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IOWA  
ASSOCIATION OF MUNICIPAL  
UTILITIES

**AMENDED**

**REQUEST FOR PROPOSAL**

**Joint Street Light and Security Light Purchase**

Issuance Date: (April 15 release date)

Response due date: **MAY 1** ~~April 29~~, 2014 by 5:00 p.m. Central Time

**Anne Kimber, P.E., Director of Energy Services**

**(515)-289-1999**

[akimber@iamu.org](mailto:akimber@iamu.org)

**NOTE:** Answers, revisions and deletions are in yellow. Please refer to this amended RFP when preparing a proposal.

**Summary of this Request:**

1. Iowa Municipal Utilities wish to purchase LED roadway luminaires and photocontrols to replace 400, 250, 150 or 100/70 Watt High Pressure Sodium Barn Light or Cobra Head fixtures in order to improve lighting quality, lower the community's energy costs and lower their operation and maintenance costs.
2. The Iowa Association of Municipal Utilities (IAMU) is assisting these utilities through a common Request for Proposal (RFP), whose purpose is to achieve economies of scale through a larger volume of fixtures purchased.
3. The quantities of fixtures listed in Appendix A are solely estimates based on current municipal utility interest. It is IAMU's intent to offer this joint purchase pricing to additional interested municipal utilities that wish to join this joint purchase program later.

**QUESTION: ARE THESE ESTIMATES FIRM?**

**ANSWER:** The estimates are based on a survey of IAMU members and are ONLY estimates.

4. The timeframe for this purchase is estimated at 24 months, however it could be shorter depending on the pricing proposals.

**QUESTION: WILL THE PURCHASES TAKE PLACE IN ONE YEAR?**

**ANSWER:** NO, the purchases will be spread out over more than one utility budget cycle

5. **IAMU role:** Cities will order luminaires and photocontrols by contacting IAMU. IAMU will place orders with successful electrical wholesale distributors or with luminaire manufacturers who wish to establish a direct purchase relationship. The selected vendor(s) will bill IAMU and IAMU will bill the utilities. The Vendor(s) will ship luminaires and photocontrols directly to the utilities when notified by IAMU to do so.

**QUESTION: IF A DISTRIBUTOR BIDS, MUST THE DISTRIBUTOR MAINTAIN A CERTAIN MINIMUM INVENTORY?**

**ANSWER:** NO, a distributor will not be required to maintain a minimum inventory.

6. **Multiple product options:** IAMU will select products and prices from among those offered that meet all requirements of the RFP. Municipal utilities will have the option to choose among these products. The successful respondents will be required to provide at no charge and FOB Destination / Freight Prepaid (1) sample each of the listed fixture and photocontrol type(s) from the manufacturer's standard product inventory within (10) days of notification by IAMU. Sample products are to be identical to those submitted for consideration during bidding and will be retained by IAMU for evaluation by IAMU membership representatives. At the conclusion of the RFP purchase period, the samples will be returned to the manufacturer FOB Origin / Freight Collect.

**QUESTION: WILL MULTIPLE PRODUCTS BE SELECTED?**

**ANSWER:** It is possible that multiple products may be selected.

7. **IAMU Associate Members:** IAMU encourages its Associate Members to respond to this RFP.

**ADDITIONAL QUESTIONS and REVISIONS:**

**QUESTION: CAN PRODUCTS NOT LISTED IN APPENDIX A BE SUBMITTED?**

**ANSWER:** Voluntary alternate products not listed in Appendix A and submitted as part of a bid will not be reviewed and will be considered non-compliant with this Request for Proposal.

**QUESTION: ARE THERE PHOTOMETRIC CRITERIA TO DETERMINE WATTAGE AND LUMEN REQUIREMENTS FOR THE LED- TO- HID EQUIVALENCIES?**

**ANSWER:** Products are to be submitted as listed in Appendix A.

**DELETE:** Item B / Section 2.0 Luminaire Requirements – “Luminaire shall have an external label per ANSI C136.15”.

**DELETE:** Item2 / APPENDIX E Notes – “Provide a separate price add item for an optional 7 pin photocontrol receptacle in full compliance with ANSI C136.41-2013 “For Roadway and Area Lighting Equipment-Dimming Control an External Locking Type Photocontrol and Ballast or Driver”.

**REVISE:** Revise the following product nomenclature from Table 54 : “Cree Lighting - BXSP-A-2-3-G-A-U-S-R” to the following “Cree Lighting - BXSP-A-0-3-G-A-U-S-R”.

**REVISE:** Revise the following product nomenclature from Table 1: “American Electric Lighting - ATB0-60BLEDE10-MVOLT-R3” to the following “American Electric Lighting - ATB2-60BLEDE10-MVOLT-R3”.

**REVISE:** Revise the following product nomenclature from Table 2: “American Electric Lighting - ATB0-40BLEDE10-MVOLT-R3” to the following “American Electric Lighting - ATB2-40BLEDE10-MVOLT-R3”.

**QUESTION:** **ARE YOU ASKING FOR AN IP RATING FOR THE ENTIRE ELECTRONICS COMPARTMENT OR FOR THE COMPONENTS WITHIN THE COMPARTMENT?**

**ANSWER:** See 2.4 A. The luminaire optical chamber and electronics components shall have a minimum rating of IP66 as specified in IEC 60529.

### **1.0 Important Dates and Contact Information**

RFP Publication Date.....April 15, 2014  
Questions due .....April 21, 2014  
Answers to questions.....April 24 5, 2014  
RFP Response due to IAMU .....**MAY 1** April 29, 5 pm, Central Time  
Decisions or awards .....May **8 6**, 2014 5 pm, Central Time

**Note:** IAMU reserves the right to adjust this schedule at its sole discretion

**RFP Questions:** All Responder questions and requests for clarification shall be submitted by FAX or email to:

Name: Anne Kimber  
Title: Director of Energy Services  
Address: Iowa Association of Municipal Utilities  
1735 NE 70<sup>th</sup> Avenue  
Ankeny, Iowa 50021  
Telephone: (515) 289-5213 or cell phone (515) 291-4378  
Fax: (515) 289-2499  
Email: [akimber@iamu.org](mailto:akimber@iamu.org)

**1.1 Submission Procedure:** Proposals must be received by **5 pm Central Time April 29 MAY 1, 2014**. Proposals must be submitted **electronically by email or on a CD**. Emailed proposals should be sent to Anne Kimber at IAMU. Include your firm’s name and the words “IAMU LED Street light proposal” in the subject line.

Product information submittals: You may submit technical information to comply with the appendices before you submit your pricing proposal. **WARNING: If you choose to do this, be sure that the product(s) technical information matches exactly the product(s) for which you’re providing pricing.** Any proposals that are incomplete or deficient as of 5:01 pm Central Time April 29, 2014 will be rejected.

Proposals must contain the signature of a duly authorized officer or agent that is empowered with the right to bind the proposing firm. All qualified Proposals will be evaluated and award(s)

made to respondents whose proposals are deemed to be in the best interest of IAMU members, all factors considered.

IAMU reserves the unqualified right to reject any or all proposals.

The following pages detail the specification for the Luminaires and Photocontrols. Please read the specification carefully as nonconforming proposals will be discarded. Proposals are requested for luminaires, photocontrols and associated warranties, with unit pricing. Luminaires and photocontrols will be ordered over time using release dates. The quantities listed in Appendix A are estimates only based on a 2014 survey of interest of IAMU members.

**1.3 Proposal Documents:** The Proposals must include the following:

1. Respondent contact information
2. Evidence that products comply with State of Iowa Department of Commerce Utilities Statute 17 Exterior Flood Lighting Rules. Products shall meet or exceed efficacy standards of 66 lumens per watt minimum
3. Completed **Appendix E Product Submittal Form for each Luminaire** proposed that shows the luminaire complies with the minimum requirements of this RFP, including the warranty (Section 1.4, E., F. and G.). The second page of Appendix E is the Luminaire Pricing Proposal.
4. Complete **Appendix F Product Submittal Form for each Photocontrol** proposed that shows the photocontrol complies with the minimum requirements of this RFP including warranty. The second page of Appendix F is the Photocontrol Pricing Proposal.
5. An anti-collusion statement (**Appendix G**).

**1.4 IAMU Performance and Quality Assurance Requirements:** Please pay attention to the following criteria, as failure to meet these quality assurances will result in those luminaires being rejected.

- A. For this joint purchase the luminaire shall be determined to be at the end of life when light output is less than or equal to **80%** of the original light output of the luminaire. Please list the lifetime of the unit in **Appendix E** accordingly. This lifetime must be at a minimum 80,000 hours with lumen maintenance testing done in accordance with IES LM-80-08 and projected lumen maintenance L-80 period extrapolated as per IES TM-21-11. The manufacturer selected testing temperature stipulated in IES LM-80-08 and TM-21-11 shall be clearly indicated in the product data sheet submittal. **Note that this is different than the industry standard of L70.** If L70 lifetimes are provided we will estimate a life based on the 80%.
- B. IAMU may request IES LM-80 testing of luminaire sample(s) to verify performance is within manufacturer-reported tolerances. After installation, IAMU may perform field measurements to verify performance requirements.
- C. The successful responder(s) shall provide run-of-manufacture samples of the selected products to IAMU for inspection by IAMU staff and IAMU members. The responder(s) shall provide documentation attesting that the samples have not been altered or specially

prepared in any respect. Refer to the "Summary of this Request" Section Line Item #5 for requirements related to furnishing sample fixtures for IAMU's evaluation and use.

- D. The Luminaires shall meet the state of Iowa's statute 17 which requires a luminaire efficiency of 66 lumens per watt.
- E. **All** manufacturer supplied components of the quoted luminaire shall have an included minimum 5 year full warranty. If the warranty is not a full 5 year warranty on **all** luminaire components in the finished luminaire assembly, the luminaire will be determined to not meet our specifications and will be rejected.
- F. A warranty of 10 years must be available, and any additional cost for this warranty must be listed in **Appendix E, in the Luminaire Pricing Proposal**. The 5 year and 10 year warranties shall cover all luminaire manufacturer supplied components in the finished luminaire assembly. Any LED failure upon initial installation shall be considered failed. Post initial installation, if 10% or more of the LEDs cease to be operational or demonstrate negligible light output within the warranty period, the installation shall be considered failed and eligible for replacement under both the 5 year and 10 year warranties.

## **2.0 Luminaire Requirements**

### **2.1 General Specifications for All Luminaires**

- A. Luminaires shall be as specified for each type in **Appendix A**, and be fully functional self-contained luminaires. Cobrahead retrofits will not be considered.
- ~~B. Luminaire shall have an external label per ANSI C136.15~~
- C. If applicable Luminaire shall have an internal label per ANSI C136.22.
- D. Luminaires shall start and operate in -40°C to +40°C ambient.
- E. Luminaires shall be fully assembled and electrically tested before shipment from factory.
- F. Luminaires shall have a color temperature between 4000 and 5000 degrees Kelvin.
- G. Luminaires shall have tool-less entry, with a hinged door and quick plug electronics.
- H. Mechanical design of protruding external surfaces (heat sink fins) shall facilitate hose-down cleaning and discourage debris accumulation.
- I. LED light source(s) and driver(s) shall be RoHS compliant.
- J. Luminaires shall have a suitable clamp to a pipe that is between 1 5/8" and 2 3/8".
- K. A standard Photocontrol socket is desired
- L. At this time IAMU is not looking to implement adaptive control dimming or remote controls on the fixtures but it is desirable to have that option available should IAMU members decide to pursue it without having to replace the entire fixture. Any additional cost for this should be shown in **Appendix E as part of the Luminaire Pricing Proposal**.

### **2.2 Driver**

- A. Rated case temperature shall be suitable for operation in a luminaire operating in the ambient temperatures indicated in section 2.1.D above.
- B. Shall accept 120v ±10% at 60 Hz, with a minimum power factor of 0.9

- C. The driver shall have the same rated life as the luminaire. If the driver's lifetime is less than that quoted for the luminaire, the driver's lifetime will be used instead, and must at a minimum be rated for 80,000 hours of use.
- D. The driver should be thermally separated from the LED chips.

### **2.3 Exterior Housing**

- A. Painted or finished luminaire components exposed to the environment shall exceed a rating of six per ASTM D1654 after 1,000 hours of testing per ASTM B117.
- B. The coating shall exhibit no greater than 30% reduction of gloss per ASTM D523, after 500 hours of QUV testing at ASTM G154 Cycle 6.
- C. The color of the coating shall be grey or another neutral color.
- D. The housing's electronics compartment should be sealed to prevent moisture and insects from entering.

### **2.4 Testing and Performance Standards**

- A. Electrical safety testing
  - i. Luminaire shall be listed for wet locations by an OSHA NRTL. The luminaire optical chamber and electronics components shall have a minimum rating of IP66 as specified in IEC 60529.
  - ii. Luminaires shall have locality-appropriate governing mark and certification.
- B. Luminaire Lifetime Testing
  - i. All luminaires shall be tested according to LM80, and TM21 protocols. See **Appendices**.
  - ii. It is understood that requesting an end of life at 80% may require extrapolation beyond what LM80 protocols allow. If this is the case, please provide documentation on the actual LM80 testing, and note in the exceptions section of **Appendix E** that further extrapolation was performed to provide the lifetime at 80%.
- C. Electrical immunity and Electromagnetic interference
  - i. Robust surge protection is desired, and should exceed ANSI C62.41 cat. C (10kV,5kA)
  - ii. Total Harmonic Distortion (THD) should not exceed 20% at full input power and across specified voltage range.
  - iii. Shall comply with FCC 47 CFR part 15 non-consumer RFI/EMI standards.
- D. The following Wiring and Grounding shall be in accordance with corresponding sections of ANSI C136.37
  - i. All internal components shall be assembled and pre-wired.
  - ii. Terminal blocks shall be provided for incoming AC lines
  - iii. Quick plug disconnects should be used for any equipment attached to the removable door.
- E. Maintenance
  - i. Any required maintenance required to maintain the warranty should be noted in Appendix E as well as the intervals that maintenance should occur within.

- ii. Any conditions among IAMU members that would not be considered “Normal Use” in regards to warranty shall be noted in **Appendix E**.

### **3.0 Photocontrol Requirements**

#### **3.1 Operation and Performance Requirements**

- A. The unit shall operate from a -40°C to +70°C temperature range
- B. Photocontrols shall have a means of sealing according to ANSI C136.10, Sec. 4.3
- C. Each Photocontrol shall be provided with an internal surge suppression MOV and shall at minimum meet and exceed ANSI **C136.10** at **Category C**. (20kv, 10KA) surge protection

#### **3.2 Electrical Requirements**

- A. The photocontrol shall be rated at 120 VAC @ 60 Hz with power consumption less than or equal to 0.5 watts average
- B. The photocontrol’s failure mode shall be fail on.
- C. The unit shall be individually calibrated to turn-on at 1.5+- 0.3 foot-candles.
- D. The maximum turn-off to turn on ratio shall not exceed 1.5:1
- E. Complete **Appendix F** for each photocontrol proposed

#### **3.3 Construction and Warranty Requirements**

- A. Assembled Photocontrols and each of their individual components shall be designed and constructed to have a nominal life of 20 years.
- B. There shall be a 10 year minimum full non-prorated warranty offered on the Photocontrol, with preference given by IAMU for longer warranties
- C. The plug blades shall be solid brass
- D. The housing shall be made of a long life material with UV inhibitor and antioxidant additives and ideally will come standard in a color other than black.
- E. The housing shall indicate which direction the window should be oriented towards
- F. Circuit board components shall be protected on both sides from the environment with a conformal coating for moisture protection.
- G. Complete **Appendix F** for each photocontrol proposed

### **4.0 RFP Response Required Documents**

**4.1 Luminaire Bid Documents Required.** Each luminaire product should be a separate, stand-alone quote. If a respondent submits products and prices from multiple manufacturers and/or multiple product lines of the same manufacturer, each must be treated as a separate quote. Failure to include any part may cause each quote to be discarded. **Please submit all required documents together as a single PDF document, and in the following order:**

## IAMU Request for Proposals for Replacement Solid State Roadway Lighting

- A. Cover page with Contact information for the person and company submitting the proposal. If the company is a distributor, also provide contact information for the manufacturer and products quoted
- B. A completed **Appendix E** for **each** luminaire quoted.
- C. A photo of the underside of each luminaire , and a photo of the internal electronics compartment.
- D. IES photometric reports for each **Appendix E** product submitted
- E. Written full warranty on all luminaire components on the products submitted
- F. The formal quote as part of **Appendix E LUMINAIRE PRICING PROPOSAL** which includes the itemized unit prices including if applicable the additional costs for the 10 year warranty, desired surge suppression, and future dimming/adaptive control flexibility. Lead times should also be included. Respondents are requested to provide pricing per fixture as follows:
  - a. Pricing per fixture for each luminaire: The pricing should be based, per fixture, on all components needed to install a typical retrofit luminaire, including the luminaire, any wiring harnesses specific to the luminaire, hardware specific to the luminaire, and replacement ballasts. The pricing should not include installation labor, the pole, the pole arm, or bucket truck costs.
  - b. Provide a separate price item for desired surge protection
  - c. Shipping costs per luminaire should be listed separately. Please provide brief explanation on how shipping costs were calculated.
  - d. Pricing is requested for break points (example: price per luminaire for 1-100 fixtures, 101-500 fixtures, greater than 500 fixtures, etc.)
  - e. An add item per luminaire for the additional warranty described in Section 1.4 F.
  - f. Specify period of time for which prices will be effective (for example, respondent could specify that pricing is good for 180 days from selection of respondent).

**4.2 Photocontrol Bid Documents Required.** Each photocontrol product should be a separate, stand-alone quote and must include the following documents. If a respondent submits products and prices from multiple manufacturers and/or multiple product lines of the same manufacturer, each must be treated as a separate quote. Failure to include any part may cause each quote to be discarded. Please submit all required documents together as a single PDF document, and in the following order.

- A. Cover page with Contact information for the person and company submitting the proposal. If the company is a distributor, also provide contact information for the manufacturer and products quoted
- B. A completed **Appendix F** for each photocontrol quoted.
- C. Written full warranty on the photocontrol submitted in the quote.
- D. The formal quote as part of **Appendix F PHOTOCONTROL PRICING PROPOSAL** which includes the itemized unit prices and desired surge suppression. Lead times should also be included.

### **4.3. Respondent's Affidavit Appendix G completed.**

**Appendix A**  
**Material Specification**  
**Replacement Luminaire Types**

<b>TABLE 1: 400 Watt HPS Roadway Fixture Equivalent (estimated quantity= 500) Type III Distribution</b>	
<b>Acceptable Equivalent Product:</b>	<b>Voltage range, Watts</b>
American Electric Lighting - ATB02-60BLEDE10-MVOLT-R3	(120-277V) 216 Watts
Cooper Lighting - NVN-AE-04-E-U-T3-10K-4-U-AP	(120-277V) 213 Watts
Cree Lighting – STR-LWY-3ME-HT-2-F-UL-SV-A-40K-R-SC	(120-277V) 274 Watts
GE Lighting – ESR4-0-TX/EX-5-40-2-GRAY-L-T	(120-277V) 258 Watts
Leotek – EC9-30M-MV-NW-3-GY-700/530-DSC	(120-277V) 198 Watts
Philips - RVM-245W144LED4K-LE3-UNIV-RC-GY3	(120-277V) 235 Watts
Philips Hadco – RX2160-I-3-N-A-5-R-N-A-N	(120-277V) 258 Watts

<b>TABLE 2: 250 Watt HPS Roadway Fixture Equivalent (estimated quantity= 400) Type III Distribution</b>	
<b>Acceptable Equivalent Product:</b>	<b>Voltage range, Watts</b>
American Electric Lighting - ATB02-40BLEDE10-MVOLT-R3	(120-277V) 146 Watts
Cooper Lighting - NVN-AE-02-E-U-T3R-10K-4-U-AP	(120-277V) 107 Watts
Cree Lighting – STR-LWY-3ME-HT-1-F-UL-SV-A-40K-R-SC	(120-277V) 136 Watts
GE Lighting – ESR3-0-KX/EX-5-40-2-GRAY-L-T	(120-277V) 159 Watts
Leotek - EC7-18M-MV-NW-3-GY-700/530-DSC	(120-277V) 126 Watts
Philips - RVM-145W128LED4K-LE3-UNIV-RC-GY3	(120-277V) 137 Watts
Philips Hadco – RX296-I-3-N-A-5-R-N-A-N	(120-277V) 158 Watts

<b>TABLE 3: 150 Watt HPS Roadway Fixture Equivalent (estimated quantity= 2,500) Type III Distribution</b>	
<b>Acceptable Equivalent Product:</b>	<b>Voltage range, Watts</b>
American Electric Lighting - ATB0-30BLEDE10-MVOLT-R3	(120-277V) 108 Watts
Cooper Lighting - XNV2-AC-02-E-U-3-10K-FADC-4-U-AP	(120-277V) 76 Watts
Cree Lighting - BXSP-A-0-3-H-A-U-S-R	(120-277V) 101 Watts
GE Lighting - ESR2-0-GX/EX-5-40-2-GRAY-L-T	(120-277V) 118 Watts
Leotek - EC3-10M-MV-NW-3-GY-700/700-DSC	(120-277V) 87 Watts
Philips - RVS-108W48LED4K-LE3-UNIV-RC-GY3	(120-277V) 105 Watts
Philips Hadco - RX164-I-3-N-A-5-R-N-A-N	(120-277V) 101 Watts

<b>TABLE 4 5: 100/70 Watt HPS Roadway Fixture Equivalent (estimated quantity= 1,500) Type III Distribution</b>	
<b>Acceptable Equivalent Product:</b>	<b>Voltage range, Watts</b>
American Electric Lighting - ATB0-20BLEDE70-MVOLT-R3	(120-277V) 47 Watts
Cooper Lighting - XNV-AC-01-E-U-3-10K-FADC-4-U-AP	(120-277V) 39 Watts
Cree Lighting - <del>BXSP-A-2-3-G-A-U-S-R</del> BXSP-A-0-3-G-A-U-S-R	(120-277V) 53 Watts
GE Lighting - ESR1-0-BX/EX-5-40-2-GRAY-L-T	(120-277V) 54 Watts
Leotek - EC1-6M-MV-NW-3-GY-700/530-DSC	(120-277V) 42 Watts
Philips - RVS-35W32LED4K-LE3-UNIV-RC-GY3	(120-277V) 37 Watts
Philips Hadco - RX132-I-3-N-A-5-R-N-A-N	(120-277V) 54 Watts

<b>TABLE 5 6: PHOTOCNTROLS (estimated quantity= 4,900)</b>	
<b>Acceptable Equivalent Product:</b>	<b>Voltage range, VA</b>
DTL - DLL127-1.5	(120-277V) 1800VA
FP / Sun-Tech - ELL124	(105-305V) 1800VA
Ripley - 6390LL-BK	(105-305V) 1800VA

## **APPENDIX B: ESTIMATING LED LUMEN MAINTENANCE**

IES TM-21 allows for extrapolation of expected lumen maintenance from available test data. The extent of such extrapolation is limited by the duration of testing completed and the number of samples used in the testing. The TM-21 methodology shall be used by the manufacturer to determine lamp lumen depreciation (LLD) at end of lumen maintenance life. The applicant may estimate lumen maintenance in the following way

### **Component Performance**

Under this compliance path, the applicant must submit calculations per TM-21 predicting lumen maintenance at the luminaire level using In Situ Temperature Measurement Testing (ISTMT) and LM-80 data. To be eligible for the Component Performance option, ALL of the conditions below must be met. If ANY of the conditions is not met, the component performance option may not be used and the applicant must use Option 2 for compliance.

1. The LED light source(s) have been tested according to LM-80.
2. The LED drive current specified by the luminaire manufacturer is less than or equal to the drive current specified in the LM-80 test report.
3. The LED light source(s) manufacturer prescribes/indicates a temperature measurement point ( $T_S$ ) on the light source(s).
4. The  $T_S$  is accessible to allow temporary attachment of a thermocouple for measurement of in situ temperature. Access via a temporary hole in the housing, tightly resealed during testing with putty or other flexible sealant is allowable.
5. For the hottest LED light source in the luminaire, the temperature measured at the  $T_S$  during ISTMT is less than or equal to the temperature specified in the LM-80 test report for the corresponding drive current or higher, within the manufacturer's specified operating current range.
  - a. The ISTMT laboratory must be approved by OSHA as a Nationally Recognized Testing Lab (NRTL), must be qualified, verified, and recognized through DOE's CALiPER program, or must be recognized through UL's Data Acceptance Program.
  - b. The ISTMT must be conducted with the luminaire installed in the appropriate application as defined by ANSI/UL 1598 (hardwired luminaires), with bird-fouling appropriately simulated (and documented by photograph) as determined by the manufacturer.

## **APPENDIX C: PRODUCT FAMILY TESTING: LM-79 AND ISTMT**

It is recognized that due to the time and cost required for product testing, it would not be realistic to expect manufacturers offering a multitude of unique luminaire configurations to test every possible configuration. Therefore, the “product families” method may be utilized for LM-79 and ISTMT, whereby manufacturers identify a set of representative products for which test data can be used to demonstrate the accuracy of interpolated or extrapolated performance of product configurations lacking test data. Precedent for this approach can be found in LM-80.

If the particular luminaire configuration submitted has not been tested, the performance may be conservatively represented by test data for another luminaire configuration having:

- The same intensity distribution (typically only applies to LM-79)
- The same or lower nominal CCT
- The same or higher nominal drive current
- The same or greater number of LED light source(s)
- The same or lower percentage driver loading and efficiency
- The same or smaller size luminaire housing.

A more accurate estimate of performance can be obtained by linear interpolation between two or more tests differing in terms of the six parameters listed above. For example, consider a hypothetical luminaire offered in a single size housing, and having the following parameters:

- Three intensity distributions: IES Type II, III, or IV
- Three CCTs: 4000, 5000, and 6000K
- Three drive currents: 350, 525, and 700 mA
- Four LED quantities: 20, 40, 60, or 80 LEDs.

Interpolation between minimal LM-79 and ISTMT data is more difficult if housing size increases with increasing wattage; it may not be clear whether the lowest-wattage configuration would be expected to “run cooler” than the highest-wattage configuration. In these circumstances, the adequacy of submitted data is subject to Owner approval.

At this time, the “successor” method cannot be used; luminaires tested must utilize the LED light source(s) characterized by the submitted LM-80 report.

## APPENDIX D: REFERENCES

The publications listed below form a part of this specification to the extent referenced. Publications are referenced within the text by their basic designation only. Versions listed shall be superseded by updated versions as they become available.

- A. American National Standards Institute (ANSI)
  - i. C136.2-2004 (or latest), American National Standard for Roadway and Area Lighting Equipment—Luminaire Voltage Classification
  - ii. C136.10-2010 (or latest), American National Standard for Roadway and Area Lighting Equipment - Locking-Type Photocontrol Devices and Mating Receptacle Physical and Electrical Interchangeability and Testing
  - iii. C136.15-2011 (or latest), American National Standard for Roadway and Area Lighting Equipment – Luminaire Field Identification
  - iv. C136.22-2004 (R2009 or latest), American National Standard for Roadway and Area Lighting Equipment – Internal Labeling of Luminaires
  - v. C136.25-2009 (or latest), American National Standard for Roadway and Area Lighting Equipment – Ingress Protection (Resistance to Dust, Solid Objects and Moisture) for Luminaire Enclosures
  - vi. C136.31-2010 (or latest), American National Standard for Roadway Lighting Equipment – Luminaire Vibration
  - vii. C136.37-2011 (or latest), American National Standard for Roadway and Area Lighting Equipment - Solid State Light Sources Used in Roadway and Area Lighting
  
- B. American Society for Testing and Materials International (ASTM)
  - i. B117-09 (or latest), Standard Practice for Operating Salt Spray (Fog) Apparatus
  - ii. D1654-08 (or latest), Standard Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments
  - iii. D523-08 (or latest), Standard Test Method for Specular Gloss
  - iv. G154-06 (or latest), Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials
  
- C. Council of the European Union (EC)
  - i. RoHS Directive 2002/95/EC, on the restriction of the use of certain hazardous substances in electrical and electronic equipment
  
- D. Federal Trade Commission (FTC)
  - i. Green Guides, 16 CFR Part 260, Guides for the Use of Environmental Marketing Claims
  
- E. Illuminating Engineering Society of North America (IESNA or IES)
  - i. DG-4-03 (or latest), Design Guide for Roadway Lighting Maintenance
  - ii. HB-10-11 (or latest), IES Lighting Handbook, 10<sup>th</sup> Edition
  - iii. LM-50-99 (or latest), IESNA Guide for Photometric Measurement of Roadway Lighting Installations

IAMU Request for Proposals for Replacement Solid State Roadway Lighting

- iv. LM-61-06 (or latest), IESNA Approved Guide for Identifying Operating Factors Influencing Measured Vs. Predicted Performance for Installed Outdoor High Intensity Discharge (HID) Luminaires
  - v. LM-79-08 (or latest), IESNA Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products
  - vi. LM-80-08 (or latest), IESNA Approved Method for Measuring Lumen Maintenance of LED Light Sources
  - vii. RP-8-00 (or latest), ANSI / IESNA American National Standard Practice for Roadway Lighting
  - viii. RP-16-10 (or latest), ANSI/IES Nomenclature and Definitions for Illuminating Engineering
  - ix. TM-3-95 (or latest), A Discussion of Appendix E - "Classification of Luminaire Lighting Distribution," from ANSI/IESNA RP-8-83
  - x. TM-15-11 (or latest), Luminaire Classification System for Outdoor Luminaires
  - xi. TM-21-11 (or latest), Projecting Long Term Lumen Maintenance of LED Light Sources
- F. Institute of Electrical and Electronics Engineers (IEEE)
- i. IEEE C62.41.2-2002 (or latest), IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and less) AC Power Circuits
  - ii. ANSI/IEEE C62.45-2002 (or latest), IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000 V and Less) AC Power Circuits
- G. National Electrical Manufacturers Association (NEMA)
- i. ANSI/NEMA/ANSI C78.377-2008 (or latest), American National Standard for the Chromaticity of Solid State Lighting Products
- H. National Fire Protection Association (NFPA)
- i. 70 – National Electrical Code (NEC)
- I. Underwriters Laboratories (UL)
- i. 1449 Surge Protective Devices, 1598 Luminaires, 8750 Light Emitting Diode (LED) Equipment for Use in Lighting Products.

**APPENDIX E: LUMINAIRE PRODUCT SUBMITTAL FORM AND PRICING PROPOSAL**

Luminaire Type		Housing finish color	
Manufacturer and Model number			
Optical Pattern		Nominal BUG Ratings	
Tenon nominal pipe size (inches)		Nominal input voltage (V)	
Nominal luminaire weight (lb)		Nominal luminaire EPA (ft <sup>2</sup> )	
Make/model of LED drivers			
State after surge suppression failure	<input type="checkbox"/> on <input type="checkbox"/> off	Retrofit remote control possible?	<input type="checkbox"/> yes <input type="checkbox"/> no
<b>Retrofit</b> Dimmability possible?	<input type="checkbox"/> yes <input type="checkbox"/> no	Quick Disconnects?	<input type="checkbox"/> yes <input type="checkbox"/> no
Reported luminaire life (hr)		Removable Door?	<input type="checkbox"/> yes <input type="checkbox"/> no
Included Warranty period (yr)		Reported Driver Life (hr)	
		Lumen maintenance test duration (hr)	
Constant Lumen output driver available?	<input type="checkbox"/> yes <input type="checkbox"/> no	Luminaire life with constant lumen output driver (hr)	
<b>Parameter</b>	Nominal value	Tolerance (%)	
Initial photopic output (lm)			
Lamp lumen depreciation at 50,000 hrs			
Lamp lumen depreciation at 100,000 hrs			
Initial input power (W)			
Maintained input power (W)			
Surge Protection Level			
CCT (K)			
Required Maintenance and timing over LED's lifetime.	Year	Type of Maintenance	
Lead Time (weeks):			
<b>PRICING:</b>			
Price per luminaire (see notes) (\$/unit)			
Price Add for desired Surge Protection (\$/unit)			
Shipping costs per luminaire (\$/unit)			
Price Add for additional warranty to 10 years (\$/unit)			
Period of time for which pricing is effective (weeks)			
<b>Break point pricing:</b>			
1-100: \$/luminaire			
101-500 \$/luminaire			
>500 \$/luminaire			
Additional pricing discount			

**SEE NEXT PAGE FOR NOTES**

**APPENDIX E Notes:**

Price per fixture for the luminaire is based, per fixture, on all components needed to install a typical retrofit luminaire, including the luminaire, any wiring harnesses specific to the luminaire, hardware specific to the luminaire, and replacement ballasts. The pricing should not include installation labor, the pole, the pole arm, or bucket truck costs.

1. Provide a separate price add item for desired surge protection
- ~~2. Provide a separate price add item for an optional 7 pin photocontrol receptacle in full compliance with ANSI C136.41-2013 "For Roadway and Area Lighting Equipment Dimming Control an External Locking Type Photocontrol and Ballast or Driver".~~
3. Shipping costs per fixture. Please provide brief explanation on how shipping costs were calculated.
4. An add item per luminaire for the additional warranty described in Section 1.4 F.
5. Pricing is requested for break points (example: price per fixture or photocontrol for 1-100 fixtures, 101-500 fixtures, greater than 500 fixtures, etc.)
6. Specify period of time for which prices will be effective (for example, respondent could specify that pricing is good for 180 days from selection of respondent).

**APPENDIX F: PHOTOCONTROL PRODUCT SUBMITTAL AND PRICING PROPOSAL**

Photocontrol Manufacturer			
Manufacturer and Model number			
Operating life (yrs)		Warranty (yrs)	
Power Consumption ave Watts		Rated voltage (V)	
Turn-off to turn-on ratio		Turn-on (ft-c)	
Failure Mode	<input type="checkbox"/> Fail-on	<input type="checkbox"/> Fail-off	Rated Load Watts
		Color	
Internal Surge Suppression level			
Price per unit (\$/photocontrol)			
Lead time (weeks)			
Shipping costs (\$/photocontrol) (with brief explanation)			
Pricing points:			
Period of time for which pricing is in place (days):			
Pricing Break Points: (\$/photocontrol)			
Pricing per photocontrol 1-100			
Pricing per photocontrol 101-500			
Pricing per photocontrol, >500			

**APPENDIX G RESPONDENT'S AFFIDAVIT**

(Return with the Proposal)

Affidavit of non-collusion:

I hereby swear (or affirm) under the penalty for perjury:

(1) That I am the Respondent (if the Responder is an individual), a partner in the Respondent (if the Respondent is a partnership), or an officer or employee of the corporation having authority to sign on its behalf (if the Respondent is a corporation);

(2) The attached Proposal or Proposals have been arrived at by the Respondents independently, and have been submitted without collusion with, and without any agreement, understanding, or planned common course of action with, any other vendor of materials, supplies, equipment or services described in the Request for Proposals designed to limit independent bidding or competition;

(3) The contents of the Proposal or Proposals have not been communicated by the Respondent or its employees or agents to any person not an employee or agent to the Respondent and

(4) That I have fully informed myself regarding the accuracy of the statements made in this affidavit.

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Firm Name: \_\_\_\_\_

Subscribed and sworn to before me  
this day of \_\_\_\_\_, 20\_\_.

\_\_\_\_\_  
(Notary Public)

Printed Name: \_\_\_\_\_

My Commission expires \_\_\_\_\_, 20\_\_

Respondent's E.I. Number  
(Number used on Employer's Quarterly Federal Tax Return,  
U.S. Treasury Department Form 941): \_\_\_\_\_ .