



LEARN. CONNECT. EXPERIENCE.

Integrating LED's Into Utility Programs

Amanda Townsend
January 18, 2011



BENEFITS OF LED'S

- Operational Savings
 - LED's require significantly less energy than traditional light sources
- Durability and Maintenance
 - LED's have a long life and require little to no maintenance
- Light Quality
 - LED's provide a bright, uniform light throughout where it is needed
- Environmental Benefits
 - LED's contain no lead or mercury



LED'S AND UTILITY PROGRAMS

The Challenges

1. LED Technology Standards
 - ENERGY STAR® does not label products for commercial outdoor applications
2. Cost and Receiving Buy-In From Decision Makers
 - Higher up front capital cost than other lighting products
 - Calculating financial impacts
3. Lack of Education about LED Technology
 - Misconceptions about application areas, lack of knowledge of questions to ask vendors
4. Proven Results
 - Limited access to actual LED installations

TECHNOLOGY STANDARDS

- Product Testing

- LM-79

- Total Light Output (lumens) and Efficacy (lm/W)
 - Color (CCT, CRI)
 - Voltage and Wattage
 - Lumen Distribution

- LM-80

- Lumen maintenance (i.e. useful life)
 - L_{70} : Rated lifetime hours



TECHNOLOGY STANDARDS

Lighting Facts®	ENERGY STAR®	DesignLights™
<ul style="list-style-type: none"> • Provides at-a-glance information labels about LED products • Easy to read format enables side-by-side comparisons • Manufacturers partner with the program to make a pledge to quality 	<ul style="list-style-type: none"> • Has established criteria for most applications • Labels products for certain applications <ul style="list-style-type: none"> ○ Labels available for most residential applications ○ Limited labeling available for commercial applications 	<ul style="list-style-type: none"> • Utility-sponsored program that reviews LED product information • Products that meet criteria are listed with the DLC • Provides a list of products eligible for utility incentive programs

THE GREAT T8 DEBATE

Are LED linear replacement lamps ready for market?

- ENERGY STAR has set requirements
 - Few products meet the required efficacy
- DOE Caliper Reports
 - Tests similar products side-by-side
 - Most T8 products still out perform the LED linear replacement counterpart
- Light distribution issues
 - Cave-like effect
- Installation can be more costly than initially projected
 - If not done properly it can void a fixture's UL listing

**Complete T8 to LED fixture retrofits are a more viable replacement option*



OVERCOMING THE COST OF LED'S

- Higher upfront cost, but lower long term cost
 - Look at the true cost of multiple options after 5,10, and 15 years (life cycle analysis)
 - Include maintenance and labor
- Utility programs can offer a higher level of incentive for qualifying projects
 - Texas programs incentive levels typically cover 25-35% of the installed project cost

OVERCOMING THE COST OF LED'S

	LED	MH
Fixture Wattage	184	775
Number of Fixtures	69	57
Initial Cost per Fixture	\$970.00	\$650.00
Fixture Life (hours/years)	50,000 hr/10 yr	22,000 hr/5 yr
Lamp Life (hours/years)	N/A	22,000 hr/5 yr
Ballast Life (hours/years)	N/A	22,000 hr/5 yr
Annual kWh Consumption	50,733	185,406
Current Energy Cost (\$/kWh)	\$0.072	\$0.072
Energy Cost Inflation Rate	3%	3%
Fixture Cost Depreciation Rate	4.5%	1.0%
Lamp Replacement Cost w/Labor	N/A	\$125.00
Ballast Replacement Cost w/Labor	N/A	\$250.00
Total Initial Installed Cost	\$53,237.00	\$37,050.00
O&M Year 1	\$3,762.36	\$13,749.71
O&M Year 2	\$3,875.23	\$14,162.20
O&M Year 3	\$3,991.49	\$14,587.07
O&M Year 4	\$4,111.23	\$15,024.68
O&M Year 5	\$4,234.57	\$22,600.42
5 Year Cost:	\$73,211.88	\$117,174.07



geavistagroup.com



aesp.org

EDUCATION & AWARENESS

- Many tools are available
 - Department of Energy resources
 - ENERGY STAR Resources
- Utility programs are a great third party resource for information
 - Promote the most efficient and efficacious LED lighting solutions
 - Establish a network of service providers to assist customers with selecting quality products
 - Provide incentives to encourage the installation of qualified LED



RESULTS: LED PROJECT EXAMPLES

A parking garage in Irving, Texas did a one-for-one replacement of 53 metal halides to LEDs.

Savings: 7 kW
and 57,998 kWh



Before: 175 W Metal Halide



After: 78 W LED



STATE FAIR OF TEXAS

Big Tex was lit using two, 1,000W metal halide fixtures. Customized LED lighting reduced energy consumption by **57%**.



Before:
2000 W

After:
864 W

2 ft. Asymmetric = 86 W

1 ft. Spotlight = 58 W



CONVENIENCE STORE CHAIN

Local convenience store chain retrofitted 146 stores in North Texas. The average store will save an estimated 17,629 kWh per year.

*Project Total:
2,573,760 kWh*



HIGH SCHOOL PARKING LOT - BEFORE

Before picture:

(70) 400 W

Metal halide



HIGH SCHOOL PARKING LOT - AFTER

After picture:

(77) 94 W LED

Savings:
98,629 kWh



PILOT PROJECT – PARKING GARAGE

A national chain casino in Shreveport, LA is currently retrofitting their garage. The project consists of removing 1,874 150W high pressure sodium fixtures with 932 86W LED fixtures.

Estimated
Savings:
153.7 kW
1,685,215 kWh



CONCLUSIONS

- Integrating LED's into utility programs drives higher quality products and services
 - Test parameters and criteria are in place to incentivize high performing LED products
 - Integrating financial assessment tools and appropriate incentives addresses the higher upfront cost
 - LED projects are successfully generating significant energy savings

QUESTIONS?

Amanda Townsend

astownsend@geavistagroup.com

214.302.8155

Save the Date



22nd National Conference & Expo

February 6-10, 2012
Hilton San Diego Bay Front

