	1256
Nominal Length (in)	24.000
Nominal Length (mm)	609.60
Nominal Wattage (W)	14.00

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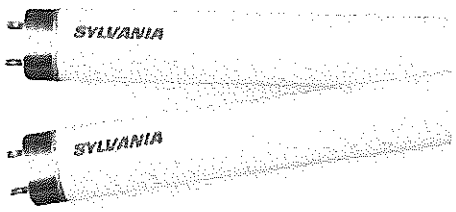
Footnotes

- Approximate initial lumens after 100 hours operation.
- The life ratings of fluorescent lamps are based on 3 hr. operating cycles under specified conditions and with ballast meeting ANSI specifications. If operating cycle is increased, there will be a corresponding increase in the average hours life.
- Lumen output and life rated on high frequency operation.
- Minimum starting temperature is a function of the ballast; consult the ballast manufacturer.
- There is a NEMA supported, industry issue where T2, T4, and T5 fluorescent and compact fluorescent lamps operated on high frequency ballasts may experience an abnormal end-of-life phenomenon. This end-of-life phenomenon can resultin one or both of the following: 1. Bulb wall cracking near the lamp base. 2. The lamp can overheat in the base area and possibly melt the base and socket. NEMA recommends that high frequency compact fluorescent ballasts have an end-of-life shutdown circuit which will safely and reliably shut down the system in the rare event of an abnormal end-of-life failure mode described above.

The final requirements of this system are yet to be defined by ANSI. For additional information refer to NEMA papers on their WEBSITE at www.NEMA.org.

- SYLVANIA ECOLOGIC fluorescent lamps are designed to pass the Federal Toxic Characteristic Leaching Procedure (TCLP) criteria for classification as non-hazardous waste in most states. TCLP test results are available upon request. Lamp disposal regulations may vary, check your local & state regulations. For more information, please visit www.lamprecycle.org
- Mean lumens are measured at 40% of average rated lamp life.
- The distance between any parts of the lamp and any conductive surface of the luminaire should not be less than 3 mm (applies to all high frequency ballasted systems).
- The lamp should not be in contact with any surface of the luminaire (applies to either high frequency or 60Hz ballasted systems).
- Miniature bi-pin bases require UL Listed 600 Volt rated sockets.



Product Number: 21781

Order Abbreviation: FO32/841/ECO

General Description: 32W, 48" MOL, T8 OCTRON fluorescent lamp, 4100K color temperature, rare earth phosphor, 85 CRI, suitable for IS or RS operation, ECOLOGIC

* Full Case Required

Product Information	
Abbrev. With Packaging Info.	FO32841ECO 30/CS 1/SKU
Actual Length (in)	47.780
Actual Length (mm)	1213.61
Average Rated Life (hr)	30000
Base	Medium Bipin
Bulb	T8
Color Rendering Index (CRI)	85
Color Temperature/CCT (K)	4100
Diameter (in)	1.098
Diameter (mm)	27.90
Family Brand Name	OCTRON® 800, ECOLOGIC®
Industry Standards	ANSI C78.81 - 2014
Initial Lumens at 25C	2975
Mean Lumens at 25C	2750
Nominal Length (in)	48.000
Nominal Length (mm)	1219.20
Nominal Wattage (W)	32.00
Outside Diameter (in)	1.098
Outside Diameter (mm)	27.9
Life at 3 hrs./start on IS ballasts	21000
Life at 12 hrs./start on IS ballasts	30000
Life at 3 hrs./start on PRS ballasts	30000
Life at 12 hrs./start on PRS ballasts	36000

Footnotes
• Approximate initial lumens after 100 hours operation.

- The life ratings of fluorescent lamps are based on 3 hr. operating cycles under specified conditions and with ballast meeting ANSI specifications. If operating cycle is increased, there will be a corresponding increase in the average hours life.
- Minimum starting temperature is a function of the ballast; consult the ballast manufacturer.
- OCTRON lamps should be operated only with magnetic rapid start ballasts designed to operate 265 mA, T-8 lamps or high frequency (electronic) ballasts that are either instant start, or rapid start, or programmed rapid start specifically designed to operate T8 lamps. OCTRON lamps may be operated on instant start or programmed rapid start ballasts with ballast factors ranging from a minimum of 0.71 to a maximum of 1.20 at the nominal ballast input voltage (see ballast specs for details). When OCTRON lamps are operated in the instant start mode, the two contacts (bi-pin lamps) of each rapid start lampholder/socket should be connected to each other or use "shunted" circle I lampholders/sockets for instant start bi-pin lamps. Always disconnect power before servicing installations and wire per the ballast schematics and National Electric Code.
- SYLVANIA ECOLOGIC fluorescent lamps are designed to pass the Federal Toxic Characteristic Leaching Procedure (TCLP) criteria for classification as non-hazardous waste in most states. TCLP test results are available upon request. Lamp disposal regulations may vary, check your local & state regulations. For more information, please visit www.lamprecycle.org
- Mean lumens are measured at 40% of average rated lamp life.
- The distance between any parts of the lamp and any conductive surface of the luminaire should not be less than 3 mm (applies to all high frequency ballasted systems).
- The lamp should not be in contact with any surface of the luminaire (applies to either high frequency or 60Hz ballasted systems).

Product Number: 21616

Order Abbreviation: F15T8/CW

General Description: 15W T8 preheat fluorescent lamp, Cool White phosphor, 4200K color temperature, 60 CRI. 7500 Avg rated life at 3 hrs/start

* Full Case Required

Product Information	
Abbrev. With Packaging Info.	F15T8CW 24/CS 1/SKU
Actual Length (in)	17.780
Actual Length (mm)	451.61
Average Rated Life (hr)	7500
Base	Medium Bipin
Bulb	T8
Color Rendering Index (CRI)	60
Color Temperature/CCT (K)	4200
Diameter (in)	1.094
Diameter (mm)	27.80
Industry Standards	ANSI C78.81 - 2001
Initial Lumens at 25C	825
Mean Lumens at 25C	718
Nominal Length (in)	20.000
Nominal Length (mm)	508.00
Nominal Wattage (W)	15.00

Footnotes

- Approximate initial lumens after 100 hours operation.
- The life ratings of fluorescent lamps are based on 3 hr. operating cycles under specified conditions and with ballast meeting ANSI specifications. If operating cycle is increased, there will be a corresponding increase in the average hours life.
- Minimum starting temperature is a function of the ballast; consult the ballast manufacturer.
- Preheat lamp, starter required.
- Mean lumens are measured at 40% of average rated lamp life.
- The distance between any parts of the lamp and any conductive surface of the luminaire should not be less than 3 mm (applies to all high frequency ballasted systems).
- The lamp should not be in contact with any surface of the luminaire (applies to either high frequency or 60Hz ballasted systems).

Product Number: 26377

Order Abbreviation: CF13EL/SPIRAL/865

General Description: T2 13W Compact Fluorescent Full Half Spiral with integral 120V ballast medium screw base; color temperature 6500K 80 CRI; 10,000 life

Product Information	
Abbrev. With Packaging Info.	CF13ELSPIRAL865 6/CS 1/SKU
Average Rated Life (hr)	10000
Base	Medium
Bulb	T2
Color Rendering Index (CRI)	80
Color Temperature/CCT (K)	6500
Initial Lumens at 25C	800
Nominal Voltage (V)	120.00
Nominal Wattage (W)	13.00

Product Number: 20894

Order Abbreviation: CF13DT/E/841/ECO

General Description: DULUX 13W triple compact fluorescent lamp with 4-pin base, 4100K color temperature, 82 CRI, for use with electronic and dimming ballasts, ECOLOGIC

Product Information	
Abbrev. With Packaging Info.	CF13DTE841ECO 50/CS 1/SKU
Average Rated Life (hr)	12000
Base	GX24Q-1
Bulb	T4
Color Rendering Index (CRI)	82
Color Temperature/CCT (K)	4100
Diameter (in)	0.472
Diameter (mm)	12.00
Family Brand Name	Dulux® T/E
Industry Standards	IEC 60901- 3413
Initial Lumens at 25C	900
Mean Lumens at 25C	774
Maximum Overall Length - MOL (in)	4.2
Maximum Overall Length - MOL (mm)	106
NEMA Generic Designation (old)	CFM13W/GX24Q/841
Nominal Voltage (V)	77.00
Nominal Wattage (W)	13.00

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Footnotes

- Minimum starting temperature is a function of the ballast; consult the ballast manufacturer.
- There is a NEMA supported, industry issue where T2, T4, and T5 fluorescent and compact fluorescent lamps operated on high frequency ballasts may experience an abnormal end-of-life phenomenon. This end-of-life phenomenon can resultin one or both of the following: 1. Bulb wall cracking near the lamp base. 2. The lamp can overheat in the base area and possibly melt the base and socket. NEMA recommends that high frequency compact fluorescent ballasts have an end-of-life shutdown circuit which will safely and reliably shut down the system in the rare event of an abnormal end-of-life failure mode described above. The final requirements of this system are yet to be defined by ANSI. For additional information refer to NEMA papers on their WEBSITE at www.NEMA.org.
- Lumen output and life rated on high frequency operation.

- Rule of Thumb for Compact Fluorescent Lamps: Divide wattage of incandescent lamp by 4 to determine approximate wattage of compact fluorescent lamp that will provide similar light output.
- Approximate initial lumens after 100 hours operation.
- The life ratings of fluorescent lamps are based on 3 hr. operating cycles under specified conditions and with ballast meeting ANSI specifications. If operating cycle is increased, there will be a corresponding increase in the average hours life.
- Minimum starting temperature is a function of the ballast; consult the ballast manufacturer.
- SYLVANIA ECOLOGIC fluorescent lamps are designed to pass the Federal Toxic Characteristic Leaching Procedure (TCLP) criteria for classification as non-hazardous waste in most states. TCLP test results are available upon request. Lamp disposal regulations may vary, check your local & state regulations. For more information, please visit www.lamprecycle.org
- Mean lumens are measured at 40% of average rated lamp life.
- The distance between any parts of the lamp and any conductive surface of the luminaire should not be less than 3 mm (applies to all high frequency ballasted systems).
- The lamp should not be in contact with any surface of the luminaire (applies to either high frequency or 60Hz ballasted systems).

Product Number: 21115

Order Abbreviation: CF26DD/841/ECO

General Description: DULUX 26W double compact fluorescent lamp with 2-pin base, 4100K color temperature, 82 CRI, ECOLOGIC for use on magnetic ballast

Product Information	
Abbrev. With Packaging Info.	CF26DD841ECO 50/CS 1/SKU
Average Rated Life (hr)	10000
Base	G24D-3
Bulb	T4X2
Color Rendering Index (CRI)	82
Color Temperature/CCT (K)	4100
Diameter (in)	0.500
Diameter (mm)	12.70
Initial Lumens at 25C	1710
Nominal Voltage (V)	120.00
Nominal Wattage (W)	26.00

Footnotes

- Minimum starting temperature is a function of the ballast; consult the ballast manufacturer.
- 2 pin CF lamps are not suitable for use in frequently cycled applications or with occupancy sensors. 2 pin CF lamps should never be installed in 4 pin sockets regardless if lamp will fit.
- Rule of Thumb for Compact Fluorescent Lamps: Divide wattage of incandescent lamp by 4 to determine approximate wattage of compact fluorescent lamp that will provide similar light output.
- Approximate initial lumens after 100 hours operation.
- The life ratings of fluorescent lamps are based on 3 hr. operating cycles under specified conditions and with ballast meeting ANSI specifications. If operating cycle is increased, there will be a corresponding increase in the average hours life.
- Minimum starting temperature is a function of the ballast; consult the ballast manufacturer.
- SYLVANIA ECOLOGIC fluorescent lamps are designed to pass the Federal Toxic Characteristic Leaching Procedure (TCLP) criteria for classification as non-hazardous waste in most states. TCLP test results are available upon request. Lamp disposal regulations may vary, check your local & state regulations. For more information, please visit www.lamprecycle.org
- Mean lumens are measured at 40% of average rated lamp life.
- The lamp should not be in contact with any surface of the luminaire (applies to either high frequency or 60Hz ballasted systems).

Product Number: 26375

Order Abbreviation: CF13EL/SPIRAL/841

General Description: T2 13W Compact Fluorescent Full Half Spiral with integral 120V ballast medium screw base; color temperature 4100K 80 CRI; 10,000 life

Product Information	
Abbrev. With Packaging Info.	CF13ELSPIRAL841 6/CS 1/SKU
Average Rated Life (hr)	10000
Base	Medium
Bulb	T2
Color Rendering Index (CRI)	80
Color Temperature/CCT (K)	4100
Initial Lumens at 25C	800
Nominal Voltage (V)	120.00
Nominal Wattage (W)	13.00

Product Number: 20885

Order Abbreviation: CF32DT/E/IN/835/ECO

General Description: DULUX 32W triple compact fluorescent amalgam lamp with 4-pin base, 3500K color temperature, 82 CRI, for use with electronic and dimming ballasts, ECOLOGIC

Product Information	
Abbrev. With Packaging Info.	CF32DTEIN835ECO 50/CS 1/SKU
Average Rated Life (hr)	16000
Base	GX24Q-3
Bulb	T4X3
Color Temperature/CCT (K)	3500
Diameter (in)	0.472
Diameter (mm)	12.00
Family Brand Name	Dulux® T/E
Industry Standards	IEC 60901- 7432
Initial Lumens at 25C	2400
Mean Lumens at 25C	2002
Maximum Overall Length - MOL (in)	5.6
Maximum Overall Length - MOL (mm)	142
NEMA Generic Designation (old)	CFM32W/GX24Q/835
Nominal Voltage (V)	120.00
Nominal Wattage (W)	32.00

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Footnotes
• Minimum starting temperature is a function of the ballast; consult the ballast manufacturer. • There is a NEMA supported, industry issue where T2, T4, and T5 fluorescent and compact fluorescent lamps operated on high frequency ballasts may experience an abnormal end-of-life phenomenon. This end-of-life phenomenon can resultin one or both of the following: 1. Bulb wall cracking near the lamp base. 2. The lamp can overheat in the base area and possibly melt the base and socket. NEMA recommends that high frequency compact fluorescent ballasts have an end-of-life shutdown circuit which will safely and reliably shut down the system in the rare event of an abnormal end-of-life failure mode described above. The final requirements of this system are yet to be defined by ANSI. For additional information refer to NEMA papers on their WEBSITE at www.NEMA.org. • Lumen output and life rated on high frequency operation.

Product Number: 29729

Order Abbreviation: CF23EL/MICRO/827/RP2

General Description: 23W Compact Fluorescent Micro Mini with integral 120V ballast medium screw base color temperature 2700K 82CRI

SYLVANIA

* Full Case Required

Product Information	
Abbrev. With Packaging Info.	CF23ELMICRO827RP2 12/CS 2/SKU
Average Rated Life (hr)	12000
Base	Medium
Bulb	MICROMINI
Color Rendering Index (CRI)	82
Color Temperature/CCT (K)	2700
Diameter (in)	2.047
Diameter (mm)	52.00
Family Brand Name	Dulux® EL
Initial Lumens at 25C	1640
Maximum Overall Length - MOL (in)	4.45
Maximum Overall Length - MOL (mm)	113
Nominal Voltage (V)	120.00
Nominal Wattage (W)	23.00

ECOLOGIC

Footnotes

- Approximate initial lumens after 100 hours operation.
- Minimum starting temperature for DULUX EL lamps is 0° F, unless otherwise specified in product literature. .
- DULUX ELs meet CSA, FCC and UL requirements.
- Caution: DULUX EL units cannot be used on dimming circuits (unless the lamp is labeled dimmable), emergency exit fixtures or lights, electronic timers, photocells, lighted switches or any other switches that do not meet UL20 Sec. 7.6.15. In outdoor applications, use only in enclosed fixtures to avoid exposure to weather. Use only on 120V, 60 Hz circuits. Never disassemble or modify lamp. Install or remove unit from fixture by grasping plastic base. Best performance achieved when operated at 77degrees F (25 degrees C). 40 Watt lamp is designed for base down orientation only
- The life ratings of fluorescent lamps are based on 3 hr. operating cycles under specified conditions and with ballast meeting ANSI specifications. If operating cycle is increased, there will be a corresponding increase in the average hours life.
- Minimum starting temperature for DULUX EL lamps is 0 degrees F

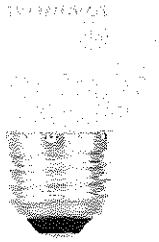
- Rule of Thumb for Compact Fluorescent Lamps: Divide wattage of incandescent lamp by 4 to determine approximate wattage of compact fluorescent lamp that will provide similar light output.
- Optimum light output for DULUX T/E IN amalgam compact fluorescent lamps occurs at approximately 35 deg. C/ 95 deg. F ambient temperature when the lamp is operated in the base up position. The lumen value listed refers to the optimum light output. Non-amalgam compact fluorescent lamps provide atleast 90% light output from 60-100 degrees F in the base up position, the temperature range is narrower for horizontal or base down position.
- Approximate initial lumens after 100 hours operation.
- The life ratings of fluorescent lamps are based on 3 hr. operating cycles under specified conditions and with ballast meeting ANSI specifications. If operating cycle is increased, there will be a corresponding increase in the average hours life.
- Minimum starting temperature is a function of the ballast; consult the ballast manufacturer.
- SYLVANIA ECOLOGIC fluorescent lamps are designed to pass the Federal Toxic Characteristic Leaching Procedure (TCLP) criteria for classification as non-hazardous waste in most states. TCLP test results are available upon request. Lamp disposal regulations may vary, check your local & state regulations. For more information, please visit www.lamprecycle.org
- Mean lumens are measured at 40% of average rated lamp life.
- The distance between any parts of the lamp and any conductive surface of the luminaire should not be less than 3 mm (applies to all high frequency ballasted systems).
- The lamp should not be in contact with any surface of the luminaire (applies to either high frequency or 60Hz ballasted systems).

- Rule of Thumb for Compact Fluorescent Lamps: Divide wattage of incandescent lamp by 4 to determine approximate wattage of compact fluorescent lamp that will provide similar light output.

Product Number: 26358

Order Abbreviation: CF23EL/SPIRAL/841

General Description: T2 23W Compact Fluorescent Full Half Spiral with integral 120V ballast medium screw base; color temperature 4100K 80 CRI; 10,000 life



Product Information	
Abbrev. With Packaging Info.	CF23ELSPIRAL841 6/CS 1/SKU
Average Rated Life (hr)	10000
Base	Medium
Bulb	T2
Color Rendering Index (CRI)	80
Color Temperature/CCT (K)	4100
Initial Lumens at 25C	1600
Nominal Voltage (V)	120.00
Nominal Wattage (W)	23.00

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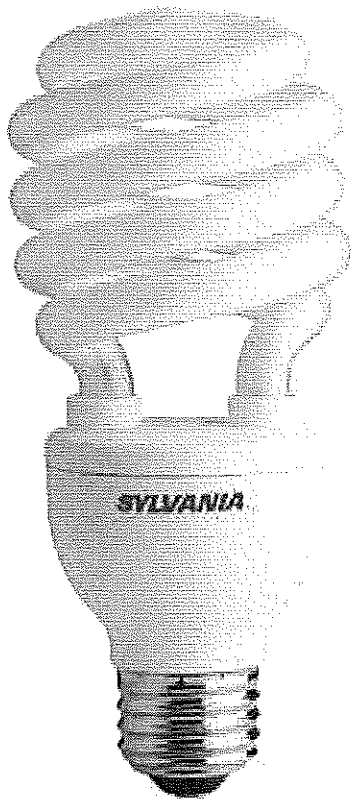

Product Number:	29564
Order Abbreviation:	CF23EL/MINITWIST/4100K
General Description:	Dulux EL 23Wcompact fluorecsent lamp with integral 120V ballast, medium screw base, 4100K color temperature, 82 CRI

Product Information	
Abbrev. With Packaging Info.	CF23ELMINITWIST4100K 6/CS 1/SKU
Average Rated Life (hr)	10000
Base	Medium
Bulb	MINI TWIST
Color Rendering Index (CRI)	82
Color Temperature/CCT (K)	4100
Family Brand Name	Dulux® EL
Initial Lumens at 25C	1600
Mean Lumens at 25C	1160
Nominal Wattage (W)	23.00

Additional Product Information

Product Documents, Graphs, and Images

Packaging Information