Lighting and Controls in Retail — Retailer Energy Alliance

Lighting and Controls Supplier Summit
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Walmart Stores, Inc.
Commercial Building Energy Alliances

• The goal of this program is to *minimize the energy use and environmental impact of commercial buildings*

• The central vision of the Building Technologies Program is the *realization of marketable net-zero energy buildings* through the development of conservation technologies and practices
Who Are We?
Retailer Energy Alliance Members

Retailers

- A&P
- Applebee’s International, Inc.
- Army & Air Force Exchange Service
- Bank of America
- Belk, Inc.
- Best Buy Co., Inc.*
- BJ’s Wholesale Club, Inc.
- Boston Market Corp.
- Chipotle Mexican Grill, Inc.
- CKE Restaurants, Inc.
  – Includes: Carl’s Jr., Hardee’s, Green Burrito, Red Burrito
- Costco Wholesale Corp.
- Crate and Barrel
- Food Lion, LLC*
- Ford Motor Co.
- Harris Teeter Inc.
- JCPenney*
- John Deere
- Kohl’s Department Stores*
- Lamey-Wellehan Shoes
- Lowe’s Companies, Inc.*
- Macy’s, Inc.
- McDonald’s Corp.*
- OfficeMax Inc.
- Panda Restaurant Group, Inc.
  – Includes: Panda Express, Panda Inn, Hibachi-San
- PETCO Animal Supplies, Inc.
- ProLogis
- Publix Super Markets
- Recreational Equipment, Inc.
- Rutter’s Holdings, Inc.
- Safeway Inc.
- Sears Holdings Corp.
- Sonic Corp.
- Staples, Inc.*
- SUPERVALU INC.
- Target Corp.*
- The Home Depot, Inc.*
- The Stop & Shop Supermarket Co.
- Toyota Motor Sales, U.S.A., Inc.
- Walgreen Co.
- Walmart Stores, Inc.*
- Wawa, Inc.
- Wendy’s/Arby’s Group, Inc.
- Whole Foods Market, Inc.*
- Yum! Brands*
  – Includes: A&W Restaurants, KFC, Long John Silver’s, Pizza Hut, Taco Bell

Associations

- ASHRAE*
- IES*
- IFMA
- National Association of Convenience Stores
- Retail Industry Leaders Association
- Unified Foodservice Purchasing Co-op, LLC

*Steering Committee Member
Market Share of REA Members

Retailer Energy Alliance

• 50 member companies
• 2,548 million sq. ft.
Why Become a Member of REA?

• Access to DOE and the national energy laboratories’ expertise

• Share information on successful energy-efficient lighting/control products and strategies.

• Provide a consistent message to national manufacturers and distributors

• Provide greater consistency in energy-efficiency program design
The Retailer Energy Alliance (REA) subcommittees: Subcommittees form working groups with members from the alliances

- **Lighting Subcommittee**: Members are working to develop more cost-effective and high-quality light-emitting diodes (**LEDs**) for interior and exterior store lighting and parking lot lighting. In addition, members are working to improve the energy efficiency of other electrical equipment and plug loads.
  
  - CBEA LED Site (Parking Lot) Lighting Performance Specification
  
  - High Efficiency Lighting for Parking Structures Performance Specification
  
  - Lighting Measurement and Evaluation Protocol Document
  
  - CBEA LEDs for Refrigerated Display Cases Lighting Specification
Typical Working Group Project
LED Site Lighting Specification

• **Objective:** To speed the market introduction of advanced, reliable, efficient, and competitively priced outdoor area SSL luminaires through a collaborative CBEA project designed to
  - Investigate the field and laboratory performance of luminaires
  - Investigate the life and reliability issues of luminaires
  - Develop product specifications and evaluation procedures for use in bid specifications
  - Maximize the sales of “selected” products
Why LEDs Make Sense for Commercial Parking Lots

• Save energy
  – Enhanced luminaire optical efficiency
  – Better total system efficacy (lumens per watt)
  – Control capability (e.g., dimming)

• Reduced maintenance costs

• Improved uniformity

• Environmentally friendly

Leavenworth, KS, Walmart Supercenter

LED Signage
LED Bollards
LED Site Lights
• 2,170 watts of Metal Halide HID vs. 406 watts of LED
• 80% power reduction

HID in foreground, LED beyond … notice the reduced glare from the LEDs

LED in foreground, HID beyond … notice the reduced glare from the LEDs
LED is currently a 3–7x $ premium.

Barrier today is simple — ROI. However, the future looks “bright.”

<table>
<thead>
<tr>
<th>Fixture type</th>
<th>Today</th>
<th>2015</th>
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<tbody>
<tr>
<td></td>
<td>Initial lumens</td>
<td></td>
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<tr>
<td>220 W LED</td>
<td>~$0.09/lum fixture lpw = 57</td>
<td>~$0.06/lum ↓ 100–125 lpw↑</td>
</tr>
<tr>
<td>454 W MH</td>
<td>~$0.008/lum fixture lpw = 51</td>
<td>minimal change</td>
</tr>
<tr>
<td>1080 W MH</td>
<td>~$0.004/lum fixture lpw = 80</td>
<td>minimal change</td>
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White LED Efficacy Forecast

- >88% reduction in $/lum (65% LPW improvement) over the past 4 years!

Theoretical maximum for LED

- Ready in Volume Fall of 2010
- 208 LPW
- 186 LPW
- 161 LPW
- 131 LPW: 3 yrs R&D Capability

High Volume Production

HID
Fluorescent
CFL
LED
Incandescent

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Avoiding ‘Greenwash’

1. Fluffy language
   Words or terms with no clear meaning, e.g. ‘eco-friendly’

2. Green products vs dirty company
   Such as efficient light bulbs made in a factory which pollutes rivers

3. Suggestive pictures
   Green images that indicate a (un-justified) green impact e.g. flowers blooming from exhaust pipes

4. Irrelevant claims
   Emphasising one tiny green attribute when everything else is un-green

5. Best in class?
   Declaring you are slightly greener than the rest, even if the rest are pretty terrible

6. Just not credible
   ‘Eco friendly’ cigarettes anyone? ‘Greening’ a dangerous product doesn’t make it safe

7. Gobbledygook
   Jargon and information that only a scientist could check or understand

8. Imaginary friends
   A ‘label’ that looks like third party endorsement … except it’s made up

9. No proof
   It could be right, but where’s the evidence?

10. Out-right lying
    Totally fabricated claims or data
What Were the Retailer Concerns?
Separating the Pretenders from the Contenders!

- **Assure product claims translate to life and lighting performance**
  - If the supplier’s products fall into one of the two programs, listed below, the products must be **ENERGY STAR® qualified**
    - ENERGY STAR Solid-State Lighting Luminaire Program
    - ENERGY STAR Integral LED Lamps Program
  - Solid-State Lighting Quality Assurance Program participation
    - The product must have an approved **Lighting Facts Label**
  - Other minimum product specifications
    - **LM-79 Test**: Provide *independent* testing according to IES LM-79 that provides efficacy, output, color, and photometric distribution of your product
    - **IES File**: Provide *absolute* photometric testing data in IES LM-63 electronic file format
    - **Proof of Lifetime**: Provide written explanation of how L70 Lifetime of Product is determined using the **LM-80 and in-situ temperature tests**
Warranty — Walk the Talk

• **SSL warranties should not be vague**
  - Not “warranted for defects in materials and workmanship”

• **SSL warranties should be specific to product specifications**
  - Specify the warranted life — years and operational hours
  - Specify the warranted maximum lumen depreciation
  - Specify the warranted maximum warranted color shift
  - Specify what conditions constitute failure
Lowe’s Daylighting Update: Daylighting Is Lighting

Industry standard is to install 3–5% SFR; Indian Trail has 4.7% daylighting

Pictures of Indian Trail lit solely by skylights
Retailers and Suppliers Have a Date

- In closing, remember
  - Lighting energy reduction is a major goal with retailers
  - Our needs for quality certified lighting/controls products are the same
  - Our applications are not the same — know the retailers’ needs

- Learn more about each retailer needs, goals, and barriers/solutions to obtaining these goals during breakout sessions and “speed-dating”

- THANK YOU!