Office Lighting: Title 24 & Technology Update

Supporting compliance with California’s 2013 Title 24 standards

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OBJECTIVES

At the close of the class, attendees should be able to:

- Effectively apply the Title 24 Building Energy Efficiency Standards code requirements specific to lighting for office applications.

- Identify current lighting technologies and controls, including LED luminaires, that are available to fulfill code requirements.

- Review major lighting-related sections in the 2013 Building Energy Efficiency Standards code.

- Identify mandatory and prescriptive Standards’ requirements, apply compliance methodology, and procedures in professional practice.

- Access resources through utility and lighting technology training centers for continued professional development.
CLTC’s Mission: To stimulate, facilitate and accelerate the development, application and commercialization of energy-efficient lighting and daylighting technologies in partnership with utilities, manufacturers, occupants, builders, designers, researchers, academicians, and government agencies.

Mission-driven Activities:
- Research & Development
- Demonstration & Outreach
- Education & Training
FOUNDING ORGANIZATIONS

- UC Davis
- pier
- NEMA
- Large End-Users

UTILITIES

- Pacific Gas and Electric Company
- Southern California Edison
- SDG&E
- Sempria Solar
- SMUD
- Los Angeles Department of Water & Power
- Contra Costa
- Roseville Electric
- Silicon Valley Power
- BC Hydro

MANUFACTURERS

- Acuity Brands
- Entech Solar
- Ideal
- Leviton
- Qualcomm
- Cooper Lighting by Eaton
- Finelite
- Intermatic
- Lumenetix
- Sharp
- Cree
- Jade Technologies
- Lucentia
- Soraa
- Lutron
- Stack
- Daikin
- Everlast Lighting
- Kenall
- Konica Minolta
- Microsoft
- Echelon
- GE Lighting
- Kuraray
- Velux
- Enlighted
- GE
- Samsung Lighting
- Philips
- Watt Stopper
- Honda
- LeTek
- LEED
- Allied Alliance
- The Power of Dreams
LUMINOUS EFFICACY

Luminous Efficacy

- One-time, long-term change
- Reduction of baseline
- Light Source Efficacy
- Luminaire Efficacy
- Application Efficacy

LIGHTING CONTROLS

Lighting Controls

- Continuous, real-time change
- Fluctuations from baseline
  - Occupancy / Vacancy
  - Daylighting
  - Demand Response
  - Tuning
  - Personal Control
ADAPTIVE LIGHTING SYSTEMS…

automatically adjust their light output…

• Total Luminous Flux
• Spectral Power Distribution
• Candle Power Distribution

based on sensor input from the space…

• Occupancy / Vacancy
• Daylight
• DR Signals

to optimize space and building performance.

• Comfort
• Energy Savings
• Peak Demand Reduction
INTEGRATED CONTROL STRATEGY

During occupancy, focus on comfort
- Adjust fenestration for daylight penetration
- Adjust electric lighting for daylight contribution
- Offer manual control options
- Adjust electric lighting for demand response
- Adjust HVAC

During vacancy, focus on energy efficiency
- Adjust fenestration for cooling/heating loads
- Turn electric lighting off or dim down
- Adjust electric lighting for demand response
- Adjust HVAC
SELECT THE APPROPRIATE…
Source + Luminaire + Controls for the application