

# **What's New in the 2015 International Energy Conservation Code**

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# Commercial Code Change Proposal Summary

- Building envelope – slight reduction of efficiency
  - Building mechanical – big gains in efficiency
  - Lighting system – big gains in efficiency
  - Added efficiencies
    - Transformers
    - Motors
    - Refrigeration equipment
    - Horizontal people movers
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# Scope and Application

- Exempts greenhouses from complying with the envelope requirements of the code
- Requires locations of daylight zones to be included on the floor plans
- Allows telecommunications buildings to comply with lower envelope requirements than a typical building

# Existing Buildings

- New Chapter 5 CE
- New Historic Buildings Definition (7 codes)
- Roof recover and repair definitions – distinct from roof replacements
- Roadmap for contingencies
- Repairs more tightly delineated

# Historic Buildings

- **HISTORIC BUILDING.** Any building or structure that is one or more of the following:
  1. Listed, or certified as eligible for listing by the State Historic Preservation Officer or the Keeper of the National Register of Historic Places, in the National Register of Historic Places
  2. Designated as historic under an applicable state or local law; or
  3. Certified as a contributing resource within a National Register listed or locally designated historic district.
- **C101.4.2 Historic buildings.** The *No* provisions of this code relating to the construction, *repair, alteration*, restoration and movement of structures, and *change of occupancy* shall not be mandatory for *historic buildings* provided a report has been submitted to the code official and signed by a registered design professional, or a representative of the State Historic Preservation Office or the historic preservation authority having jurisdiction, demonstrating that compliance with that provision would threaten, degrade or destroy the historic form, fabric or function of the building.

# Clarify Roof Alterations

## SECTION C202 GENERAL DEFINITIONS

**[B] REROOFING.** The process of recovering or replacing an existing *roof covering*. See “Roof recover” and “Roof replacement.”

**[B] ROOF RECOVER.** The process of installing an additional *roof covering* over a prepared existing *roof covering* without removing the existing *roof covering*.

**[B] ROOF REPAIR.** Reconstruction or renewal of any part of an existing roof for the purposes of its maintenance.

**[B] ROOF REPLACEMENT.** The process of removing the existing *roof covering*, repairing any damaged substrate and installing a new *roof covering*.



# Building Envelope

- Decreases in Efficiency
  - Mass wall U-factor 0.078 to 0.090 in CZ 6
  - Mass wall U-factor from 0.078 to 0.090 (all other) and 0.078 to 0.080 (Group R) in CZ 5
  - Minor tweaks in wall assembly U-factors
  - Roof reflectivity for CZ 1,2,3

# HVAC and Water Heating

- Puts new HVAC equipment efficiency requirements into the code.
- Puts in requirement for zone isolation per 90.1-2010
- Requires economizer fault detection and diagnostics for HVAC systems (FDD)
- Requires controls for enclosed parking garage ventilation per 90.1-2010

# HVAC and Water Heating

- Increase duct insulation requirement to R-12 for CZ 5 to 8 when located outside the building
- Provides equipment efficiency requirements for refrigeration equipment and envelope, lighting and equipment requirements for walk-in coolers and freezers

# HVAC and Water Heating

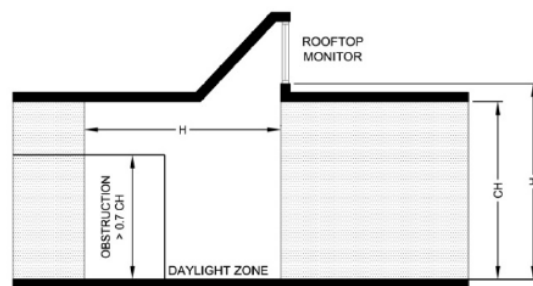
- Efficiency requirements for fractional (1/12 HP to <1HP) fan motors
- Requires on demand controls for all circulation pumps on hot water systems

# Required Daylighting

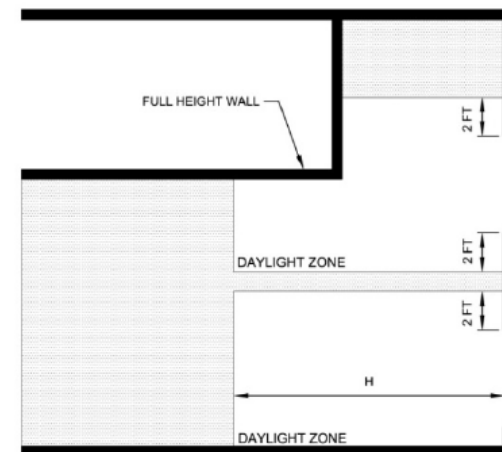
- **C402.3.2 Minimum skylight fenestration area.** In an enclosed space greater than 10,000 square feet (929 m<sup>2</sup>) in floor area directly under a roof with a not less than 75 percent of ceiling area with heights greater than 15 feet (4572 mm), and used as an office, lobby, atrium, concourse, corridor, storage space, gymnasium/exercise center, convention center, automotive service area, space where manufacturing occurs, non-refrigerated warehouse, retail store, distribution/sorting area, transportation depot, or workshop, the total daylight zone under skylights shall be not less than half the floor area and shall provide a minimum skylight area to daylight zone under skylights of either
  1. A minimum skylight area to daylight zone under skylights of not less than 3 percent with a skylight where all skylights have a VT of at least 0.40 when tested in accordance with NFRC 202, or
  2. A provide minimum skylight effective aperture of at least 1 percent as determined in accordance with Equation 4-1.

# Lighting Systems

- Adds occ. sensors to copy rooms, lounges, locker rooms, and warehouses
- Requires automatic daylighting controls in all daylight zones
- Requires clarifying diagrams on plans



(a) Section view and  
(b) Plan view of daylight zone under a rooftop monitor



# Lighting Systems

- LPDs

BUILDING AREA TYPE	LPD (w/ft2)
Dining: family	<del>4.6</del> <u>0.95</u>
Dormitory	<del>4.0</del> <u>0.57</u>
Exercise center	<del>4.0</del> <u>0.84</u>
Fire station	<del>0.8</del> <u>0.67</u>
Gymnasium	<del>4.4</del> <u>0.94</u>
Health care clinic	<del>4.0</del> <u>0.90</u>
Hospital	<del>4.2</del> <u>1.05</u>
Hotel/Motel	<del>4.0</del> <u>0.87</u>
Library	<del>4.3</del> <u>1.19</u>
Manufacturing facility	<del>4.3</del> <u>1.17</u>
Motel	<del>4.0</del> <u>0.87</u>
Motion picture theater	<del>4.2</del> <u>0.76</u>
Multifamily	<del>0.7</del> <u>0.51</u>
Museum	<del>4.4</del> <u>1.02</u>
Office	<del>0.9</del> <u>0.82</u>
Parking garage	<del>0.3</del> <u>0.21</u>
Penitentiary	<del>4.0</del> <u>0.81</u>
Performing arts theater	<del>4.6</del> <u>1.39</u>
Police station	<del>4.0</del> <u>0.87</u>
Post office	<del>4.4</del> <u>0.87</u>
Religious building	<del>4.3</del> <u>1.0</u>
Retail	<del>4.4</del> <u>1.26</u>
School/University	<del>4.2</del> <u>0.87</u>
Sports arena	<del>4.4</del> <u>0.91</u>
Town hall	<del>4.4</del> <u>0.89</u>
Transportation	<del>4.0</del> <u>0.70</u>
Warehouse	<del>0.6</del> <u>0.66</u>

# Electrical Systems

- Requires transformers  $\geq 15$  kVA to meet efficiency requirements.
- Requires electric motors  $\geq 1$  HP to meet efficiency requirements
- Requires elevators, escalators and moving walkways to include controls that reduce energy use when not in use



# Options Packages

- Added additional Options Packages and increased the usability of the approach
- Clarifies application to tenant spaces

**C406.1 Requirements.** Buildings shall comply with at least one of the following:

1. More efficient HVAC equipment performance in accordance with Section C406.2.
2. Reduced efficient lighting power density system in accordance with Section C406.3.
3. Enhanced lighting controls in accordance with Section C406.4
4. On-site supply of renewable energy in accordance with Section C406.5.
5. Provision of a dedicated outdoor air system for certain HVAC equipment in accordance with Section C406.6.
6. High efficiency service water heating in accordance with Section C406.8.

# Questions?



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