



How Long is 100,000 Hours?

What does it mean for an LED light fixture to have a 100,000 hour life? For street and roadway lighting it usually means that light output will not depreciate more than 30% in the first 100,000 hours of use (referred to as L70). Since dusk to dawn operation equals 4,300 hours per year, a street light with an L70 of 100,000 hours should last for more than 20 years. Over a 20 year period maintenance crews would normally visit an HPS street light four, five or more times for lamp and ballast replacements.

LED Lighting Uses 50-60% Less Energy

LED, or light-emitting diode, is a highly efficient, solid-state lighting (SSL) technology in which nearly all the energy used produces light rather than waste heat. In addition to being inherently more efficient than high pressure sodium (HPS) and other traditional light sources, LED technology has characteristics that enable higher wattage HPS fixtures to be replaced with lower wattage LED fixtures. For example:

Optical Control: LED lighting provides uniform light distribution, while traditional light sources direct most of their light output to a small area directly under the fixture.

Lumen Depreciation: LED lighting sustains light output for most of its long life, while the rapid depreciation of light output from traditional light sources necessitates the use of higher wattage fixtures to maintain minimum light levels over their useful life.

Adaptability: LED lighting can be field adjusted for different applications, in contrast to HPS lighting which is offered only in fixed wattages, and LED lighting can

be easily controlled (dimmed) to save additional energy.

Converting existing street and area lighting to LED reduces energy use by 50-60% or more, depending on the application, and additional savings can be achieved by dimming during times of day when traffic volume or other factors justify lower light levels. In parking garages LED lights can be combined with controls and motion sensors so that they dim automatically at times of day when activity is low, then instantly return to full illumination when activity is detected.

LED Lighting Reduces Maintenance Costs

In contrast to LED lighting, HPS and other traditional types of area lighting require ongoing maintenance to replace failed lamps and ballasts (HPS lamps last 4-5 years, ballasts 8-10 years). The associated maintenance costs are substantial, with 20% or more of the lights in a traditional streetlight system requiring a visit from a bucket truck crew each year. Most LED street lights carry a 10 year warranty and will need little or no maintenance for much longer.

LED Lighting Provides Better Illumination

LED lighting produces full-spectrum white light, offering superior visual acuity and color rendering as compared to the yellow cast of HPS lighting. The improved optical control afforded by LED lighting results in more uniform light distribution and reduced glare. Add to this the long life and high reliability of LED technology and it's clear that LED lighting is an excellent choice where lighting is needed for public safety.

LED Lighting is Adaptable

Using networked monitoring and control systems, the output of LED lights can be reduced to achieve additional savings. For street lights these strategies range from dusk and dawn trimming (raising or lowering light output gradually in concert with ambient light) to reducing light levels during times of day when levels of traffic volume, pedestrian conflict, or other factors justify it. The US Department of Transportation's publication "Guidelines for the Implementation of Reduced Lighting on Roadways" provides a methodology to identify applications of adaptive lighting on roadways while maintaining the optimal level of safety.