Green Building Practice Summary 03/17/2011

Sector: Commercial

Category/Practice: Energy / Control of Loads in Hotel/Motel Guest Rooms

Proposed GB practice

Description
In hotels and motels with over 20 guest rooms, lighting switched outlets, permanently wired lighting fixtures, television and HVAC equipment serving each guest room will be automatically controlled to shutoff or adjust heating and cooling modes to conserve energy when the guest room is unoccupied.

Applicability
New construction: Applies
Additions: Applies
Alterations: To be determined

Intent
Conserve energy when guest rooms are not occupied.

Benefits and Costs

Triple Bottom Line Benefits

People: Convenient, guests don’t have to be as vigilant about turning off equipment.

Economic: Energy cost savings (~$0.17/square foot/year) for guest rooms. There is also reduced maintenance cost due to lower equipment operating time.

Environment: Reduced CO₂ emissions (~7 pounds of CO₂/square foot/year), more efficient use of materials by making equipment last longer.

Costs Passed to Owner
$300-$500 per hotel/motel guest room depending on the scale of the installation and the selected technology.

Lost Opportunity
This is less expensive to install in new construction compared to retrofitting.

Implementation

Availability of products and/or services
These control products currently have moderate availability. The market is growing but it is still unclear which types of automation will remain in the market.
Practicality
No significant obstacles. Most of the automation technologies are not much more difficult to install and setup than traditional thermostats and occupancy sensors.

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
Provide information on acceptable types of controls.

Training Needs – Industry
Minor training needs for architects, builders, trades and inspectors. Facility maintenance staff, housekeeping, and front-of-house staff will need to be trained in the maintenance, operation, and guest interface on these technologies.

Training Needs - Staff
Minor training for plan reviewers and inspectors

Background

Current practice
According to 2009 IECC, a master switch is required at each room entrance or main entrance for hotels, motels, or other similar properties. If room is a suite, master switch must control all permanently wired luminaries or switched receptacles. Specific control of televisions and HVAC set points is not required.

Context
Relatively recent applications of networked thermostats, occupancy sensors, and/or key card enabled room systems can reduce a significant amount of room and hotel-wide energy consumption by preventing lights, televisions, HVAC, and other amenities from operating when a guest room is unoccupied. Studies have shown (ACEEE, CEC) that occupancy based controls in hotel and motel guest rooms can lead to annual energy savings of 25 to 44% of total energy use.

Related GB practices
May relate or integrate with lighting control strategies in guest rooms.

Known objections
- Higher building controls costs
- Challenges of effectively implementing some control technologies
- Room may be too warm/cold on initial guest arrival - before systems respond to occupancy - with some technologies
- Training staff and managing guest expectations about controls
Resources

IGCC Public Version 1.0
ASHRAE 189.1
Esource - Resource Guide on Hotel Room Automation, By Peter Criscione and Ira Goldschmidt