LIGHTING TRENDS IN COMMERCIAL BUILDINGS

ARIEL CROWLEY

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“Disruption is the new norm in the lighting industry. Commercial lighting is now more than illumination” – OSRAM, 2019

AGENDA

1) Lighting Trends
   • Osram’s Top 5 Commercial Lighting Trends of 2019

2) Lighting Market Forecast
   • Navigant Research Market Forecasts

3) Deep Dive Topics
   • Connected Lighting
   • New Construction
   • Midstream Lighting Programs
OSRAM: TOP 5 COMMERCIAL LIGHTING TRENDS

• Occupant Health and Wellbeing Takes Center Stage
• Lighting Systems — the Tech Infrastructure for IoT
• Space-as-a-Service Enters Sharing Economy
• Optimum Space Utilization Enabled by Lighting System Data
• Green is Growing

The commercial building market is moving toward improved energy efficient technologies due to changing building codes and standards, corporate sustainability initiatives, utility incentives, lower LED prices, and rising energy costs.

- Overall lamp revenue in North America is expected to experience a slight increase (1.0% CAGR)
  - Revenue is expected to increase initially due to the higher cost of LEDs and as LED adoption increases.
  - As LED prices continue to decline, revenue will likely decrease slightly after 2024.
Global trends in shipments are forecasted to vary between luminaires and lamps: Luminaire shipments represent the retrofit market and lamp shipments more closely represent the replace on burnout market. LEDs are expected to dominate more in the luminaire market.
### COMMERCIAL LIGHTING MARKET: KEY DRIVERS AND BARRIERS

**Drivers**

- Energy efficiency and cost savings
  - Still leading driver
- IoT solutions
  - IoT adds valued beyond illumination- bring connectivity to devices that were previously not connected.
- Sustainability goals
  - More and more companies are including sustainability goals into their overall business strategy.
- Building codes
  - New codes and standards are driving the lighting market

**Barriers**

- Customer knowledge and expectations
  - Primary barrier
- Cost
  - Prices continue to decline, but still a barrier.
- Building codes
  - Stringent building codes can be a barrier to LED retrofits. Building codes that require controls be installed when a certain number of fixtures are replaced can actually limit retrofits and hence reduce energy savings opportunities
DEEP DIVE #1: CONNECTED LIGHTING
Lighting controls have evolved significantly over the past several years. LEDs are naturally more controllable than their legacy lighting counterparts, but lighting control adoption lags behind LED adoption.

Source: Navigant Research, 2019, "Connected Lighting Overview"
Navigant Research defines connected lighting as:

An LED-based lighting system with integrated sensors and controllers that are networked, which can be either wired or wireless, enabling lighting products within the system to communicate with each other and transmit data.

Key drivers for connected lighting include:

• Growth of IoT
• Non-mandatory building codes
  • WELL Building Standard
• Quality standards such as DLC

Source: Navigant Research, 2019, “Connected Lighting Overview”
Lighting control strategies were originally developed to save energy. Now controls such as color and task tuning are designed to improve the occupant experience.

**SCHEDULING**
More basic approach, historically used in commercial buildings. Energy codes have created a recent shift away from scheduling.

**OCUPANCY**
One of the most popular lighting controls, has increased in popularity due to energy codes and ease.

**LOAD SHEDDING/DR**
A change in lighting to reduce energy consumption during a particular time period, either in a response to a signal from the utility or for some internal purpose.

**DAYLIGHT HARVESTING**
A change in lighting in response to the amount of natural light.

**PERSONAL CONTROL**
The user can adjust the light or group of lights to their personal preferences through a network.

**WHITE COLOR TUNING**
A change in the color temperature output of an LED.

**TASK TUNING**
A change in light levels based on needs and preference, depending on the task and time of day.

Source: Navigant Research, 2019, “Connected Lighting Overview”
DEEP DIVE #2: NEW CONSTRUCTION
• State level energy code varies significantly across the county
• In addition to the energy code, the amount of enforcement can also vary by state
• There are also city codes that can be much more stringent than the statewide code
• ASHRAE 90.1-2016 LPD limits are not all 100% LED, so still some flexibility in technology choice

Source: https://www.energycodes.gov/status-state-energy-code-adoption
Xcel Energy CO recently added to their existing new construction program a lighting specific new construction program in September 2019

- Lighting new construction rebates are available under the Business New Construction lighting program.
- Lighting New Construction LPD will calculate energy saved over the IECC 2018 baseline, using a lighting COMCheck document to identify allowed wattage versus proposed wattage based on LPD.
- Applies to all Business New Construction of any size
- Rebates of up to $500 per kW saved for system peak savings. When nonpeak savings exceed system peak savings, customers earn an additional rebate of up to $100 per kW saved above the 2018 IECC Energy Standard.

This program was a recent addition to Xcel Energy CO Energy Design Assistance and Energy Efficient Buildings programs.

DEEP DIVE #3: MIDSTREAM LIGHTING PROGRAMS
Upstream Program
• Manufacturers and suppliers

Midstream Program
• Distributors, retailers and other vendors

Downstream Program
• Contractors, installers, and customers

Source: https://www.aesp.org/page/MidstreamPrograms
BENEFITS OF MIDSTREAM LIGHTING PROGRAMS

• Broader market engagement
  – Fewer program participants needed to reach broad engagement

• Greater incentive leverage
  – For example, providing a $1 incentive to distributor could translate to $2.50 at the retail level

• Greater flexibility and forecasting
  – Distributors have a good understanding of their sales forecast

• Product upselling with Trade Allies
  – TAs that operate as midstream market actors are trained in the distribution and sale of the efficient product.

Source: https://www.aesp.org/page/MidstreamPrograms
QUESTIONS
CONTACT

ARIOE L CROWLEY
Managing Consultant
303-728-2492
ariel.crowley@navigant.com