

# Questions to Ask When Specifying an LED Lighting System

QUESTIONS	COOPER LIGHTING RESPONSE
<b>Life Performance</b>	
What is the predicted lumen maintenance performance for the LED system per IESNA's LM-80 testing protocol?	Cooper Lighting will only use LED chips that have been tested for lumen maintenance according to LM-80 standards.
Do lifetime estimates include all components [LEDs, drivers, controls] such that the whole system lifetime is predicted?	Predicted lifetimes published by Cooper Lighting encompass the whole system including driver, LED lumen maintenance and LED catastrophic failures.
What is the life rating of the driver? Does it match with published lifetimes?	The lifetime of the driver is designed to match the lifetime of the luminaire.
What are the performance specifications for the driver? [Such as Efficiency, THD, Power Factor].	All LED drivers used in Cooper Lighting outdoor products are highly efficient, have a minimum power factor of 0.9 and have THD less than 20%.
Is the product adequately protected against electrical transients? Does it survive a 10kV TIL test?	Cooper Lighting outdoor products include a circuit module that is designed to survive a 10kV TIL surge test.
What is the predicted impact of ambient operating temperature on life of LEDs?	Cooper Lighting designs for, validates and rates all LightBAR™ equipped outdoor fixtures for a realistic ambient operating range of -30°C to 40°C [-22°F to 104°F].
What is the drive current?	Cooper Lighting uses a variety of drive currents for LED based systems. All LED packages are not equal and the selection of drive current depends upon the LED package chosen. For luminaires incorporating LightBAR™ technology, the LEDs are operated at 350mA.
<b>Photometric Performance</b>	
What is the total initial lumen per watt rating of the luminaire? [i.e. total system lumens per watt].	Cooper Lighting outdoor products utilizing LightBAR™ technology range in delivered lumens per watt from 61 to 70 LPW depending upon the distribution specified.
Are photometric files [data per IESNA LM-79] available?	Cooper Lighting only publishes photometry for LED luminaires that is compliance with the LM-79 standard
Was photometry performed by an accredited laboratory?	Cooper Lighting's photometric lab is NVLAP accredited for LM-79 compliant absolute photometry for LED luminaires
What is the range of light outputs available from the luminaire?	Cooper Lighting outdoor products utilizing LightBAR™ technology range in lumens output from 1,600 to 21,600 lumens [1 to 12 LightBARs]. Maximum LightBAR™ count is product platform dependant.
In a mock up or sample installation do you see a pin cushion of light [i.e. bright spots] or an even distribution?	Cooper Lighting AccuLED™ optics provide industry leading performance in distribution uniformity and light control
<b>Warranty + Certifications</b>	
What is the luminaire warranty?	Cooper Lighting provides a 5 year limited warranty on LightBAR™ equipped luminaires [See the Cooper Lighting Terms and Conditions for details].
What items are covered? <ul style="list-style-type: none"> <li>• For the complete mechanical assembly?</li> <li>• For the electrical + LED components?</li> <li>• For the driver?</li> <li>• For the finish?</li> </ul>	The standard Cooper Lighting warranty covers fixture mechanicals, electrical components, drivers and paint.

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## Questions to Ask When Specifying an LED Lighting System [continued]

Who manages and responds to warranty issues? <ul style="list-style-type: none"> <li>• The luminaire manufacturer?</li> <li>• The driver manufacturer?</li> </ul>	All warranty related issues should be directed to Cooper Lighting. The end user need not engage any third parties.
Is the product certified for operation in the intended country of use? [UL, cUL, CE, etc.]	Cooper Lighting outdoor products are listed UL and cUL certified.
<b>Cost</b>	
What is the first cost for the system?	The first cost of the system should include all elements including trenching, poles, installation and fixture cost. A convenient comparative calculator is available at the <a href="#">Cooper Lighting</a> web site to compile these costs and calculate simple payback including environmental impact.
What are the anticipated maintenance costs for the system over its life?	LED luminaires are intended to operate for extended periods without maintenance; however, should the luminaire require repair due to unusual events, both drivers and LightBARS are easily accessible for replacement.
<b>Other System Attributes To Consider</b>	
Does the luminaire have a robust mechanical design—die-cast aluminum or other materials?	Cooper Lighting has many years of experience successfully building robust, reliable luminaires for outdoor environments.
Is cooling of the LEDs passive or active?	Cooper Lighting uses only passive cooling techniques for all outdoor lighting products.
Is the product environmentally friendly?	LED outdoor luminaires from Cooper Lighting can save up to 75% energy over legacy HID systems.
Is the housing—recyclable?	Most housings are manufactured from cast aluminum and as such are 100% recyclable.
Are the luminaires repairable and upgradeable?	Cooper Lighting outdoor products utilizing LightBAR™ technology can easily be upgraded by swapping LightBARS.
Solder being used in board design, is it lead-free, [RoHS] - Restriction of Hazardous Substance Directive	All outdoor LED luminaires from Cooper Lighting are RoHS compliant; hence lead free.

**AccuLED**Optics™

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