9/16/2016

Street Light System Budget and kWh history

Year	City/CL&P St Lt Budget	City St Lt Budget	Annual kWh*	Notes
2000-2001	1,464,514		7,015,913	
2001-2002	1,323,614		6,143,410	Discovered inventory errors
2002-2003	1,337,235		6,321,952	
2003-2004		1,004,085	6,383,278	Purchased street light system in July 2003
2004-2005		1,009,040	6,388,440	
2005-2006		1,014,000	6,363,008	
2006-2007		1,115,518	6,295,840	
2007-2008		1,120,980	6,298,164	
2008-2009		1,138,000	6,230,732	
2009-2010		1,138,000	6,241,134	
2010-2011		1,045,000	6,187,945	
2011-2012		992,750	5,505,799	
2012-2013		872,080	4,460,353	
2013-2014		778,600	4,268,791	
2014-2015		739,670	4,220,444	
2015-2016		787,750	4,086,690	

* Annual kWh only for roadway lights, streetscape accounts and Harbor Point lights not in total

City Street Light budget includes energy and maintenance charges, increase to budget in 2015-2016 is due to increase in lighting in Harbor Point area

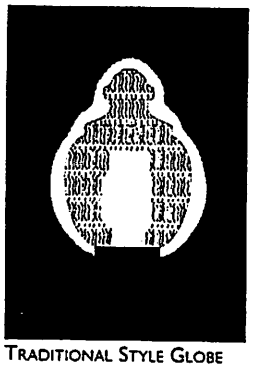
History of Street Light Project Savings & Investments

Refunds of duplicate and overbilling going back 25 years: $2,029,296 (received in 2001/2002)
Street Light System Purchase Price: $784,981 in July, 2003
Capital Investment: $100,000 in 2009 (cast iron poles replaced, LED fixtures studied)

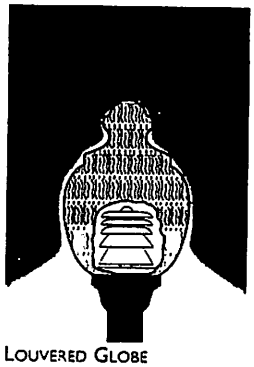
LED conversion project summary (2011-2014)

Capital Investment: $100,000 in 2011 required for EECBG grant funding
EECBG grand funds invested: $669,245
Capital Investment (CP0114): $870,068 ($300K remaining)
CL&P rebates: $357,049 (Phase 1), $205,480 (Phase 2), $159,211 (Phase 3)

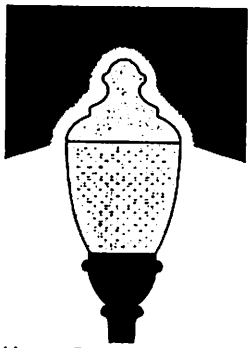
LED project Phase I: 1027 lights, 920,437 kWh savings
LED project Phase 2: 947 lights, 833,615 kWh savings
LED project Phase 3: 774 lights, 589,800 kWh savings



TRADITIONAL STYLE GLOBE



LOUVERED GLOBE



HADCO REFRACTIVE GLOBE

The refractive globe has a downward street side efficiency of three times that of traditional style globes and twice that of louvered globes. What does this mean? You can use half the number of refractive fixtures and still cast more light than with traditional style globes. And when compared to globes with louvers, our refractive globe is approximately 40 to 50% more efficient and often can cut energy usage in half by using lower wattage lamps.

HADCO REFRACTIVE GLOBES WILL ACTUALLY PROVIDE GREATER QUALITY FOR LESS MONEY THAN OTHER LIGHTING SYSTEMS.

Go ahead and compare. Here's a case where advancing lighting technology actually does create refractive lighting systems that will cost you less to purchase. They will cost you less to install. And, they will cost less to maintain.

COMPARE REFRACTIVE TO TRADITIONAL GLOBES.

HADCO refractive luminaries have a downward street side efficiency that's two to three times greater than traditional style globes. So if you choose refractive fixtures over traditional globes, you can actually use half the number of fixtures and illuminate an even greater area. Because HADCO Refractive Globes are 40 to 50% more efficient, for existing retro-fit applications, you may be able to cut energy usage in half by using lower wattage lamps. Think of it—suddenly your estimate for lighting installation is dramatically reduced as well as your cost of energy.

COMPARE REFRACTIVE LUMINARIES WITH CUT-OFF LIGHTS.

Cut-off fixtures throw most of their light straight down beneath the pole. To improve their uniformity, cut-offs must be spaced much closer together. Unlike the bright and dark spots created by cut-off lighting, HADCO refractive luminaries provide uniform, low glare lighting over a greater area. And once again, more efficient lighting means fewer poles, lower initial cost, and lower long-term maintenance.

COMPARE REFRACTIVE TO COBRA LIGHTING.

Here's an installation and maintenance no-brainer. Cobra lights require 25 foot to 30 foot poles with six to eight foot arms. That's expensive hardware, especially when you compare it with a refractive globes' typical 12 to 16 foot mounting heights. Plus, it takes a crane and an entire crew to install. And when it comes to maintenance, a large, traffic-disrupting bucket truck is required instead of a small lift truck.

NLPIP Home

Light Pollution Q & A

Resources

Sponsors and Credits

Glossary

Legal Notices

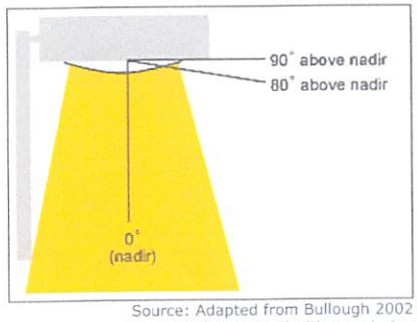
Site Map

What are the IESNA cutoff classi

The Illuminating Engineering S ca (IESNA) defines several outdoor luminaire **cutoff clas** different photometric criteria. For these classifications, two relev with respect to the **nadir** of a luminaire (the nadir is defined ts directly downward, or 0°, from the luminaire). One zone appli ve 80° above nadir, and the second zone covers all angles nadir, or above the horizontal plane of the luminaire (see Fig in the 80° to 90° zone is more likely to contribute to **glare**, a the horizontal is more likely to contribute to **sky glow**. The fi ns are defined as follows (IESNA 2000):

- Full cutoff—The **luminous intensity** (in **candelas**) at or above an angle of 90° above nadir is zero, and the luminous intensity (in candelas) at or above a vertical angle of 80° above nadir does not numerically exceed 10% of the **luminous flux** (in **lumens**) of the lamp or lamps in the luminaire.
- Cutoff—The luminous intensity (in candelas) at or above an angle of 90° above nadir does not numerically exceed 2.5% of the luminous flux (in lumens) of the lamp or lamps in the luminaire, and the luminous intensity (in candelas) at or above a vertical angle of 80° above nadir does not numerically exceed 10% of the luminous flux (in lumens) of the lamp or lamps in the luminaire.
- Semicutoff—The luminous intensity (in candelas) at or above an angle of 90° above nadir does not numerically exceed 5% of the luminous flux (in lumens) of the lamp or lamps in the luminaire, and the luminous intensity (in candelas) at or above a vertical angle of 80° above nadir does not numerically exceed 20% of the luminous flux (in lumens) of the lamp or lamps in the luminaire.
- Noncutoff—There is no candela limitation in the zone above maximum candela.

Figure 11. Angles referenced by the IESNA cutoff classifications



Source: Adapted from Bullough 2002

Previous

Next