

Sector: Commercial

Category/Practice: Energy Efficiency & Conservation / Exterior Lighting Controls

Proposed GB practice

Description

Exterior lighting of building façades, parking lots, garages, canopies (sales and non-sales) and all outdoor sales areas require automatic controls to reduce lighting power consumption by a minimum of 50 percent two hours after normal business closing and to turn off outdoor lighting within 30 minutes after sunrise.

Applicability

New construction: Applies

Additions: Applies

Alterations: No

Intent

Conserve energy at night by turning off lighting that is not essential for safety or security. The 50 percent reduction threshold provides flexibility in selecting fixtures that are not essential for safety, security, or sales.

Benefits and Costs

Triple Bottom Line Benefits

People: Reduced light trespass and light pollution.

Economic: Energy cost savings of ~\$0.015/square foot/year and reduced maintenance cost due to lower equipment operating time.

Environment: Reduced CO₂ emissions of ~0.5 pound of CO₂/square foot/year.

Costs Passed to Owner

About \$400 per structure depending on the type of control technology and the number of circuits that need to be controlled to achieve the required reduction.

Lost Opportunity

If this is not done during construction, it may difficult and expensive to create that would enable this type of control later.

Implementation

Availability of products and/or services

Timer controls with a photo sensor or astronomical clock for adjusting to seasonal changes in night-time hours are readily available.

Practicality

No significant obstacles. Designing outdoor lighting circuits so that desirable fixtures for control are on the same circuit is probably the biggest challenge.

Certification Issues

None

Enforcement Procedures

Permit application/plan review: Controls specified in construction documents.

Field inspection: City building inspector performs standard compliance inspection.

Certificate of Occupancy: Nothing additional.

Support Materials Needs

None

Training Needs – Industry

Minor training needs for designers to assure circuits are conducive to desired control scheme.

Training Needs - Staff

Minor training for plan reviews and inspectors

Background**Current practice**

The 2009 IECC requires outside lighting to be on from dusk-to-dawn and controlled by an astronomical time switch or photo sensor. Other outside lighting applications—those that are not on from dusk-to-dawn—are also required to have a clock timer in addition to astronomical or photo sensor control. This proposed approach assumes that an additional clock timer is needed above the current practice to achieve the 50 percent reduction in lighting load.

Context

Outdoor lighting is often left on from dusk-to-dawn at businesses where there is little or no activity from shortly after the close of business until after dawn. By selecting appropriate fixtures for control the safety and security of the occupants and structure can be maintained with significantly less lighting left on for the entire night.

Related GB practices

This practice will support other efforts to reduce light trespass and pollution such as the implementation of cut-off lighting fixtures.

Known objections

- Concerns about safety, security, and/or sales.