

The EMerge Alliance Fit For Today's Lighting Technologies

Presenter

Date

**OSRAM
SYLVANIA**



A DC-Powered Platform For Commercial Interiors



Buildings And The Environment

Worldwide, buildings (all types) consume or are responsible for:

- 40% of total energy use
- 30% of raw materials consumption
- 25% of timber harvest
- 35% of CO2 emissions
- 16% of fresh water withdrawal
- 40% of municipal solid waste, destined for local landfills, and
- 50% of ozone-depleting CFCs still in use

Average Savings of Green Buildings



The infographic consists of four vertical bars of different colors and heights, each representing a category of savings. The first bar is orange and features a wind turbine background. The second bar is dark blue with a cloudy sky background. The third bar is light blue with a glass of water background. The fourth bar is medium blue with a recycling symbol background. Each bar has a large white arrow pointing downwards at the bottom. The text for each category is centered within the bar, with the percentage savings at the bottom.

**ENERGY
SAVINGS**
30%

**CARBON
SAVINGS**
35%

**WATER
USE
SAVINGS**
30-50%

**WASTE
COST
SAVINGS**
50-90%



Source:
Capital E

What Is a *Green* Building?

According to the US Environmental Protection Agency, a green building:

- Has been purposefully designed to reduce direct and indirect environmental consequences associated with its
 - Construction
 - Occupancy
 - Operation
 - Maintenance
 - Eventual de-commissioning
- Requires involvement of everyone that designs, constructs, manages, and occupies the building

EMerge Integrates Well With Green Building Design

Promotes green construction and facility management

- Meets lighting needs for today and tomorrow
- Simpler lighting with less materials (no AC-DC conversions)
- Enables easy re-use of system lighting fixtures
- Reduce energy consumption through advanced controls and solid-state lighting
- Facilitate the direct connection to alternative energy sources like wind, solar and fuel cells
- Improve energy efficiency through integrated load and source management

EMerge Eases Facility Management

Offers unprecedented design and space flexibility

- Make it easier to install light fixtures, sensors, actuators and other devices
- Plug and play mobility and simplicity
- Enable easy repurposing or reconfigurations without rewiring
- Help future-proof a space for new technologies like LEDs

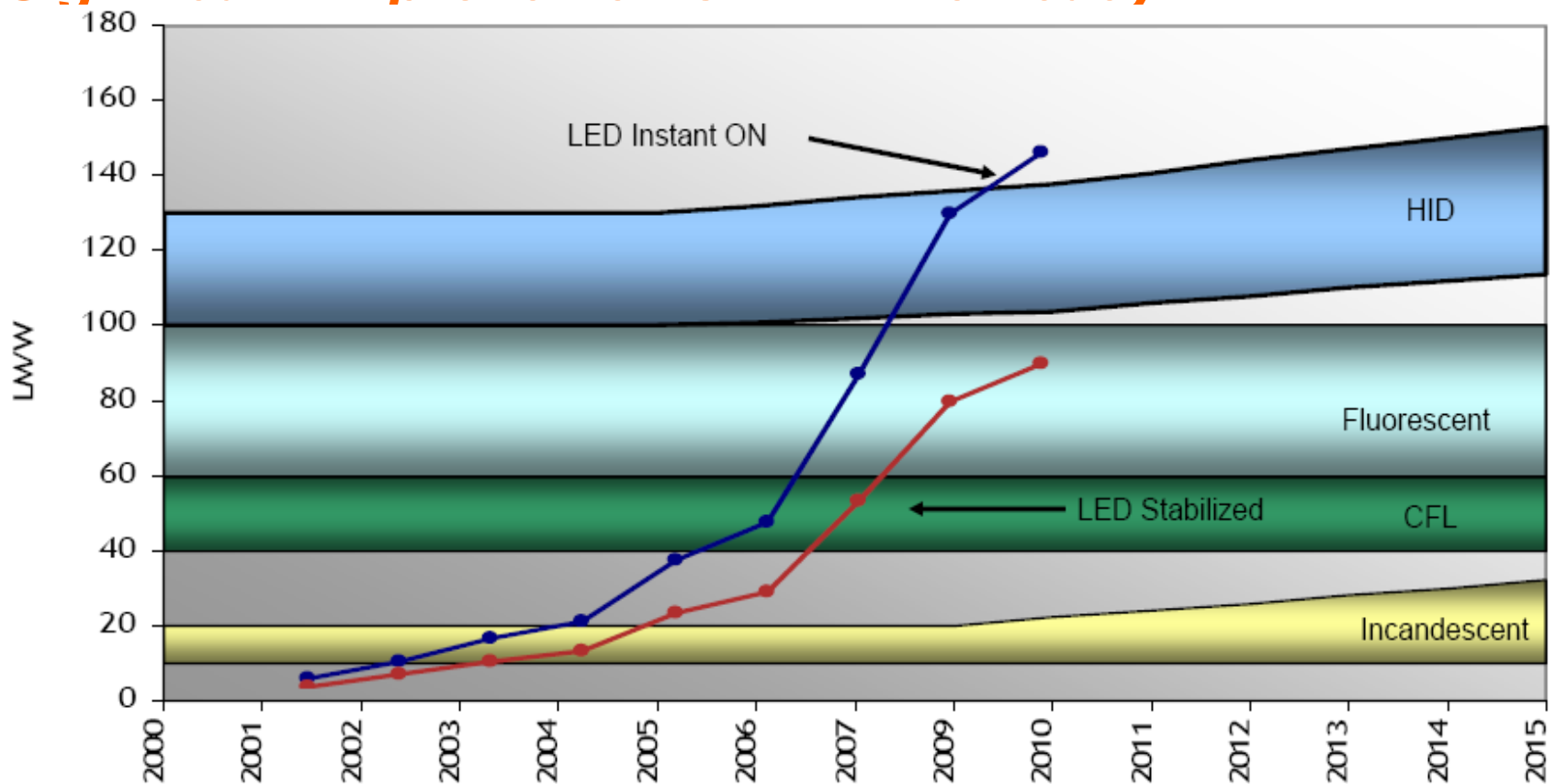
EMerge Offers Savings In Facility Design And Operation

Flexibility + Sustainability = Savings

- Lowers reconfiguration costs and time
- Allows facility teams to quickly and safely move or re-install light fixture
 - Electrician not needed for this function
- Allows for longer term use of lighting systems
 - Properties can be easily reconfigured for new tenants/users
- Reduce technology upgrade costs with this future-ready DC platform
- Reduces use of electricity by better control, metering and demand reduction

The State Of Solid State Lighting

Significant improvements in LED efficacy



Source: 2009 DOE Solid State Lighting Workshop: Keynote: What Customers Want from Solid State Lighting (Jeff Quinlan, Acuity Brands Lighting)

The State Of Solid State Lighting

Significant growth in applications for LEDS

- Today's top applications for white LEDs
 - Signage
 - Dynamic color
 - Exterior façade/security
 - Streetlighting
 - Refrigeration
 - Accent Lighting
 - Halogen/incandescent replacements
 - Compact fluorescent replacements
- Recent introductions
 - Downlighting
 - Indirect lighting
 - Fluorescent 2x2 troffer styles



Photo courtesy of Lithonia Lighting

Forecasted Electricity Savings Due To Solid State Lighting Market Penetration

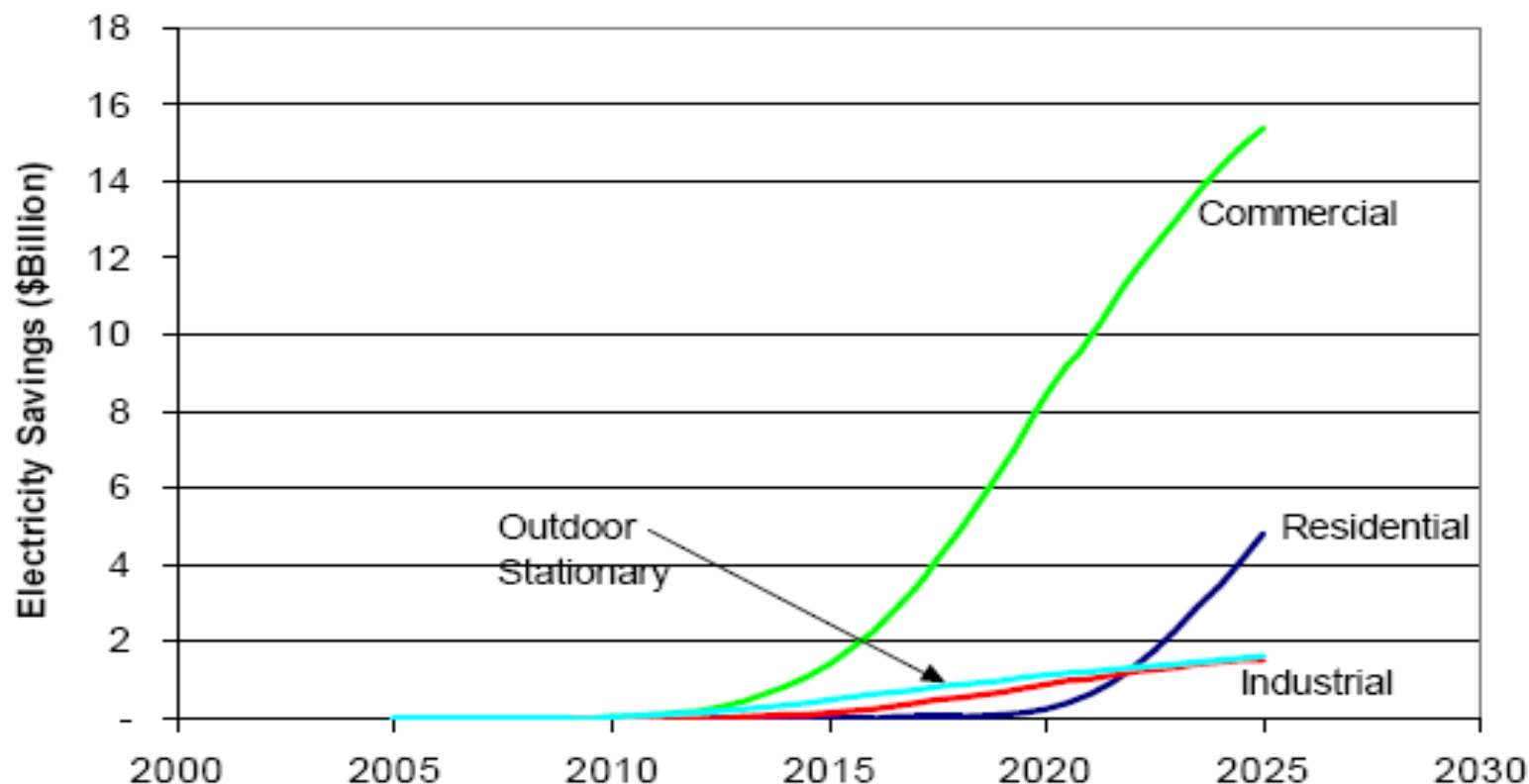


Figure 7-5. Electricity Savings by Sector Due to SSL Market Penetration

Source: United States Department of Energy

EMerge Is Compatible With LED Systems

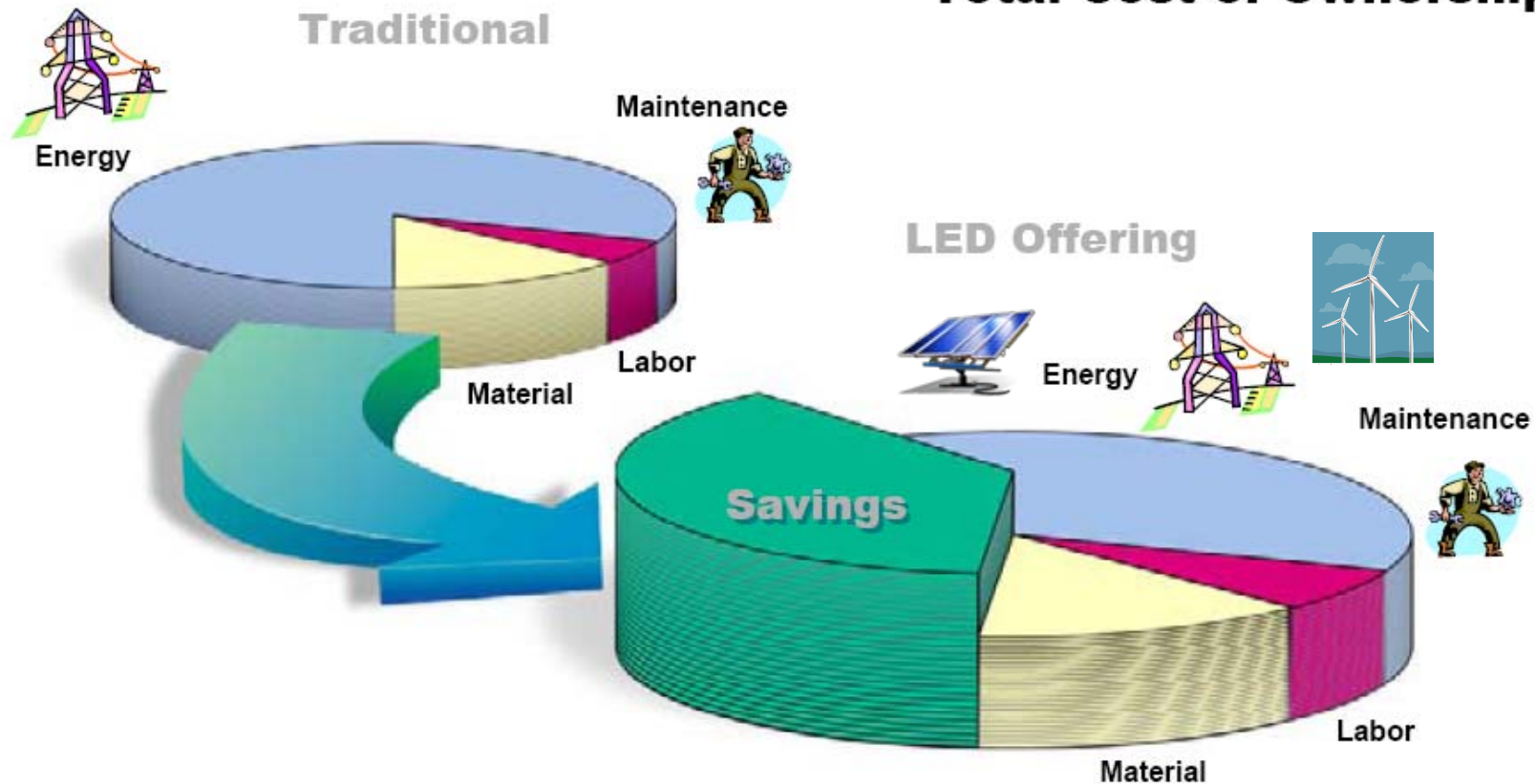
LEDs are inherent users of DC power

- Eliminates 120Vac to 24Vdc power conversion
 - No need for power supplies and enclosures if remote mounting
 - Higher reliability
- Lighter weight
 - Smaller/lower profile fixtures
 - Fewer finished fixture components
- Higher efficacy (light output per watt)
 - Power supply efficiency depends upon maximum loading
 - AC-DC conversion which typically results in 10-15% losses on fully loaded power supplies
losses will increase as load decreases



EMerge Changes Total Cost Of Ownership Model

Total Cost of Ownership



EMerge Benefits Integration Of Wireless Lighting Control

Lighting fixtures controlled without new wires

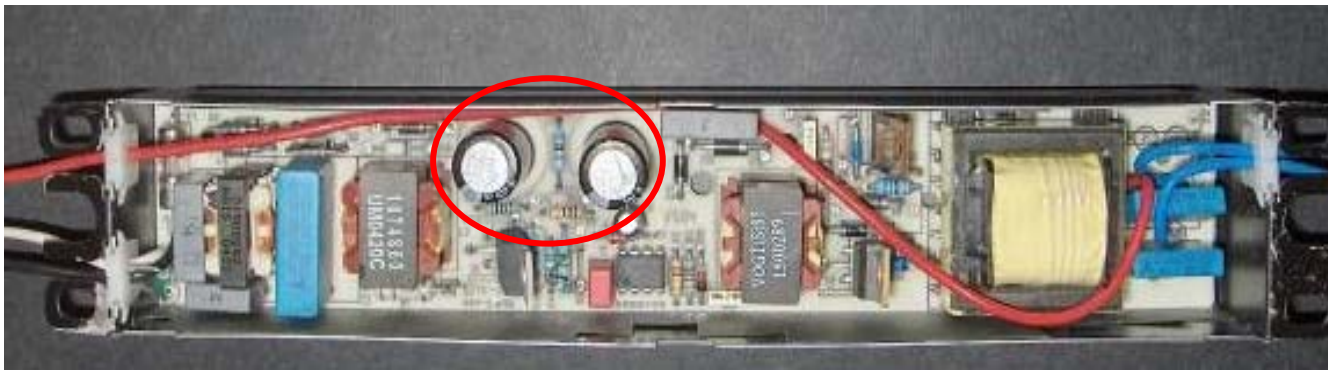
- Each light fixture has wireless receiver
- Lighting fixtures controlled via wireless, battery less switches or wireless occupancy sensors
- Wireless fixtures may be tied to building management system
- Changes to lighting configuration done via firmware, not hardware



EMerge Improves Efficiency of Fluorescent Systems

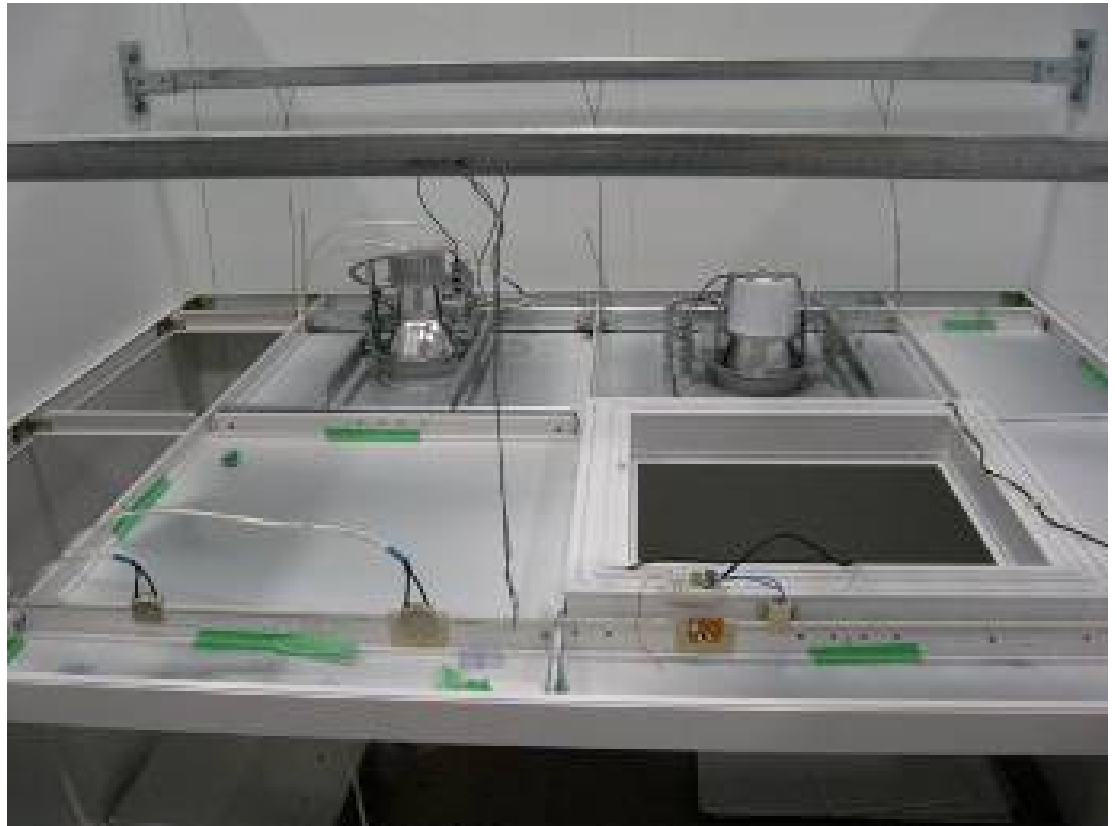
Electronic Ballasts Use High Frequency Switched DC

- A typical 32W fluorescent lamp will operate at 28W on an electronic ballast
- Direct DC input eliminates AC-DC conversion
 - May improve ballast efficiency by up to 15%
- Results in higher lighting system efficacy (light output per watt)



OSRAM SYLVANIA Demonstrates EMerge Ceiling At LIGHTFAIR 09

- A dimmable LED downlight fixture using a SYLVANIA DLM 1100 module
- A recessed downlight with SYLVANIA DULUX® T/E compact fluorescent lamp and QUICKTRONIC® 24Vdc input electronic ballast
- A dimmable LED based cove light fixture using SYLVANIA HF2Narrow Stick modules



OSRAM SYLVANIA Demonstrates EMerge at LIGHTFAIR 09



- Dimmable LED based track mounted fixtures with SYLVANIA HF2Flood modules
- All fixtures controlled by SYLVANIA elogic® wireless dimmers, control switches and wireless, battery less wall box controls

Questions?

Thank you.

