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# SSL Workshop - Walmart

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# Agenda

- Timeline
- Euclid
- Opportunities

*“LEDs have become an integral part of our energy efficiency model for our stores and play a key role in achieving our overall sustainability goals. Just as important, the energy cost savings coming from these innovations will help us maintain the low prices our customers depend on us to provide.”*

Doug McMillon, **BENTONVILLE, Ark., April 9, 2014**

# What this means, is .....



# Timeline



**2003** – Walmart begins using LEDs in store signage

# Exterior Signage

## Walmart tested LED signage in 2003



**Red & Green**  
(2004-2005)



**White Letter**  
(2005-2006)



**White Box**  
(2005-2006)

# All Walmart exterior signage is LED today



5x improvement in lumens/ft

•1/5 the watts in a sign

•10 years of in-field experience, <0.5% failures

•All countries

•LED is industry standard for exterior



# Timeline

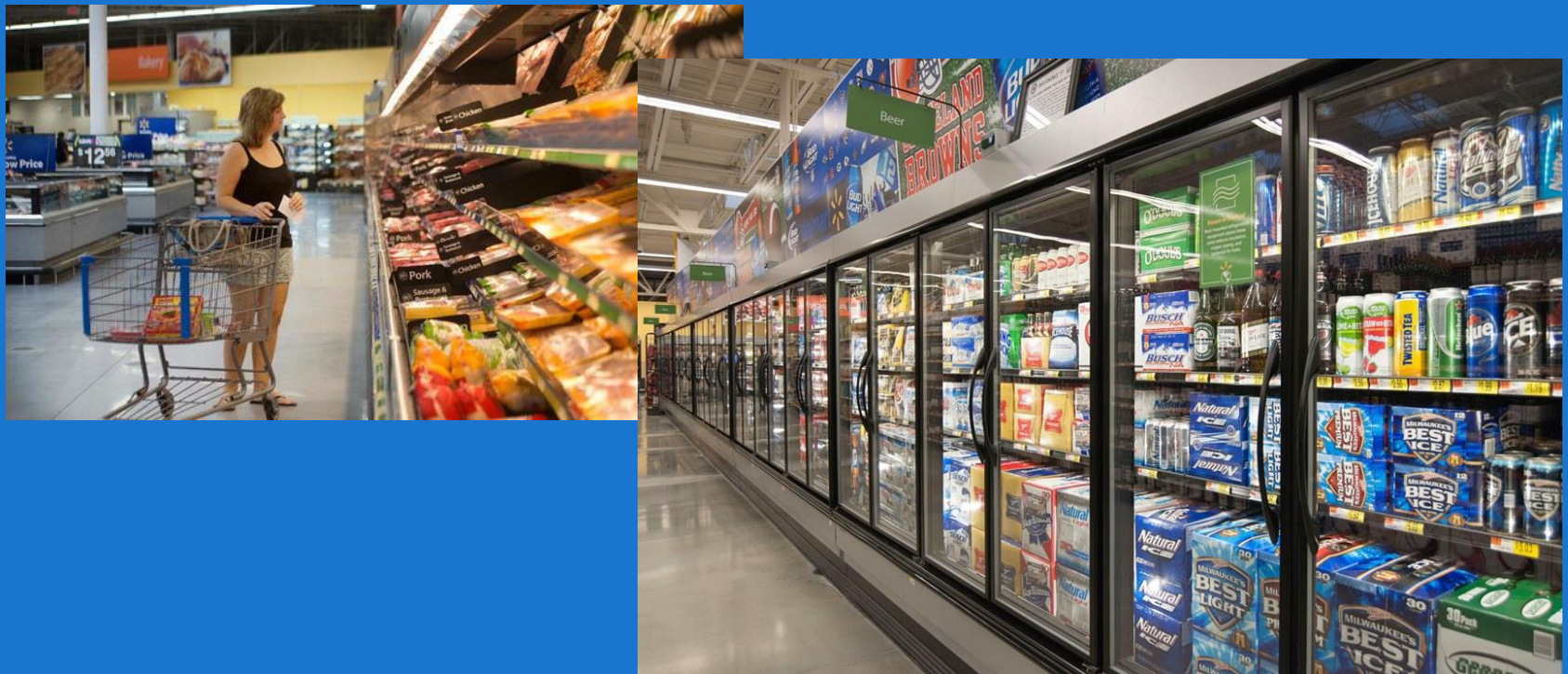


**2005**- Walmart works with GE to install its first freezer case lights.



# LED Lighting in refrigerator and freezer cases.

- Pilot In 2005, Texas
- Use 70% less energy than florescent
- Generate less heat
- Energy efficiency and reduced maintenance are the biggest advantages.



# Timeline



**2008** – Walmart installs its first-ever LED parking lot lighting in the U.S.

## Walmart Puerto Rico adds LED parking lot lights in 2009



- 48% reduction in energy cost
- 70% reduction in maintenance cost

## Why LEDs for Site Lighting?

- Reduced maintenance
- Save energy
- Improved uniformity
- Reduced Wasted Light
- No Hg



# LED Spotlights



## Walmart's Need and Application

- Started to incorporate 'higher drama' produce areas
- Expense of Ceramic Metal Halide lamps
- 2008—Walmart sees and tests first LED spotlights for proof of concept
- 2009—Walmart completes several test installations in produce and other store departments
- 2010—LED spotlights are prototypical in all formats



# LED Downlights



## Walmart's Need and Application

- Desire to eliminate maintenance and save energy
- 2009—Walmart begins test installations - LED downlights (as CFL replacements)
- 2011—LED downlights are prototypical in Bathrooms, Entry in all formats and Deli for WMN



## First 100% LED sales floor



**2011** - Walmart partners with CREE to open a Neighborhood Market in Wichita, Kansas, with 100%LED sales floor lighting.

# Walmart Neighborhood Market with LED Lighting



- 100% LED sales floor lighting
- Neighborhood Market , Wichita, Kan.
- 40% less energy compared to traditional florescent lights.
- Expected savings of 140,000 kWh a year in energy use.



# International Lead The Way With Testing and Application of Ambient LED Lighting



Superama Acapulco, MX 2012

We accelerated the installation of LED lighting in our stores. Nearly all lighting in most new buildings is LED in the following markets: Brazil, Central America, Chile, Japan, Mexico and the U.K.

# South Euclid #2362



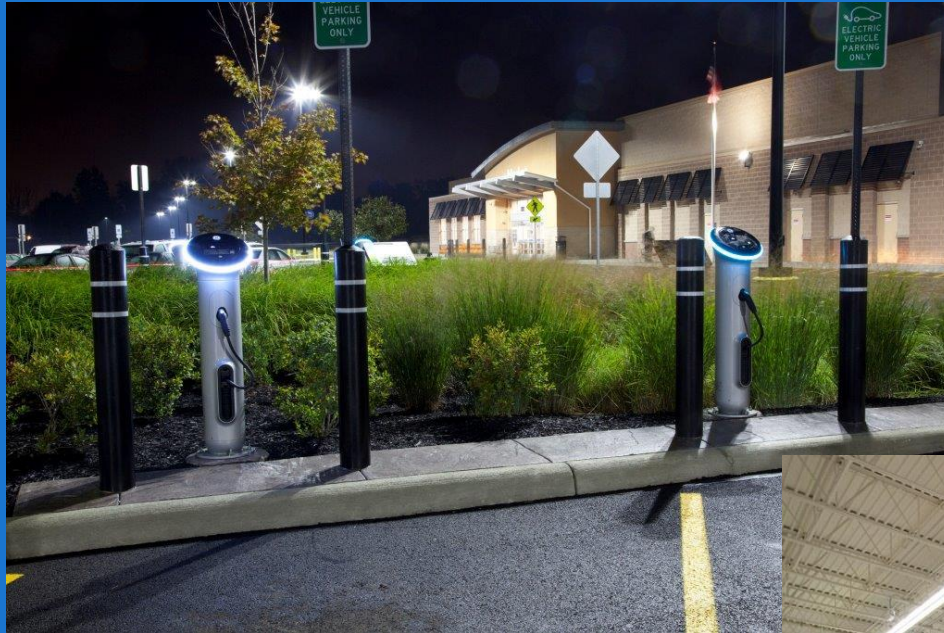
**2013**- Walmart partnered with GE and opened its first all – LED lit store in South Euclid, Ohio.

# South Euclid #2362

- The first 100% LED supercenter
- Annually consumes 34% less energy than a conventional store.
- Goes beyond sales floor LEDs to include all lighting in the building and parking lot.

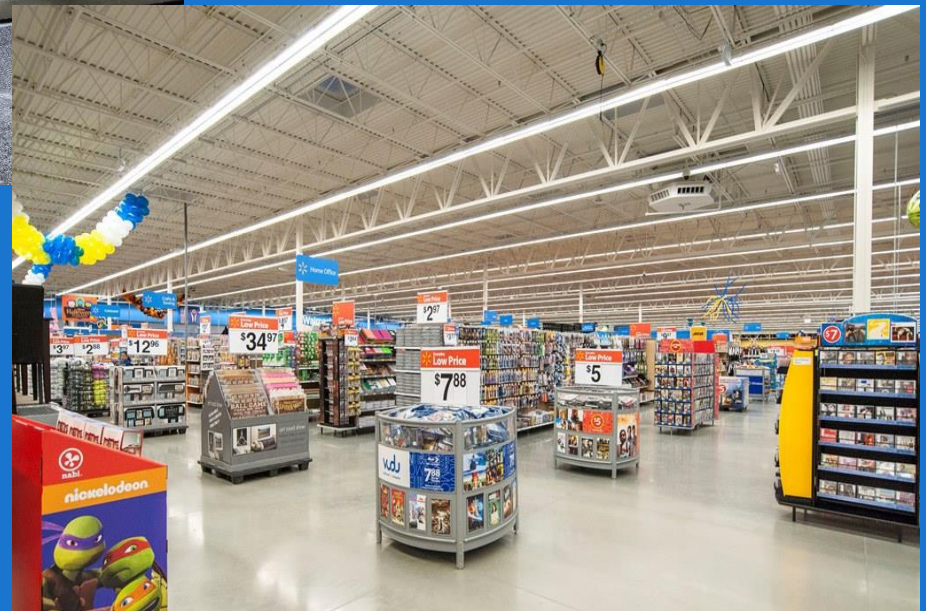


# South Euclid #2362

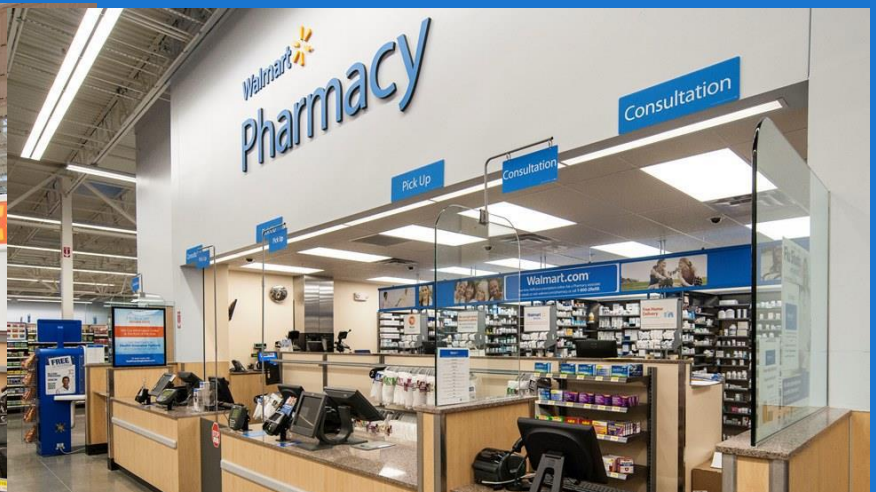


LED Site lighting  
Dimming to 50%

Sales floor  
Efficacy = 105 lpw  
CCT = 4000K, 83 CRI



# South Euclid #2362



## White roof and skylights on Las Vegas, Nev. Walmart



**Saves an average of 800,000 kwh of energy annually.**



**2014** – Walmart announces plans to outfit new stores in the U.S., Asia, Latin America, and U.K. with GE LED ceiling lighting fixtures using 40% less energy than traditional lighting sources, saving 620 million KWh over the next 10 years in the U.S. alone.

# The move to LED is expected to:

Produce an energy savings of 340,000 kilowatt hours per store for 200 stores.

Amount to a total energy savings of 620 million kWh over the next 10 years for the same 200 stores.

Equal to eliminating 327,360 metric tons of carbon dioxide emissions over the next ten years.

- or the annual greenhouse gas emissions from more than 68,000 passenger vehicles
- or the energy use of nearly 30,000 American homes for one year.



# Walmart Defined Minimum Useful Life

*Maximum calculated 15% lumen depreciation (L85)*

Location	Useful life defined *
<b>Interior Luminaires:</b>	75,000 hrs
<b>Building Mounted Exterior Luminaires:</b>	50,000 hrs
<b>Parking Structure Luminaires:</b>	90,000 hrs

**\*8,760 hrs/ yr operation**

# Walmart Defined Efficacy

## *Minimum required efficacy*

Location	Efficacy
<b>Interior Recessed Luminaires:</b>	100 lm/W
<b>Interior Suspended, High bay and surface Luminaires:</b>	110 lm/W
<b>Exit and Egress</b>	80 lm/W
<b>Exterior and Pole mounted</b>	100 lm/W

# Walmart Defined Color Rendering

## *Minimum required CRI*

Location	Color Rendering Index
<b>Retail Merchandise</b>	CRI >84 R9 > 25 R9-R12 >59
<b>Produce luminary</b>	CRI >90 R9 > 45 R9-R12 > 70
<b>Meat Prep</b>	CRI >90 R9 > 45 R9-R12 > 70
<b>Exterior</b>	CRI >70

*\* Per LM- 79 test report*

## Standards

- ENERGY STAR®
  - ENERGY STAR® TM-21 Calculator
- Illuminating Engineering Society of North America (IESNA)
  - IESNA LM-79, Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products
  - IESNA LM-80, Approved Method: Measuring Lumen Maintenance of LED Light Sources
  - IESNA TM-21, Projecting Long Term Lumen Maintenance of LED Light Sources
  - IESNA TM-15, Luminaire Classification System for Outdoor Luminaires
  - IESNA LM-63, Standard File Format for the Electronic Transfer of Photometric Data and Related Information

- **LED lighting is part of new construction, remodel and retrofit programs**
- **Rigorous concept, pilot and rollout assessment**
- **Achieve sustainability goals with ROI!**

# What's next

- Improve the customer experience
- Asset management

# Questions?