

**CTC Meeting #26
April 8 - 9, 2013
Carbon Monoxide Detectors**

The following 2013 Group B changes have been compiled for the above noted CTC Area of Study. Code changes with an (*) indicate CTC sponsored code changes. These changes are intended to serve as the agenda for the CTC in order to establish CTC positions, if any, for the upcoming 2013 Group B Committee Action Hearings.

**EB3-13
EB16-13
F179-13
F180-13
F181-13
F182-13
F183-13
F360-13
PM16-13**

EB3-13

301.1, 301.2, 302 (New), 302.1 (New), 302.1.1 (New), 303 (New), 705.1, Chapter 16

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Revise as follows:

**CHAPTER 3
COMPLIANCE METHODS, APPLICABILITY AND MINIMUM REQUIREMENTS**

301.1 General. The *repair, alteration, change of occupancy, addition* or relocation of all *existing buildings* shall comply with one of the methods listed in Sections 301.1.1 through 301.1.3 as selected by the applicant in addition to complying with the minimum requirements in Sections 302 and 303. Application of a method shall be the sole basis for assessing the compliance of work performed under a single permit unless otherwise approved by the *code official*. Sections 301.1.1 through 301.1.3 shall not be applied in combination with each other. Where this code requires consideration of the seismic force-resisting system of an existing building subject to *repair, alteration, change of occupancy, addition* or relocation of *existing buildings*, the seismic evaluation and design shall be based on Section 301.1.4 regardless of which compliance method is used.

Exception: Subject to the approval of the *code official*, *alterations* complying with the laws in existence at the time the building or the affected portion of the building was built shall be considered in compliance with the provisions of this code unless the building is undergoing more than a limited structural alteration as defined in Section 907.4.3. New structural members added as part of the *alteration* shall comply with the *International Building Code*. *Alterations of existing buildings in flood hazard areas* shall comply with Section 701.3.

SECTION 302
ADDITIONAL CODES AND REQUIREMENTS

301.2 Additional codes 302.1 General. *Alterations, repairs, additions and changes of occupancy to, or relocation of, existing buildings and structures shall comply with the provisions for alterations, repairs, additions and changes of occupancy or relocation, respectively, in this code and the International Energy Conservation Code, International Fire Code, International Fuel Gas Code, International Mechanical Code, International Plumbing Code, International Property Maintenance Code, International Private Sewage Disposal Code, International Residential Code and NFPA 70. Where provisions of the other codes conflict with provisions of this code, the provisions of this code shall take precedence.*

302.1.1 Accessibility. Level 1 alterations shall comply with the 2015 ANSI A117.1 to the extent of the altered element. Areas of an existing building that are outside the specific work area or otherwise unaffected by alterations Level 1, 2 or 3, that are required to be accessible by Chapter 7 shall comply with the 2003 ANSI A117.1.

Work performed under Level 2 and 3 alterations shall comply with the 2015 ANSI A117.1 and all spaces that change configuration as part of the alterations shall comply with the 2015 ANSI A117.1.

SECTION 303
EXISTING BUILDING MINIMUM REQUIREMENTS

303.1 Administration. Sections 303.1.1 through 303.1.4 shall set the scope, intent and administration of provisions related to minimum requirements that are applicable to existing buildings.

303.1.1 ([F] 1101.1) Scope. The provisions of this Section shall apply to existing buildings constructed prior to the adoption of this code.

303.1.2 ([F] 1101.2) Intent. The intent of this Section is to provide a minimum degree of fire and life safety to persons occupying existing buildings by providing minimum construction requirements where such existing buildings do not comply with the minimum requirements of the International Building Code.

303.1.3 ([F] 1101.3) Permits. Permits for alterations necessary to conform with this Section shall be required as set forth in Sections 105.1.

303.1.4 ([F] 1101.4) Owner notification. When a building is found to be in noncompliance with this chapter, the code official shall duly notify the owner of the building. Upon receipt of such notice, the owner shall, subject to the following time limits, take necessary actions to comply with the provisions of this chapter.

303.1.4.1 ([F] 1101.4.1) Construction documents. Construction documents necessary to comply with this chapter shall be completed and submitted within a time schedule approved by the code official.

303.1.4.2 ([F] 1101.4.2) Completion of work. Work necessary to comply with this chapter shall be completed within a time schedule approved by the code official.

303.1.4.3 ([F] 1101.4.3) Extension of time. The code official is authorized to grant necessary extensions of time when it can be shown that the specified time periods are not physically practical or pose an undue hardship. The granting of an extension of time for compliance shall be based on the showing of good cause and subject to the filing of an acceptable systematic plan of correction with the code official.

303.2 ([F] SECTION 1103) Fire safety requirements for existing buildings. Minimum fire safety requirements for existing buildings shall be in provided in accordance with Sections 303.2.1 through 303.2.9.

303.2.1 (IF 1103.1) Required construction. Existing buildings shall comply with not less than the minimum provisions specified in Table 303.2.1 and as further enumerated in Sections 303.2.2 through 303.2.9.

The provisions of this chapter shall not be construed to allow the elimination of fire protection systems or a reduction in the level of fire safety provided in buildings constructed in accordance with previously adopted codes.

Exception: Group U occupancies.

**TABLE 303.2.1 (IF TABLE 1103.1)
OCCUPANCY AND USE REQUIREMENTS^a**

SECTION	USE			OCCUPANCY CLASSIFICATION																			
	High rise	Atrium or covered mall	Under-ground building	A	B	E	F	H1	H-2	H-3	H-4	H-5	I-1	I-2	I-3	I-4	M	R-1	R-2	R-3	R-4	S	
301.3.5	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
301.3.6	R	-	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
301.3.7.1	R	-	R	-	-	-	-	-	-	-	-	-	R	R	R	R	-	-	-	-	-	-	-
301.3.7.2	R	-	R	R	R	R	R	R	R	R	R	R	-	-	-	-	R	R	R	-	R	R	R
301.3.7.3	R	-	R	R	R	R	R	R	R	R	R	R	-	-	-	-	R	R	R	-	R	R	R
301.3.7.4	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
301.3.7.5	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-
301.3.7.6	-	-	-	R	-	R	R	R	R	R	R	R	R	R	R	R	-	R	R	R	R	R	R
301.3.7.7	-	-	-	R	-	R	R	R	R	R	R	R	R	R	R	R	-	R	R	R	R	R	R
301.3.8.1	-	-	-	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
301.3.8.2	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-
301.3.9.1	R	-	R	R	R	R	R	R	R	R	-	-	R	R	R	R	R	R	R	-	R	R	R
301.3.9.2	R	-	R	R	R	R	R	R	R	R	-	-	R	R	R	R	R	R	R	-	R	R	R
301.3.10.1	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
301.3.10.2	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	-
301.3.10.3	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-
301.3.10.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-
301.3.10.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-
301.3.10.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-
301.3.10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-
301.3.10.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	R	R	R	R	-
301.3.11	R	-	-	-	-	-	-	-	-	-	-	-	R	R	R	R	-	R	R	R	R	R	-
301.3.12.4.1	R	R	R	R	R	R	R	R	R	R	-	-	R	R	R	R	R	R	R	R	R	R	R

a. Existing buildings shall comply with the Sections identified as "Required" (R) based on occupancy classification or use, or both, whichever is applicable.
R = The building is required to comply.

303.2.2 (IF 1103.2) Emergency responder radio coverage in existing buildings. Existing buildings that do not have approved radio coverage for emergency responders within the building based upon the existing coverage levels of the public safety communication systems of the jurisdiction at the exterior of the building, shall be equipped with such coverage according to one of the following:

1. Whenever an existing wired communication system cannot be repaired or is being replaced, or where not approved in accordance with Section 510.1, Exception 1 of the *International Fire Code*.

2. Within a time frame established by the adopting authority.

Exception: Where it is determined by the fire code official that the radio coverage system is not needed.

303.2.3 (IF 1103.3) Elevator operation. Existing elevators with a travel distance of 25 feet (7620 mm) or more above or below the main floor or other level of a building and intended to serve the needs of emergency personnel for fire-fighting or rescue purposes shall be provided with emergency operation in accordance with ASME A17.3.

303.2.4 (IF 1103.4) Vertical openings. Interior vertical shafts, including but not limited to stairways, elevator hoistways, service and utility shafts, that connect two or more stories of a building, shall be enclosed or protected as specified in Sections 303.2.4.1 through 303.2.4.7.

303.2.4.1 (IF 1103.4.1) Group I occupancies. In Group I occupancies, interior vertical openings connecting two or more stories shall be protected with 1-hour fire-resistance-rated construction.

303.2.4.2 (IF 1103.4.2) Three to five stories. In other than Group I occupancies, interior vertical openings connecting three to five stories shall be protected by either 1-hour fire-resistance-rated construction or an automatic sprinkler system shall be installed throughout the building in accordance with Section 903.3.1.1 or 903.3.1.2 of the *International Building Code*.

Exceptions:

1. Vertical opening protection is not required for Group R-3 occupancies.
2. Vertical opening protection is not required for open parking garages and ramps.
3. Vertical opening protection for escalators shall be in accordance with Section 303.2.4.5, 303.2.4.6 or 303.2.4.7.

303.2.4.3 (IF 1103.4.3) More than five stories. In other than Group I occupancies, interior vertical openings connecting more than five stories shall be protected by 1-hour fire-resistance-rated construction.

Exceptions:

1. Vertical opening protection is not required for Group R-3 occupancies.
2. Vertical opening protection is not required for open parking garages and ramps.
3. Vertical opening protection for escalators shall be in accordance with Section 303.2.4.5, 303.2.4.6 or 303.2.4.7.

303.2.4.4 (IF 1103.4.4) Atriums and covered malls. In other than Group I occupancies, interior vertical openings in a covered mall building or a building with an atrium shall be protected by either 1-hour fire-resistance-rated construction or an automatic sprinkler system shall be installed throughout the building in accordance with Section 903.3.1.1 or 903.3.1.2 of the *International Building Code*.

Exceptions:

1. Vertical opening protection is not required for Group R-3 occupancies.
2. Vertical opening protection is not required for open parking garages and ramps.

303.2.4.5 (IF 1103.4.5) Escalators in Group B and M occupancies. Escalators creating vertical openings connecting any number of stories shall be protected by either 1-hour fire-resistance-rated construction or an automatic sprinkler system in accordance with Section 903.3.1.1 of the *International Building Code* installed throughout the building, with a draft curtain and closely spaced sprinklers around the escalator opening.

303.2.4.6 (IF 1103.4.6) Escalators connecting four or fewer stories. In other than Group B and M occupancies, escalators creating vertical openings connecting four or fewer stories shall be protected by

either 1-hour fire-resistance-rated construction or an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 of the *International Building Code* shall be installed throughout the building, and a draft curtain with closely spaced sprinklers shall be installed around the escalator opening.

303.2.4.7 (IF) 1103.4.7) Escalators connecting more than four stories. In other than Group B and M occupancies, escalators creating vertical openings connecting five or more stories shall be protected by 1-hour fire-resistance-rated construction.

303.2.5 (IF) 1103.5) Sprinkler systems. An automatic sprinkler system shall be provided in existing buildings in accordance with Sections 303.2.5.1 and 303.2.5.2.

303.2.5.1 (IF) 1103.5.1) Pyroxylin plastics. An automatic sprinkler system shall be provided throughout existing buildings where cellulose nitrate film or pyroxylin plastics are manufactured, stored or handled in quantities exceeding 100 pounds (45 kg). Vaults located within buildings for the storage of raw pyroxylin shall be protected with an approved automatic sprinkler system capable of discharging 1.66 gallons per minute per square foot (68 L/min/m²) over the area of the vault.

303.2.5.2 (IF) 1103.5.2) Group I-2. An automatic sprinkler system shall be provided throughout existing Group I-2 fire areas. The sprinkler system shall be provided throughout the floor where the Group I-2 occupancy is located, and in all floors between the Group I-2 occupancy and the level of exit discharge.

303.2.6 (IF) 1103.6) Standpipes. Where required by Sections 303.2.6.1 or 303.2.6.2, standpipes shall be installed in accordance with Section 905 of the *International Building Code*. The code official is authorized to approve the installation of manual standpipe systems to achieve compliance with this Section where the responding fire department is capable of providing the required hose flow at the highest standpipe outlet.

303.2.6.1 (IF) 1103.6.1) Existing multiple-story buildings. Existing buildings with occupied floors located more than 50 feet (15 240 mm) above the lowest level of fire department access or more than 50 feet (15 240 mm) below the highest level of fire department access shall be equipped with standpipes.

303.2.6.2 (IF) 1103.6.2) Existing helistops and heliports. Existing buildings with a rooftop helistop or heliport located more than 30 feet (9144 mm) above the lowest level of fire department access to the roof level on which the helistop or heliport is located shall be equipped with standpipes in accordance with Section 905.3.6 of the *International Building Code*.

303.2.7 (IF) 1103.7) Fire alarm systems. An approved fire alarm system shall be installed in existing buildings and structures where required by Sections 303.2.7.1 through 303.2.7.7 and provide occupant notification in accordance with Section 907.6 of the *International Building Code* unless other requirements are provided by other Sections of this code.

Exception: Occupancies with an existing, previously approved fire alarm system.

303.2.7.1 (IF) 1103.7.1) Group E. A fire alarm system shall be installed in existing Group E occupancies in accordance with Section 907.2.3.

Exceptions:

1. A manual fire alarm system is not required in a building with a maximum area of 1,000 square feet (93 m²) that contains a single classroom and is located no closer than 50 feet (15 240 mm) from another building.
2. A manual fire alarm system is not required in Group E occupancies with an occupant load less than 50.

303.2.7.2 (IF) 1103.7.2) Group I-1. An automatic fire alarm system shall be installed in existing Group I-1 residential care/assisted living facilities in accordance with Section 907.2.6.1 of the *International Building Code*.

Exceptions:

1. Manual fire alarm boxes in resident or patient sleeping areas shall not be required at exits if located at all nurses' control stations or other constantly attended staff locations, provided such stations are visible and continuously accessible and that travel distances required in Section 907.5.2 of the *International Building Code* are not exceeded.
2. Where each sleeping room has a means of egress door opening directly to an exterior egress balcony that leads directly to the exits in accordance with Section 1019 of the *International Building Code*, and the building is not more than three stories in height.

303.2.7.3 (IF) 1103.7.3) Group I-2. An automatic fire alarm system shall be installed in existing Group I-2 occupancies in accordance with Section 907.2.6.2 of the *International Building Code*.

Exception: Manual fire alarm boxes in resident or patient sleeping areas shall not be required at exits if located at all nurses' control stations or other constantly attended staff locations, provided such stations are visible and continuously accessible and that travel distances required in Section 907.5.2.1 of the *International Building Code* are not exceeded.

303.2.7.4 (IF) 1103.7.4) Group I-3. An automatic and manual fire alarm system shall be installed in existing Group I-3 occupancies in accordance with Section 907.2.6.3 of the *International Building Code*.

303.2.7.5 (IF) 1103.7.5) Group R-1. A fire alarm system and smoke alarms shall be installed in existing Group R-1 occupancies in accordance with Sections 303.2.7.5.1 through 303.2.7.5.2.1.

303.2.7.5.1 (IF) 1103.7.5.1) Group R-1 hotel and motel manual fire alarm system. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.6 of the *International Building Code* shall be installed in existing Group R-1 hotels and motels more than three stories or with more than 20 sleeping units.

Exceptions:

1. Buildings less than two stories in height where all sleeping units, attics and crawl spaces are separated by 1-hour fire-resistance-rated construction and each sleeping unit has direct access to a public way, egress court or yard.
2. Manual fire alarm boxes are not required throughout the building when the following conditions are met:
 - 2.1. The building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 of the *International Building Code*;
 - 2.2. The notification appliances will activate upon sprinkler water flow; and
 - 2.3. At least one manual fire alarm box is installed at an approved location.

303.2.7.5.1.1 (IF) 1103.7.5.1.1) Group R-1 hotel and motel automatic smoke detection system. An automatic smoke detection system that activates the occupant notification system in accordance with Section 907.6 of the *International Building Code* shall be installed in existing Group R-1 hotels and motels throughout all interior corridors serving sleeping rooms not equipped with an approved, supervised sprinkler system installed in accordance with Section 903 of the *International Building Code*.

Exception: An automatic smoke detection system is not required in buildings that do not have interior corridors serving sleeping units and where each sleeping unit has a means of egress door opening directly to an exit or to an exterior exit access that leads directly to an exit.

303.2.7.5.2 (IF) 1103.7.5.2) Group R-1 boarding and rooming houses manual fire alarm system. A manual fire alarm system that activates the occupant notification system in accordance with Section

907.6 of the *International Building Code* shall be installed in existing Group R-1 boarding and rooming houses.

Exception: Buildings less than two stories in height where all sleeping units, attics and crawl spaces are separated by 1-hour fire-resistance-rated construction and each sleeping unit has direct access to a public way, egress court or yard.

303.2.7.5.2.1 ([F] 1103.7.5.2.1) Group R-1 boarding and rooming houses automatic smoke detection system. An automatic smoke detection system that activates the occupant notification system in accordance with Section 907.6 of the *International Building Code* shall be installed in existing Group R-1 boarding and rooming houses throughout all interior corridors serving sleeping units not equipped with an approved, supervised sprinkler system installed in accordance with Section 903 of the *International Building Code*.

Exception: Buildings equipped with single-station smoke alarms meeting or exceeding the requirements of Section 907.2.11.1 of the *International Building Code* and where the fire alarm system includes at least one manual fire alarm box per floor arranged to initiate the alarm.

303.2.7.6 ([F] 1103.7.6) Group R-2. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.6 of the *International Building Code* shall be installed in existing Group R-2 occupancies more than three stories in height or with more than 16 dwelling or sleeping units.

Exceptions:

1. Where each living unit is separated from other contiguous living units by fire barriers having a fire-resistance rating of not less than 0.75 hour, and where each living unit has either its own independent exit or its own independent stairway or ramp discharging at grade.
2. A separate fire alarm system is not required in buildings that are equipped throughout with an approved supervised automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 of the *International Building Code* and having a local alarm to notify all occupants.
3. A fire alarm system is not required in buildings that do not have interior corridors serving dwelling units and are protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 of the *International Building Code*, provided that dwelling units either have a means of egress door opening directly to an exterior exit access that leads directly to the exits or are served by open-ended corridors designed in accordance with Section 1026.6, Exception 4 of the *International Building Code*.

303.2.7.7 ([F] 1103.7.7) Group R-4. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.6 of the *International Building Code* shall be installed in existing Group R-4 residential care/assisted living facilities in accordance with Section 907.2.10.1 of the *International Building Code*.

Exceptions:

1. Where there are interconnected smoke alarms meeting the requirements of Section 907.2.11 of the *International Building Code* and there is at least one manual fire alarm box per floor arranged to continuously sound the smoke alarms.
2. Other manually activated, continuously sounding alarms approved by the code official.

303.2.8 ([F] 1103.8) Single- and multiple-station smoke alarms. Single- and multiple-station smoke alarms shall be installed in existing Group I-1 and R occupancies in accordance with Sections 303.2.8.1 through 303.2.8.3.

303.2.8.1 ([F] 1103.8.1) Where required. Existing Group I-1 and R occupancies shall be provided with single-station smoke alarms in accordance with Section 907.2.11 of the *International Building Code*, except as provided in Sections 303.2.8.2 or 303.2.8.3.

Exceptions:

1. Where the code that was in effect at the time of construction required smoke alarms and smoke alarms complying with those requirements are already provided.
2. Where smoke alarms have been installed in occupancies and dwellings that were not required to have them at the time of construction, additional smoke alarms shall not be required provided that the existing smoke alarms comply with requirements that were in effect at the time of installation.
3. Where smoke detectors connected to a fire alarm system have been installed as a substitute for smoke alarms.

303.2.8.2 (IF) 1103.8.2) Interconnection. Where more than one smoke alarm is required to be installed within an individual dwelling or sleeping unit, the smoke alarms shall be interconnected in such a manner that the activation of one alarm will activate all of the alarms in the individual unit. Physical interconnection of smoke alarms shall not be required where listed wireless alarms are installed and all alarms sound upon activation of one alarm. The alarm shall be clearly audible in all bedrooms over background noise levels with all intervening doors closed.

Exceptions:

1. Interconnection is not required in buildings that are not undergoing alterations, repairs or construction of any kind.
2. Smoke alarms in existing areas are not required to be interconnected where alterations or repairs do not result in the removal of interior wall or ceiling finishes exposing the structure, unless there is an attic, crawl space or basement available which could provide access for interconnection without the removal of interior finishes.

303.2.8.3 (IF) 1103.8.3) Power source. Single-station smoke alarms shall receive their primary power from the building wiring provided that such wiring is served from a commercial source and shall be equipped with a battery backup. Smoke alarms with integral strobes that are not equipped with battery backup shall be connected to an emergency electrical system. Smoke alarms shall emit a signal when the batteries are low. Wiring shall be permanent and without a disconnecting switch other than as required for overcurrent protection.

Exceptions:

1. Smoke alarms are permitted to be solely battery operated in existing buildings where no construction is taking place.
2. Smoke alarms are permitted to be solely battery operated in buildings that are not served from a commercial power source.
3. Smoke alarms are permitted to be solely battery operated in existing areas of buildings undergoing alterations or repairs that do not result in the removal of interior walls or ceiling finishes exposing the structure, unless there is an attic, crawl space or basement available which could provide access for building wiring without the removal of interior finishes.

303.2.9 (IF) 1103.9) Carbon monoxide alarms. Existing Group I or R occupancies located in a building containing a fuel-burning appliance or a building which has an attached garage shall be equipped with single-station carbon monoxide alarms. The carbon monoxide alarms shall be listed as complying with UL 2034, and be installed and maintained in accordance with NFPA 720 and the manufacturer's instructions. An open parking garage, as defined in the International Building Code, or an enclosed parking garage ventilated in accordance with Section 404 of the *International Mechanical Code* shall not be deemed to be an attached garage.

Exception: Sleeping units or dwelling units which do not themselves contain a fuel-burning appliance or have an attached garage, but which are located in a building with a fuel-burning appliance or an attached garage, need not be equipped with single-station carbon monoxide alarms provided that:

1. The sleeping unit or dwelling unit is located more than one story above or below any story that contains a fuel-burning appliance or an attached garage;
2. The sleeping unit or dwelling unit is not connected by duct work or ventilation shafts to any room containing a fuel-burning appliance or to an attached garage; and
3. The building is provided with a common area carbon monoxide alarm system.

303.3 (F) 1104.1). Means of egress. Means of egress in existing buildings shall comply with the minimum egress requirements when specified in Table 303.2.1 as further enumerated in Sections 303.3.1 through 303.3.23, and the building code that applied at the time of construction. Where the provisions of this chapter conflict with the building code that applied at the time of construction, the most restrictive provision shall apply. Existing buildings that were not required to comply with a building code at the time of construction shall comply with the minimum egress requirements when specified in Table 303.2.1 as further enumerated in Sections 303.3.1 through 303.3.23.

303.3.1 (F) 1104.2) Elevators, escalators and moving walks. Elevators, escalators and moving walks shall not be used as a component of a required means of egress.

Exceptions:

1. Elevators used as an accessible means of egress where allowed by Section 1007.4 of the *International Building Code*.
2. Previously approved escalators and moving walks in existing buildings.

303.3.2 (F) 1104.3) Exit sign illumination. Exit signs shall be internally or externally illuminated. The face of an exit sign illuminated from an external source shall have an intensity of not less than 5 footcandles (54 lux). Internally illuminated signs shall provide equivalent luminance and be listed for the purpose.

Exception: Approved self-luminous signs that provide evenly illuminated letters shall have a minimum luminance of 0.06 foot-lamberts (0.21 cd/m²).

303.3.3 (F) 1104.4) Power source. here emergency illumination is required in Section 303.3.4, exit signs shall be visible under emergency illumination conditions.

Exception: Approved signs that provide continuous illumination independent of external power sources are not required to be connected to an emergency electrical system.

303.3.4 (F) 1104.5) Illumination emergency power. The power supply shall normally be provided by the premises' electrical supply. In the event of power supply failure, illumination shall be automatically provided from an emergency system for the following occupancies where such occupancies require two or more means of egress:

1. Group A having 50 or more occupants.

Exception: Assembly occupancies used exclusively as a place of worship and having an occupant load of less than 300.

2. Group B buildings three or more stories in height, buildings with 100 or more occupants above or below a level of exit discharge serving the occupants or buildings with 1,000 or more total occupants.
3. Group E in interior stairs, corridors, windowless areas with student occupancy, shops and laboratories.
4. Group F having more than 100 occupants.

Exception: Buildings used only during daylight hours which are provided with windows for natural light in accordance with the International Building Code.

- 5. Group I.
- 6. Group M.

Exception: Buildings less than 3,000 square feet (279 m²) in gross sales area on one story only, excluding mezzanines.

- 7. Group R-1.

Exception: Where each sleeping unit has direct access to the outside of the building at grade.

- 8. Group R-2.

Exception: Where each dwelling unit or sleeping unit has direct access to the outside of the building at grade.

- 9. Group R-4.

Exception: Where each sleeping unit has direct access to the outside of the building at ground level.

303.3.4.1 (IF] 1104.5.1) Emergency power duration and installation. In other than Group I-2, the emergency power system shall provide power for not less than 60 minutes and consist of storage batteries, unit equipment or an on-site generator. In Group I-2, the emergency power system shall provide power for not less than 90 minutes and consist of storage batteries, unit equipment or an on-site generator. The installation of the emergency power system shall be in accordance with Section 1006.3 of the *international Building Code*.

303.3.5 (IF] 1104.6) Guards. Guards complying with this Section shall be provided at the open sides of means of egress that are more than 30 inches (762 mm) above the floor or grade below.

303.3.5.1 (IF] 1104.6.1) Height of guards. Guards shall form a protective barrier not less than 42 inches (1067 mm) high.

Exceptions:

- 1. Existing guards on the open side of stairs shall be not less than 30 inches (760 mm) high.
- 2. Existing guards within dwelling units shall be not less than 36 inches (910 mm) high.
- 3. Existing guards in assembly seating areas.

303.3.5.2 (IF] 1104.6.2) Opening limitations. Open guards shall have balusters or ornamental patterns such that a 6-inch-diameter (152 mm) sphere cannot pass through any opening up to a height of 34 inches (864 mm).

Exceptions:

- 1. At elevated walking surfaces for access to, and use of, electrical, mechanical or plumbing systems or equipment, guards shall have balusters or be of solid materials such that a sphere with a diameter of 21 inches (533 mm) cannot pass through any opening.
- 2. In occupancies in Group I-3, F, H or S, the clear distance between intermediate rails measured at right angles to the rails shall not exceed 21 inches (533 mm).
- 3. Approved existing open guards.

303.3.6 (IF] 1104.7) Size of doors. The minimum width of each door opening shall be sufficient for the occupant load thereof and shall provide a clear width of not less than 28 inches (711 mm). Where this Section requires a minimum clear width of 28 inches (711 mm) and a door opening includes two door leaves without a mullion, one leaf shall provide a clear opening width of 28 inches (711 mm). The

maximum width of a swinging door leaf shall be 48 inches (1219 mm) nominal. Means of egress doors in an occupancy in Group I-2 used for the movement of beds shall provide a clear width not less than 41.5 inches (1054 mm). The height of doors shall not be less than 80 inches (2032 mm).

Exceptions:

1. The minimum and maximum width shall not apply to door openings that are not part of the required means of egress in occupancies in Groups R-2 and R-3.
2. Door openings to storage closets less than 10 square feet (0.93 m²) in area shall not be limited by the minimum width.
3. Width of door leaves in revolving doors that comply with Section 1008.1.4.1 shall not be limited.
4. Door openings within a dwelling unit shall not be less than 78 inches (1981 mm) in height.
5. Exterior door openings in dwelling units, other than the required exit door, shall not be less than 76 inches (1930 mm) in height.
6. Exit access doors serving a room not larger than 70 square feet (6.5 m²) shall be not less than 24 inches (610 mm) in door width.

303.3.7 (IF 1104.8) Opening force for doors. The opening force for interior side-swinging doors without closers shall not exceed a 5-pound (22 N) force. For other side-swinging, sliding and folding doors, the door latch shall release when subjected to a force of not more than 15 pounds (66 N). The door shall be set in motion when subjected to a force not exceeding 30 pounds (133 N). The door shall swing to a full-open position when subjected to a force of not more than 50 pounds (222 N). Forces shall be applied to the latch side.

303.3.8 (IF 1104.9) Revolving doors. Revolving doors shall comply with the following:

1. A revolving door shall not be located within 10 feet (3048 mm) of the foot or top of stairs or escalators. A dispersal area shall be provided between the stairs or escalators and the revolving doors.
2. The revolutions per minute for a revolving door shall not exceed those shown in Table 303.3.8.
3. Each revolving door shall have a conforming side-hinged swinging door in the same wall as the revolving door and within 10 feet (3048 mm).

Exceptions:

1. A revolving door is permitted to be used without an adjacent swinging door for street-floor elevator lobbies provided a stairway, escalator or door from other parts of the building does not discharge through the lobby and the lobby does not have any occupancy or use other than as a means of travel between elevators and a street.
2. Existing revolving doors are permitted where the number of revolving doors does not exceed the number of swinging doors within 20 feet (6096 mm).

**303.3.8 TABLE (IF 1104.9)
REVOLVING DOOR SPEEDS**

<u>INSIDE DIAMETER (feet-inches)</u>	<u>POWER-DRIVEN-TYPE SPEED CONTROL (rpm)</u>	<u>MANUAL-TYPE SPEED CONTROL (rpm)</u>
6-6	11	12
7-0	10	11
7-6	9	11
8-0	9	10
8-6	8	9
9-0	8	9
9-6	7	8
10-0	7	8

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

303.3.8.1 (IF 1104.9.1) Egress component. A revolving door used as a component of a means of egress shall comply with Section 1104.9 and all of the following conditions:

1. Revolving doors shall not be given credit for more than 50 percent of the required egress capacity.
2. Each revolving door shall be credited with not more than a 50-person capacity.
3. Revolving doors shall be capable of being collapsed when a force of not more than 130 pounds (578 N) is applied within 3 inches (76 mm) of the outer edge of a wing.

303.3.9 ([F] 1104.10) Stair dimensions for existing stairs. Existing stairs in buildings shall be permitted to remain if the rise does not exceed 8 1/4 inches (210 mm) and the run is not less than 9 inches (229 mm). Existing stairs can be rebuilt.

Exception: Other stairs approved by the code official.

303.3.9.1 ([F] 1104.10.1) Dimensions for replacement stairs. The replacement of an existing *stairway* in a structure shall not be required to comply with the new *stairway* requirements of Section 1009 of the International Building Code where the existing space and construction will not allow a reduction in pitch or slope.

303.3.10 ([F] 1104.11) Winders. Existing winders shall be allowed to remain in use if they have a minimum tread depth of 6 inches (152 mm) and a minimum tread depth of 9 inches (229 mm) at a point 12 inches (305 mm) from the narrowest edge.

303.3.11 ([F] 1104.12) Circular stairways. Existing circular stairs shall be allowed to continue in use provided the minimum depth of tread is 10 inches (254 mm) and the smallest radius shall not be less than twice the width of the stairway.

303.3.12 ([F] 1104.13) Stairway handrails. Stairways shall have handrails on at least one side. Handrails shall be located so that all portions of the stairway width required for egress capacity are within 44 inches (1118 mm) of a handrail.

Exception: Aisle stairs provided with a center handrail are not required to have additional handrails.

303.3.12.1 ([F] 1104.13.1) Height. Handrail height, measured above stair tread nosings, shall be uniform, not less than 30 inches (762 mm) and not more than 42 inches (1067 mm).

303.3.13 ([F] 1104.14) Slope of ramps. Ramp runs utilized as part of a means of egress shall have a running slope not steeper than one unit vertical in 10 units horizontal (10-percent slope). The slope of other ramps shall not be steeper than one unit vertical in eight units horizontal (12.5-percent slope).

303.3.14 ([F] 1104.15) Width of ramps. Existing ramps are permitted to have a minimum width of 30 inches (762 mm) but not less than the width required for the number of occupants served as determined by the *International Building Code*.

303.3.15 ([F] 1104.16) Fire escape stairs. Fire escape stairs shall comply with Sections 303.3.15.1 through 303.15.7.

303.3.15.1 ([F] 1104.16.1) Existing means of egress. Fire escape *stairs* shall be permitted in existing buildings but shall not constitute more than 50 percent of the required *exit* capacity.

303.3.15.2 ([F] 1104.16.2) Protection of openings. Openings within 10 feet (3048 mm) of fire escape stairs shall be protected by opening protectives having a minimum ³/₄-hour fire protection rating.

Exception: In buildings equipped throughout with an approved automatic sprinkler system, opening protection is not required.

303.3.15.3 (IF) 1104.16.3) Dimensions. Fire escape *stairs* shall meet the minimum width, capacity, riser height and tread depth as specified in Section 303.3.9.

303.3.15.4 (IF) 1104.16.4) Access. Access to a fire escape *stair* from a *corridor* shall not be through an intervening room. Access to a fire escape *stair* shall be from a door or window meeting the criteria of Section 1005.1 of the *International Building Code*. Access to a fire escape *stair* shall be directly to a balcony, landing or platform. These shall be no higher than the floor or window sill level and no lower than 8 inches (203 mm) below the floor level or 18 inches (457 mm) below the window sill.

303.3.15.5 (IF) 1104.16.5) Materials and strength. Components of fire escape *stairs* shall be constructed of noncombustible materials. Fire escape *stairs* and balconies shall support the dead load plus a live load of not less than 100 pounds per square foot (4.78 kN/m²). Fire escape *stairs* and balconies shall be provided with a top and intermediate handrail on each side.

303.3.15.5.1 (IF) 1104.16.5.1) Examination. Fire escape *stairs* and balconies shall be examined for structural adequacy and safety in accordance with Section 303.15.5 by a registered design professional or others acceptable to the *fire code official* every five years, or as required by the *fire code official*. An inspection report shall be submitted to the *fire code official* after such examination.

303.3.15.6 (IF) 1104.16.6) Termination. The lowest balcony shall not be more than 18 feet (5486 mm) from the ground. Fire escape *stairs* shall extend to the ground or be provided with counterbalanced *stairs* reaching the ground.

Exception: For fire escape *stairs* serving 10 or fewer occupants, an *approved* fire escape ladder is allowed to serve as the termination.

303.3.15.7 (IF) 1104.16.7) Maintenance. Fire escapes shall be kept clear and unobstructed at all times and shall be maintained in good working order.

303.3.16 (IF) 1104.17) Corridors. Corridors serving an occupant load greater than 30 and the openings therein shall provide an effective barrier to resist the movement of smoke. Transoms, louvers, doors and other openings shall be kept closed or self-closing.

Exceptions:

1. Corridors in occupancies other than in Group H, which are equipped throughout with an approved automatic sprinkler system.
2. Patient room doors in corridors in occupancies in Group I-2 where smoke barriers are provided in accordance with the *International Building Code*.
3. Corridors in occupancies in Group E where each room utilized for instruction or assembly has at least one-half of the required means of egress doors opening directly to the exterior of the building at ground level.
4. Corridors that are in accordance with the *International Building Code*.

303.3.16.1 (IF) 1104.17.1) Corridor openings. Openings in corridor walls shall comply with the requirements of the *International Building Code*.

Exceptions:

1. Where 20-minute fire door assemblies are required, solid wood doors at least 1.75 inches (44 mm) thick or insulated steel doors are allowed.
2. Openings protected with fixed wire glass set in steel frames.
3. Openings covered with 0.5-inch (12.7 mm) gypsum wallboard or 0.75-inch (19.1 mm) plywood on the room side.
4. Opening protection is not required when the building is equipped throughout with an approved automatic sprinkler system.

303.3.16.2 (IF) 1104.17.2) Dead ends. Where more than one exit or exit access doorway is required, the exit access shall be arranged such that dead ends do not exceed the limits specified in Table 303.16.2.

Exception: A dead-end passageway or corridor shall not be limited in length where the length of the dead-end passageway or corridor is less than 2.5 times the least width of the dead-end passageway or corridor.

**303.3.16.2 TABLE (IF) 1104.17.2)
COMMON PATH, DEAD-END AND TRAVEL DISTANCE LIMITS (by occupancy)**

OCCUPANCY	COMMON PATH LIMIT		DEAD-END LIMIT		TRAVEL DISTANCE LIMIT	
	Unsprinklered (feet)	Sprinklered (feet)	Unsprinklered (feet)	Sprinklered (feet)	Unsprinklered (feet)	Sprinklered (feet)
Group A	20/75 ^a	20/75 ^a	20 ^b	20 ^b	200	250
Group B ¹	75	100	50	50	200	300
Group E	75	100	50	50	200	300
Group F-1, S-1 ^{d,f}	75	100	50	50	200	250
Group F-2, S-2 ^{d,f}	75	100	50	50	300	400
Group H-1	25	25	0	0	75	75
Group H-2	50	100	0	0	75	100
Group H-3	50	100	20	20	100	150
Group H-4	75	75	20	20	150	175
Group H-5	75	75	20	50	150	200
Group I-1	75	75	20	50	200	250
Group I-2 (Health care)	NR ^e	NR ^e	NR	NR	150	200 ^c
Group I-3 (Detention and correctional – Use Conditions II, III, IV, V)	100	100	NR	NR	150 ^c	200 ^c
Group I-4 (Day care centers)	NR	NR	20	20	200	250
Group M (Covered or open mall)	75	100	50	50	200	400
Group M (Mercantile)	75	100	50	50	200	250
Group R-1 (Hotels)	75	75	50	50	200	250
Group R-2 (Apartments)	75	125	50	50	200	250
Group R-3 (One- and two-family)	NR	NR	NR	NR	NR	NR
Group R-4 (Residential care/assisted living)	NR	NR	NR	NR	NR	NR
Group U	75	100	20	50	300	400

NR = No requirements.

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m².

- a. 20 feet for common path serving 50 or more persons; 75 feet for common path serving less than 50 persons.
- b. See Section 1028.9.5 for dead-end aisles in Group A occupancies.
- c. This dimension is for the total travel distance, assuming incremental portions have fully utilized their allowable maximums. For travel distance within the room, and from the room exit access door to the exit, see the appropriate occupancy chapter.
- d. See the International Building Code for special requirements on spacing of doors in aircraft hangars.
- e. Any patient sleeping room, or any suite that includes patient sleeping rooms, of more than 1,000 square feet shall have at least two exit access doors placed a distance apart equal to not less than one-third of the length of the maximum overall diagonal dimension of the patient sleeping room or suite to be served, measured in a straight line between exit access doors.
- f. Where a tenant space in Group B, S and U occupancies has an occupant load of not more than 30, the length of a common path of egress travel shall not be more than 100 feet.

303.3.17 ([F] 1104.18) Exit access travel distance. Exits shall be located so that the maximum length of exit access travel, measured from the most remote point to an approved exit along the natural and unobstructed path of egress travel, does not exceed the distances given in Table 301.3.12.15.2.

303.3.18 ([F] 1104.19) Common path of egress travel. The common path of egress travel shall not exceed the distances given in Table 301.3.12.15.2.

303.3.19 ([F] 1104.20) Stairway discharge identification. An interior exit stairway or ramp which continues below its level of exit discharge shall be arranged and marked to make the direction of egress to a public way readily identifiable.

Exception: Stairs that continue one-half story beyond their levels of exit discharge need not be provided with barriers where the exit discharge is obvious.

303.3.20 ([F] 1104.21) Exterior stairway protection. Exterior exit stairs shall be separated from the interior of the building as required in Section 1026.6 of the *International Building Code*. Openings shall be limited to those necessary for egress from normally occupied spaces.

Exceptions:

1. Separation from the interior of the building is not required for buildings that are two stories or less above grade where the level of exit discharge serving such occupancies is the first story above grade.
2. Separation from the interior of the building is not required where the exterior stairway is served by an exterior balcony that connects two remote exterior stairways or other approved exits, with a perimeter that is not less than 50 percent open. To be considered open, the opening shall be a minimum of 50 percent of the height of the enclosing wall, with the top of the opening not less than 7 feet (2134 mm) above the top of the balcony.
3. Separation from the interior of the building is not required for an exterior stairway located in a building or structure that is permitted to have unenclosed interior stairways in accordance with Section 1022 of the *International Building Code*.
4. Separation from the interior of the building is not required for exterior stairways connected to open-ended corridors, provided that:
 - 4.1. The building, including corridors and stairs, is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 of the *International Building Code*.
 - 4.2. The open-ended corridors comply with Section 1018.2 of the *International Building Code*.
 - 4.3. The open-ended corridors are connected on each end to an exterior exit stairway complying with Section 1026 of the *International Building Code*.
 - 4.4. At any location in an open-ended corridor where a change of direction exceeding 45 degrees (0.79 rad) occurs, a clear opening of not less than 35 square feet (3 m²) or an exterior stairway shall be provided. Where clear openings are provided, they shall be located so as to minimize the accumulation of smoke or toxic gases.

303.3.21 ([F] 1104.22) Minimum aisle width. The minimum clear width of aisles shall be:

1. Forty-two inches (1067 mm) for aisle stairs having seating on each side.

Exception: Thirty-six inches (914 mm) where the aisle serves less than 50 seats.

2. Thirty-six inches (914 mm) for stepped aisles having seating on only one side.

Exception: Thirty inches (760 mm) for catchment areas serving not more than 60 seats.

3. Twenty inches (508 mm) between a stepped aisle handrail or guard and seating when the aisle is subdivided by the handrail.

4. Forty-two inches (1067 mm) for level or ramped aisles having seating on both sides.

Exception: Thirty-six inches (914 mm) where the aisle serves less than 50 seats.

5. Thirty-six inches (914 mm) for level or ramped aisles having seating on only one side.

Exception: Thirty inches (760 mm) for catchment areas serving not more than 60 seats.

6. Twenty-three inches (584 mm) between a stepped stair handrail and seating where an aisle does not serve more than five rows on one side.

303.3.22 ([F] 1104.23) Stairway floor number signs. Existing stairs shall be marked in accordance with Section 1022.8 of the *International Building Code*.

303.3.23 ([F] 1104.24) Egress path markings. Existing high-rise buildings of Group A, B, E, I, M and R-1 occupancies shall be provided with luminous egress path markings in accordance with Section 1024 of the *International Building Code*.

Exception: Open, unenclosed stairwells in historic buildings designated as historic under a state or local historic preservation program.

303.4 ([F] 1105) Requirements for outdoor operations. Outdoor operations shall be in accordance with Section 303.4.1 through 303.4.1.2.

303.4.1 ([F] 1105.1) Tire storage yards. Existing tire storage yards shall be provided with fire apparatus access roads in accordance with Sections 1105.1.1 and 1105.1.2 of the *International Building Code*.

303.4.1.1 ([F] 1105.1.1) Access to piles. Access roadways shall be within 150 feet (45 720 mm) of any point in the storage yard where storage piles are located, at least 20 feet (6096 mm) from any storage pile.

303.4.1.2 ([F] 1105.1.2) Location within piles. Fire apparatus access roads shall be located within all pile clearances identified in Section 3405.4 and within all fire breaks required in Section 3405.5 of the *International Fire Code*.

705.1 General. An area being altered within a facility that is altered shall comply with the applicable provisions in Sections 705.1.1 through 705.1.14, and Chapter 11 of the International Building Code unless it is technically infeasible. Where compliance with this Section is technically infeasible, the alteration shall provide access to the maximum extent that is technically feasible. Accessibility for existing buildings shall be determined as required by Section 302.1.1.

Add new standards to Chapter 16 as follows:

NFPA National Fire Protection Association
1 Batterymarch Park
Quincy, MA 02169-7471

NFPA 720-09 Standard for the installation of carbon monoxide(co) detection and warning equipment

UL Underwriters Laboratories, Inc.
333 Pfingsten Road
Northbrook, IL 60062-2096

UL 2034-08 Single and Multiple Station Carbon Monoxide Alarms with revisions through February 2009

Reason: This proposal does several things which include the following:

1. Revises the chapter title to more clearly reflect the content of the chapter
2. Restructures the requirements to more clearly point out the additional code requirements and make room for the existing minimum requirements
3. Adds some clarity on the applicable accessibility provisions
4. Places the minimum existing requirements from the fire code in the IEBC.

Title Change. The new title will make it more clear that the chapter both explains applicability and provides minimum requirements that apply to all methods of compliance.

Restructuring. Currently the additional code reference is lost at the end of the chapter. This will provide more visibility to this requirement. This also provides a better structure for future requirements such as those proposed for accessibility. In addition, it is felt that the provisions from Chapter 11 of the IFC which represent minimum existing requirements for all buildings, as applicable, should be stand alone for clarity.

Accessibility. Significant changes are being developed in the 2015 Edition of ANSI A117.1 Standard. No existing buildings have been designed to meet these standards and would be considered inaccessible under the new standard despite having complied with the 2003 standard. For example, Section 705.1.1 provides an exception for bringing an entrance into compliance if there is an accessible entrance elsewhere. A fully complying entrance under the older A117.1 would no longer be considered accessible under the new standard. Similarly, 705.2 requires the accessible route to conform where alterations are made to a primary function. Fully compliant access routes under the 2003 standard will not conform to the 2011 standard because of the changes to the minimum clearances reflecting the changed clear floor space.

With this change those elements that were compliant with the 2009 standard would continue to be considered compliant after the 2015 standard is made mandatory. This philosophy has been used with the changes in the new 2010 ADA Standard. Any existing building that conformed to the older standard is considered compliant under the new standard.

Existing requirements from IFC. Currently the IEBC only includes requirements for when an existing building is being repaired, altered or is undergoing a change of occupancy. The IFC includes minimum requirements for existing buildings in Chapter 11 that are applicable to all buildings. This change duplicates those requirements and moves them into the requirements for compliance in Chapter 3 of the IEBC so that owners and designers are aware of the additional minimums that may be imposed on an existing building beyond those required for the work anticipated. The intent is that these changes remain under the purview of the IFC Code Development Committee and are simply placed here to provide clarity to the code user that additional requirements may apply to the building if these minimums are not already met.

Changes from the IFC are only due to duplicate provisions that are already a part of the IEBC. For reference only we have included the original IFC Section number parenthetically.

- Fire code official has been revised to code official to address the fact that the authority enforcing this code may not be a fire code official.
- New Section 303.1.3 is based on IFC Section [F] 1101.3 that indicates that permits must be obtained per Sections 105.6 and 105.7 of the IFC and the IBC. The two referenced IFC Sections are not requiring permits for alterations necessary to conform, but for occupancies or systems in a building. A correction is made in this change to reference the IEBC permit requirements and a companion change is being submitted to make the same change to the IFC.

Cost Impact: This code change proposal will not increase the cost of construction.

Analysis: The proposed referenced standards are already referenced in the *International Building Code*.

EB16-13

705 (NEW)

Proponent: Rebecca Morley, National Center for Healthy Housing

Add new text as follows:

SECTION 705

CARBON MONOXIDE ALARMS

705.1 General. Carbon monoxide alarms shall be installed in existing Group I or R occupancies in accordance with Section 1103.9 of the *International Fire Code*.

Reason: Carbon monoxide (CO) is an odorless, tasteless, invisible gas that kills more than 300 people in homes each year. Thousands more are admitted to the hospital with carbon monoxide poisoning. This is a serious issue that affects people nationwide in all regions of the country. The International Residential Code requires CO alarms for residences with fuel-fired appliances or attached garages. This change would make the IEBC consistent with the IRC.

The following states have required CO alarms in existing residences: Alaska, California, Colorado, Illinois, Massachusetts, Michigan, Minnesota, Montana, New Jersey, New York, North Carolina, Oklahoma, Oregon, Rhode Island, Vermont and Wisconsin.

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Deaths from CO are spread throughout the country as residents unwittingly use dangerous methods to stay warm in unusually cold weather.

Cost Impact: Yes, this code change proposal will increase the cost of property maintenance. A carbon monoxide alarm typically costs approximately \$25.

F179–13

105.7.5 (New), 908 (IBC[F] 908)

Proponent: Daniel P Finnegan, representing Siemens Industry (daniel.finnegan@siemens.com)

Add new text as follows:

105.7.5 Emergency alarm systems. A construction permit is required for installation of or modification to emergency alarm systems. Maintenance performed in accordance with this code is not considered a modification and does not require a permit.

Revise as follows:

SECTION 908 EMERGENCY ALARM SYSTEMS

908.1 (IBC [F] 908.1) General. This section covers the application, installation, performance and maintenance of emergency alarm systems.

908.2 (IBC [F] 908.2) Construction documents. The *fire code official* shall have the authority to require *construction documents* and calculations for all *emergency alarm systems* and to require permits be issued for the installation, rehabilitation or modification of any *emergency alarm system*. *Construction documents for emergency alarm systems* shall be submitted for review and approval prior to system installation.

908.3 (IBC [F] 908.3) Permits. Permits shall be required as set forth in Section 105.7.

908.4 (IBC [F] 908.4) Equipment. *Emergency alarm system* control units and components shall be *listed* or *approved* for the purpose for which they are installed.

908.5 (IBC [F] 908.5) Acceptance tests and completion. Upon completion of the installation, the *emergency alarm system* shall be tested in accordance with the manufacturer's instructions and as required by the *fire code official* to verify it provides the required protection.

908.6 (IBC [F] 908.6) Where required. An *approved emergency alarm system* installed in accordance with the provisions of this code shall be provided in accordance with Sections 908.6.1 through 908.6.6.

908.1-908.6.1 (IBC [F] 908.6.1) Group H occupancies. Emergency alarms for the detection and notification of an emergency condition in Group H occupancies shall be provided as required in Chapter 50.

908.2-908.6.2 (IBC [F] 908.6.2) Group H-5 occupancy. Emergency alarms for notification of an emergency condition in an HPM facility shall be provided as required in Section 2703.12. A continuous gas detection system shall be provided for HPM gases in accordance with Section 2703.13.

908.3-908.6.3 (IBC [F] 908.6.3) Highly toxic and toxic materials. Where required by Section 6004.2.2.10, a gas detection system shall be provided for indoor storage and use of highly toxic and toxic *compressed gases*.

908.4-908.6.4 (IBC [F] 908.6.4) Ozone gas-generator rooms. A gas detection system shall be provided in ozone gas-generator rooms in accordance with Section 6005.3.2.

908.5 908.6.5 (IBC [F] 908.6.5) Repair garages. A flammable-gas detection system shall be provided in repair garages for vehicles fueled by nonodorized gases in accordance with Section 2311.7.2.

908.6-908.6.6 (IBC [F] 908.6.6) Refrigeration systems. Refrigeration system machinery rooms shall be provided with a refrigerant detector in accordance with Section 606.8.

908.7 (IBC [F] 908.7) Maintenance. Emergency alarm systems shall be maintained in accordance with the original installation standards for that system. Required systems shall be extended, altered or augmented as necessary to maintain and continue protection whenever the building is altered, remodeled or added to. Alterations to emergency alarm systems shall be done in accordance with applicable standards.

908.8 (IBC [F] 908.8) Responsibility and records. The building owner shall be responsible to maintain emergency alarm systems in an operable condition at all times. A written record of the maintenance inspection and testing shall be maintained and shall be made available to the fire code official.

SECTION 915 **CARBON MONOXIDE ALARMS**

908.7 (IBC [F] 908.7) Carbon monoxide alarms. 915.1 (IBC [F] 915.1) General. Group I or R occupancies located in a building containing a fuel-burning appliance or in a building which has an attached garage shall be equipped with single-station carbon monoxide alarms. The carbon monoxide alarms shall be listed as complying with UL 2034 and be installed and maintained in accordance with NFPA 720 and the manufacturer's instructions. An open parking garage, as defined in Chapter 2 of the *International Building Code*, or an enclosed parking garage ventilated in accordance with Section 404 of the *International Mechanical Code* shall not be considered an attached garage.

Exception: *Sleeping units* or *dwelling units* which do not themselves contain a fuel-burning appliance or have an attached garage, but which are located in a building with a fuel-burning appliance or an attached garage, need not be equipped with single-station carbon monoxide alarms provided that:

1. The *sleeping unit* or *dwelling unit* is located more than one story above or below any story which contains a fuel-burning appliance or an attached garage;
2. The *sleeping unit* or *dwelling unit* is not connected by duct work or ventilation shafts to any room containing a fuel-burning appliance or to an attached garage; and
3. The building is equipped with a common area carbon monoxide alarm system.

908.7.4 915.1.1 (IBC [F] 915.1.1) Carbon monoxide detection systems. Carbon monoxide detection systems, which include carbon monoxide detectors and audible notification appliances, installed and maintained in accordance with this section for carbon monoxide alarms and NFPA 720 shall be permitted. The carbon monoxide detectors shall be *listed* as complying with UL 2075.

Reason: As written the emergency alarm system section has no specific requirements for the basic installation, testing and maintenance of these systems, and by definition these systems are not considered to be fire protection systems and are not subject to the general requirements in Section 901.

The proposal makes no changes to where emergency alarm systems are required, which are retained verbatim in Sections 908.6.1 through 908.6.6. It does include basic system requirements as noted below:

Sections 908.2, 908.3 and 908.7 are based on similar requirements in section 901.1. These sections are required in Section 908 since the Section 901 requirements only apply to fire protection systems.

Section 908.4 is based on Section 907.1.3. However, instead of requiring emergency alarm system equipment to be listed and approved, it recognizes that listed equipment is not always available for the systems covered by these requirements. Accordingly this section allows this equipment to be listed or approved.

Sections 908.5 and 908.8 include requirements similar to those in Sections 907.7 and 907.8.5.

Sections 908.6.1 through 908.6.6 are taken verbatim from Section 908.

Additionally, this proposal simply relocates CO alarm system requirements from Section 908.7 to a new Section 915, with no technical changes whatsoever. This is being done for the following reasons:

1. By definition emergency alarm systems provide indication and warning of emergency situations involving hazardous materials, which relates more closely to warning systems required by the hazardous materials chapters of this code (e.g. Chapter 50 to 67). Carbon monoxide that is generated by motor vehicle exhaust and damaged fuel burning appliances is not regulated by those chapters.
2. As currently written the CO alarm requirements in Section 908.7 stand alone, and do not relate in any way to the emergency alarm requirements in Sections 908.1 through 908.6. Thus there is no advantage to having both emergency alarm and carbon monoxide alarm requirements in the same Section.
3. This proposal relocates the carbon monoxide alarm requirements to a new Section 915, which was done so the current Sections 909 through 914 don't need to be renumbered.
4. It is recognized that there is at least one other proposal to revise the Section 908.7 CO alarm requirements. If that proposal succeeds, approval of this proposal is intended to retain the changes from the other proposal, and relocate the revised provisions into Section 915.
5. This is consistent with a similar proposal submitted by the FCAC

Cost Impact: Clarifies what should be done already-minimal cost impact.

F180-13

915 (New) [IBC [F] 915 (New)], 908.7(IBC [F] 908.7), 908.7.1 (IBC [F] 908.7.1)

Proponent: Adolf Zubia. Chairman IAFC Fire and Life Safety Section, representing ICC Fire Code Action Committee (azumiamia@yahoo.com)

Revise as follows:

SECTION 915 **CARBON MONOXIDE DETECTION**

~~908.7(IBC [F] 908.7)~~ 915.1 (IBC [F] 915.1) Carbon monoxide alarms. Group I or R occupancies located in a building containing a fuel-burning appliance or in a building which has an attached garage shall be equipped with single-station carbon monoxide alarms. The carbon monoxide alarms shall be listed as complying with UL 2034 and be installed and maintained in accordance with NFPA 720 and the manufacturer's instructions. An open parking garage, as defined in Chapter 2 of the *International Building Code*, or an enclosed parking garage ventilated in accordance with Section 404 of the *International Mechanical Code* shall not be considered an attached garage.

Exception: *Sleeping units* or *dwelling units* which do not themselves contain a fuel-burning appliance or have an attached garage, but which are located in a building with a fuel-burning appliance or an attached garage, need not be equipped with single-station carbon monoxide alarms provided that:

1. The *sleeping unit* or *dwelling unit* is located more than one story above or below any story which contains a fuel-burning appliance or an attached garage;
2. The *sleeping unit* or *dwelling unit* is not connected by duct work or ventilation shafts to any room containing a fuel-burning appliance or to an attached garage; and
3. The building is equipped with a common area carbon monoxide alarm system.

~~908.7.1 (IBC [F] 908.7.1)~~ 915.2 (IBC [F] 915.2) Carbon monoxide detection systems. Carbon monoxide detection systems, which include carbon monoxide detectors and audible notification appliances, installed and maintained in accordance with this section for carbon monoxide alarms and NFPA 720 shall be permitted. The carbon monoxide detectors shall be *listed* as complying with UL 2075.

Reason: This proposal is submitted by the ICC Fire Code Action Committee (FCAC). This ICC committee was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the Fire-CAC has held 6 open meetings and numerous Regional Work Group and Task Group meetings and conference calls which included members of the committees as well as any interested party to discuss and debate the proposed changes. Related documentation and reports are posted on the FAC website at: <http://www.iccsafe.org/cs/CAC/Pages/default.aspx>.

This proposal simply relocates CO alarm system requirements from Section 908.7 to a new Section 915, with no technical changes whatsoever. This is being done for the following reasons:

1. By definition emergency alarm systems provide indication and warning of emergency situations involving hazardous materials, which relates more closely to warning systems required by the hazardous materials chapters of this code (e.g. Chapter 50 to 67). Carbon monoxide that is generated by motor vehicle exhaust and damaged fuel burning appliances is not regulated by those chapters.
2. As currently written the CO alarm requirements in Section 908.7 stand alone, and do not relate in any way to the emergency alarm requirements in Sections 908.1 through 908.6. Thus there is no advantage to having both emergency alarm and carbon monoxide alarm requirements in the same Section.
3. This proposal relocates the carbon monoxide alarm requirements to a new Section 915, which was done so the current Sections 909 through 914 don't need to be renumbered.
4. It is recognized that there is at least one other proposal to revise the Section 908.7 CO alarm requirements. If that proposal succeeds, approval of this proposal is intended to retain the changes from the other proposal, and relocate the revised provisions into Section 915.

Cost Impact: The proposal will not increase the cost of construction.

F181-13

908.7 (IBC [F] 908.7); 1103.9

Proponent: Thomas G. Daly, The Hospitality Security Consulting Group, LLC, representing Hilton Worldwide, Inc.

Delete and substitute as follows:

~~**908.7 (IBC [F] 908.7) Carbon monoxide alarms.** Group I or R occupancies located in a building containing a fuel-burning appliance, or a building which has an attached garage shall be equipped with single station carbon monoxide alarms. The carbon monoxide alarms shall be listed as complying with UL 2034 and be installed and maintained in accordance with NFPA 720 and the manufacturer's instructions. An open parking garage, as defined in Chapter 2, or an enclosed parking garage ventilated in accordance with Section 404 of the International Mechanical Code shall not be considered an attached garage.~~

~~**Exception:** Sleeping units or dwelling units which do not themselves contain a fuel-burning appliance or have an attached garage, but which are located in a building with a fuel-burning appliance or an attached garage, need not be equipped with single station carbon monoxide alarms provided that:~~

- ~~1. The sleeping unit or dwelling unit is located more than one story above or below any story which contains a fuel-burning appliance or an attached garage;~~
- ~~2. The sleeping unit or dwelling unit is not connected by duct work or ventilation shafts to any room containing a fuel-burning appliance or to an attached garage; and~~
- ~~3. The building is equipped with a common area carbon monoxide alarm system.~~

~~**908.7 (IBC [F] 908.7) Carbon monoxide alarms detection and warning equipment.** Group I or R occupancies located in a building containing a fuel-burning appliance, fireplace or a building which has an attached garage shall be equipped with carbon monoxide detection and warning equipment.~~

~~**908.7.1 (IBC [F] 908.7.1 Listings and installation.** Single station carbon monoxide alarms shall be listed as complying with UL 2034 and be installed and maintained in accordance with NFPA 720 and the manufacturer's instructions.~~

~~**908.7.2 (IBC [F] 908.7.2) Attached garage.** An open parking garage as defined in Chapter 2 or an enclosed parking garage ventilated in accordance with Section 404 of the *International Mechanical Code* shall not be deemed to be an attached garage.~~

~~**908.7.3 (IBC [F] 908.7.3) Locations.** A supervised carbon monoxide detector with an integral sounding device shall be installed within 15 feet of each fuel-burning appliance or fireplace and be monitored at a constantly attended location. Connection to an existing fire alarm system to report as a supervisory signal shall be an acceptable alternative to the detector being monitored at a constantly attended location.~~

908.7.4 (IBC [F] 908.7.4) Sleeping and dwelling units. Sleeping units or dwelling units which do not themselves contain a fuel-burning appliance, fireplace or have an attached garage, but which are located in a building with a fuel-burning appliance, fireplace or an attached garage, shall be equipped with 120 vac powered single-station carbon monoxide alarms with battery back-up provided that:

1. The sleeping unit or dwelling unit is located directly above, below or immediately adjacent to any room or space containing a fuel-burning appliance, fireplace or an attached garage.
2. The sleeping unit or dwelling unit is connected by duct work or ventilation shafts to any room containing a fuel-burning appliance or to an attached garage.
3. Affected hotel guest suites and multi-room dwelling units shall be equipped with a single station carbon monoxide alarm in each sleeping and living area and such units shall be interconnected.
4. Affected accessible sleeping units and accessible dwelling units single station carbon monoxide alarms shall activate a visual alarm within such units in accordance with NFPA 720.

908.7.5 (IBC [F] 908.7.5) Combination devices. Combination single station carbon monoxide and smoke alarms and combination carbon monoxide and smoke detectors shall be permitted.

908.7.4 (IBC [F] 908.7.4) 908.7.6 (IBC [F] 908.7.6) Carbon Monoxide detection systems. *(No change to current text)*

Delete and substitute as follows:

~~**1103.9 Carbon monoxide alarms.** Existing Group I or R occupancies located in a building containing a fuel-burning appliance or a building which has an attached garage shall be equipped with single station carbon monoxide alarms. The carbon monoxide alarms shall be listed as complying with UL 2034, and be installed and maintained in accordance with NFPA 720 and the manufacturer's instructions. An open parking garage, as defined in the International Building Code, or an enclosed parking garage ventilated in accordance with Section 404 of the International Mechanical Code shall not be deemed to be an attached garage.~~

~~**Exception:** Sleeping units or dwelling units which do not themselves contain a fuel-burning appliance or have an attached garage, but which are located in a building with a fuel-burning appliance or an attached garage, need not be equipped with single-station carbon monoxide alarms provided that:~~

- ~~1. The sleeping unit or dwelling unit is located more than one story above or below any story that contains a fuel-burning appliance or an attached garage;~~
- ~~2. The sleeping unit or dwelling unit is not connected by duct work or ventilation shafts to any room containing a fuel-burning appliance or to an attached garage; and~~
- ~~3. The building is provided with a common area carbon monoxide alarm system.~~

~~**1103.9 Carbon Monoxide detection and warning equipment.** Existing Group I or R occupancies located in a building containing a fuel-burning appliance, fireplace or a building which has an attached garage shall be equipped with carbon monoxide detection and warning equipment.~~

~~**1103.9.1 Listings and installation.** Single station carbon monoxide alarms shall be listed as complying with UL 2034, and be installed and maintained in accordance with NFPA 720 and the manufacturer's instructions. Carbon monoxide detectors shall be listed as complying with UL 2075 and be installed and maintained in accordance with NFPA 720 and the manufacturer's instructions.~~

~~**1103.9.2 Attached garage.** An open parking garage, as defined in the *International Building Code*, or an enclosed parking garage ventilated in accordance with Section 404 of the *International Mechanical Code* shall not be deemed to an attached garage.~~

~~**1103.9.3 Locations.** A supervised carbon monoxide detector with an integral sounding device shall be installed within 15 feet of each fuel burning appliance or fireplace and be monitored at a constantly~~

attended location. Connection to an existing fire alarm system to report as a supervisory signal shall be an acceptable alternative to the detector being monitored at a constantly attended location.

1103.9.4 Sleeping and dwelling units. *Sleeping units or dwelling units* which do not themselves contain a fuel-burning appliance or have an attached garage, but which are located in a building with a fuel-burning appliance, fireplace or an attached garage, shall be equipped with 120 vac powered single-station carbon monoxide alarms with battery back-up provided that:

1. The sleeping unit or dwelling unit is located directly above, below or immediately adjacent to any room or space containing a fuel-burning appliance, fireplace or an attached garage.
2. The sleeping unit or dwelling unit is connected by duct work or ventilation shafts to any room containing a fuel burning appliance or to an attached garage.
3. Affected hotel guest suites and multi-room dwelling units shall be equipped with a single station carbon monoxide alarm in each sleeping and living area and such units shall be interconnected.
4. Affected accessible sleeping units and accessible dwelling units single station carbon monoxide alarms shall activate a visual alarm within such units in accordance with NFPA 720.

1103.9.5 Combination devices. Combination single station carbon monoxide and smoke alarms and combination carbon monoxide and smoke detectors shall be permitted.

Reason – Chapter 9: The requirements are organized in a more reader friendly format.

The proposed changes will provide for earlier detection of potential carbon monoxide (CO) exposure and as a result allow for corrective action before CO can reach occupied areas of Group R & I facilities by placing a supervised and monitored CO detector at the source of potential CO. Sleeping and dwelling units in proximity to such sources of CO exposure would also have local CO alarms therein.

The requirements mirror successful CO regulation in Massachusetts, see 527 CMR 31.00 et seq., and New Jersey, see N.J.A.C. 5:23-3.21, which have no records of CO exposure related deaths in such equipped facilities in the 7 years since those regulations similar to this proposal have been in place.

CO detectors would be permitted to be a part of existing fire alarm systems making their installation more efficient and cost effective. Cost of construction would not be increased but would be diminished.

Reliability would be improved as such systems have secondary power requirements ensuring operation of the CO detector in the event of a power failure.

Listing and installation criteria for CO detectors are added.

CO alarm requirements for multi-room sleeping and dwelling units are clarified. In such units, where the means of egress from a sleeping area is thru the living area, typical of all suite hotels, the current requirement for a CO alarm only within the sleeping area is insufficient to warn the occupant and may result in a CO exposure when attempting to exit. CO alarms would be required in both sleeping and living units and would be interconnected similar to requirements for smoke alarms.

The use of combination CO/smoke alarms and detectors would be specifically allowed. Such units will allow for a more cost effective installation by avoiding new electrical work as those units may be replace existing 120vac smoke alarms and system smoke detectors. Cost of construction would not be increased but would be diminished.

Fireplaces, a potential source of CO exposure, would be added for clarity as this term is defined separately from 'fuel burning appliances' in NFPA 720.

Undefined terms, e.g., 'common areas' are deleted.

Battery backup for CO alarms is specified to ensure operation in the event of power failure.

Reason – Chapter 11: The 2012 IFC language (new) had the unintended consequences of requiring CO alarms in areas of buildings where there is little likelihood and little historical occurrence of CO exposures while at the same time not requiring CO warning equipment in locations where there is a greater likelihood of an adverse CO exposures. The historical record of CO exposures in commercial buildings is so rare that the CPSC which reports on such exposure incidents does not list commercial buildings as an occupancy group. See this link for the latest such report:

Non-Fire Carbon Monoxide Deaths Associated with the Use of Consumer Products: 2008 Annual Estimates (released 01/12) <http://www.cpsc.gov/LIBRARY/dataCO.html>

The changes proposed would focus the requirement for such warning equipment at the potential source of such exposure and provide a local and remote alarm to building staff to initiate corrective action. Early detection and warning would be provided under this proposal vs. the current delayed warning based on the 2012 IFC language.

Cost Impact – Chapter 9: Cost of construction would not be increased but would be diminished.

Cost Impact – Chapter 11: Compared to the 2012 IFC these changes would reduce compliance costs by 90% for a typical commercial building with a small number of gas fired appliances (e.g., boiler, emergency generator, pool heater, kitchen). The proposal would allow CO detectors to be incorporated into existing fire alarm systems ensuring proper operation, maintenance and inspections per the Fire Code provisions for such systems.

F182-13

908.7 (IBC[F] 908.7) , 908.7.1 (New) [IBC [F] 908.7.1 (New)], 908.7.1.1 (New) [IBC [F] 908.7.1.1 (New)], 908.7.1.2 (New) [IBC [F] 908.7.1.2 (New)]

Proponent: Roger Evans, Park City Municipal Corporation, representing the Utah Chapter of ICC (revans@parkcity.org)

Revise as follows:

908.7 (IBC[F] 908.7) Carbon monoxide alarms detection. Group I or R and E occupancies located in a building containing a fuel-burning appliance or in a building which has an attached garage shall be equipped with single-station carbon monoxide alarms detection. ~~The Group I and R occupancies shall be equipped with single-station carbon monoxide alarms shall be listed as complying with UL 2034 and be installed and be installed and maintained in accordance with NFPA 720 and the manufacturer's instructions. Group E occupancies shall be equipped with carbon monoxide detection in accordance with 907.1 and 907.2.~~ An open parking garage ventilated in accordance with Section 404 of the International Mechanical Code shall not be considered an attached garage.

Exception: *Sleeping units or dwelling units* which do not themselves contain a fuel-burning appliance or have an attached garage, but which are located in a building with a fuel-burning appliance or an attached garage, need not be equipped with single-station carbon monoxide alarms provided that:

1. The *sleeping unit or dwelling unit* is located more than one story above or below any story which contains a fuel-burning appliance or an attached garage;
2. The *sleeping unit or dwelling unit* is not connected by duct work or ventilation shafts to any room containing a fuel-burning appliance or to an attached garage; and
3. The building is equipped with a common area carbon monoxide alarm system.

908.7.1 (IBC[F] 908.7.1) Group E Occupancy Locations. Where required by Section 908.7, carbon monoxide detectors in Group E occupancies shall be installed in the locations specified in Sections 908.7.2 through 908.7.2.2.

908.7.1.1 (IBC[F] 908.7.1.1) Fuel-burning appliances and fuel burning fireplaces. Carbon monoxide detectors shall be installed on the ceiling of a room containing a fuel-burning appliance or a fuel burning fireplace. The carbon monoxide alarm signal shall be automatically transmitted to a constantly attended on site location.

908.7.1.2 (IBC[F] 908.7.1.2) Forced air furnaces. Carbon monoxide detectors shall be installed on the ceiling of a room containing a fuel-burning forced air furnace or in occupied rooms served by a fuel-burning, forced air furnace. The carbon monoxide alarm signal shall be automatically transmitted to a constantly attended on site location.

908.7.1 (IBC[F] 908.7.1) 908.7.2 (IBC[F] 908.7.2) Carbon monoxide detection systems. Carbon monoxide detection systems, which include carbon monoxide detectors and audible notification appliances, installed and maintained in accordance with this section for carbon monoxide alarms and NFPA 720 shall be permitted. The carbon monoxide detectors shall be listed as complying with UL 2075.

Reason: This proposal is intended to protect students and faculty from serious injury or possibly death from unintentional non-fire related carbon monoxide (CO) exposure by mandating the installation of CO detection devices in education occupancies. In the absence of a model code for the installation of CO detection in education occupancies each jurisdiction is developing its own regulations with varying installation requirements. For example, after several CO incidents in Connecticut (Public Act 11-248) and in Maryland (SB 173), the Governors signed bills into law for the installation CO detection in education occupancies and left the location, performance, inspection, testing and maintenance of CO detection and warning equipment up to the Building Commission or the State Fire Marshal. Section 610 of the 2010 Fire Code New York State (FCNYS) requires CO detection in Group E occupancies.

Also a result of the national publicity generated from an incident at an Atlanta school (ABC News) that sent 42 students to hospitals, three states have introduced legislation requiring CO detection in schools.

. **Pennsylvania:**

<http://www.legis.state.pa.us/cfdocs/Legis/CSM/showMemoPublic.cfm?chamber=H&SPick=20130&cosponId=9878>

. **Florida:** <http://www.flsenate.gov/Session/Bill/20130116/BillText/Filed/HTML>

. **Georgia:** [HB 23](#)

Attached are fifty three (53) reports of CO incidents in schools from 2005 through 2012. Thirty (30) of these incidents were caused by problems with a permanently installed fuel burning appliance.

This proposal models the location requirements for schools after the current requirements in the 2012 edition of the IFC for detection in hotels, dormitories and apartment buildings as a basis.

The efficacy of voluntary national consensus codes, such as the IFC, ensures a collaborative, balanced and consensus-based process.

Cost Impact: Minimal cost as a percentage of the building valuation.

F183-13

IFC: 908.7.2 (New) (IBC [F] 908.7.2 (New)), 1103.9 (New); IRC: R315.1.1 (New), R315.3.1 (New)

THIS IS A 2 PART CODE CHANGE PROPOSAL. PART 1 WILL BE HEARD BY THE IFC COMMITTEE. PART 2 OF THIS PROPOSAL WILL BE HEARD BY THE IRC BUILDING/ENERGY COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IFC AND IRC BUILDING/ENERGY CODE DEVELOPMENT COMMITTEES.

Proponent: Al Godwin, CBO, CPM, Aon Fire Protection Engineering, representing Aon Fire Protection Engineering Corporation (al.godwin@aon.com)

PART I – INTERNATIONAL FIRE CODE

Add new text as follows:

908.7.2 (IBC [F] 908.7.2) Power source. In new construction, required carbon monoxide alarms shall receive their primary power from the building wiring where such wiring is served from a commercial source and shall be equipped with a battery backup. Wiring shall be permanent and without a disconnecting switch other than as required for overcurrent protection.

Exception: Carbon monoxide alarms are not required to be equipped with battery backup where they are connected to an emergency electrical system.

Add new text as follows:

1103.9 Power source. Single-station carbon monoxide alarms shall receive their primary power from the building wiring where such wiring is served from a commercial source and shall be equipped with a battery backup. Wiring shall be permanent and without a disconnecting switch other than as required for overcurrent protection.

Exceptions:

1. Carbon monoxide alarms are not required to be equipped with battery backup where they are connected to an emergency electrical system.
2. Carbon monoxide alarms are permitted to be solely battery operated in existing buildings where no construction is taking place.
3. Carbon monoxide alarms are permitted to be solely battery operated in buildings that are not served from a commercial power source.
4. Carbon monoxide alarms are permitted to be solely battery operated in existing areas of buildings undergoing alterations or repairs that do not result in the removal of interior walls or

ceiling finishes exposing the structure, unless there is an attic, crawl space or *basement* available which could provide access for building wiring without the removal of interior finishes.

PART II – INTERNATIONAL RESIDENTIAL CODE

Add new text as follows:

R315.1.1 Power source. In new construction, required carbon monoxide alarms shall receive their primary power from the building wiring where such wiring is served from a commercial source and shall be equipped with a battery backup. Wiring shall be permanent and without a disconnecting switch other than as required for overcurrent protection.

R315.3.1 Power source. Single-station carbon monoxide alarms shall receive their primary power from the building wiring where such wiring is served from a commercial source and shall be equipped with a battery backup. Wiring shall be permanent and without a disconnecting switch other than as required for overcurrent protection.

Exceptions:

1. Carbon monoxide alarms are permitted to be solely battery operated in existing buildings where no construction is taking place.
2. Carbon monoxide alarms are permitted to be solely battery operated in buildings that are not served from a commercial power source.
3. Carbon monoxide alarms are permitted to be solely battery operated in existing areas of buildings undergoing *alterations* or repairs that do not result in the removal of interior walls or ceiling finishes exposing the structure, unless there is an attic, crawl space or *basement* available which could provide access for building wiring without the removal of interior finishes.

Reason: This proposal copies the same installation requirements as specified for smoke alarms. It would seem to be appropriate if these alarms are a life saving device.

Costs: Assuming that the original wording seems to allow carbon monoxide alarms to be only battery powered, even in new construction, this would increase the cost of construction.

F360 – 13

908.7 (IBC [F]908.7) through 908.7.7 (IBC [F]908.7.7) (New); 1103.9; 202

Proponent: Adolf Zubia. Chairman IAFC Fire and Life Safety Section, representing ICC Fire Code Action Committee (azubiamia@yahoo.com)

Delete and substitute as follows:

~~**908.7 (IBC [F]908.7) Carbon monoxide alarms.** Group I or R occupancies located in a building containing a fuel-burning appliance or in a building which has an attached garage shall be equipped with single-station carbon monoxide alarms. The carbon monoxide alarms shall be listed as complying with UL 2034 and be installed and maintained in accordance with NFPA 720 and the manufacturer's instructions. An open parking garage, as defined in Chapter 2 of the *International Building Code*, or an enclosed parking garage ventilated in accordance with Section 404 of the *International Mechanical Code* shall not be considered an attached garage.~~

~~**Exception:** *Sleeping units or dwelling units* which do not themselves contain a fuel-burning appliance or have an attached garage, but which are located in a building with a fuel-burning appliance or an attached garage, need not be equipped with single-station carbon monoxide alarms provided that:~~

- ~~1. The *sleeping unit* or *dwelling unit* is located more than one story above or below any story which contains a fuel-burning appliance or an attached garage;~~
- ~~2. The *sleeping unit* or *dwelling unit* is not connected by duct work or ventilation shafts to any room containing a fuel-burning appliance or to an attached garage; and~~
- ~~3. The building is equipped with a common area carbon monoxide alarm system.~~

908.7.1 (IBC [F]908.7.1) Carbon monoxide detection systems. Carbon monoxide detection systems, which include carbon monoxide detectors and audible notification appliances, installed and maintained in accordance with this section for carbon monoxide alarms and NFPA 720 shall be permitted. The carbon monoxide detectors shall be *listed* as complying with UL 2075.

908.7 (IBC [F]908.7) Carbon monoxide alarms. Carbon monoxide alarms shall be installed in new buildings in accordance with Sections 908.7.1 through 908.7.7. Carbon monoxide alarms shall be installed in existing buildings in accordance with Section 1103.9.

908.7.1 (IBC [F]908.7.1) Where required. Carbon monoxide alarms shall be provided in Group I-1, I-4, and R occupancies in the locations specified in 908.7.2 where any of the conditions in Sections 908.7.1.1 through 908.7.1.4 exist.

908.7.1.1 (IBC [F]908.7.1.1) Fuel-burning appliances and fuel burning fireplaces. Carbon monoxide alarms shall be provided in dwelling units and sleeping units that contain a fuel-burning appliance or a fuel burning fireplace.

908.7.1.2 (IBC [F]908.7.1.2) Forced air furnaces. Carbon monoxide alarms shall be provided in dwelling units and sleeping units served by a fuel-burning, forced air furnace.

908.7.1.3 (IBC [F]908.7.1.3) Fuel burning appliances outside of dwelling units and sleeping units. Carbon monoxide alarms shall be provided in dwelling units and sleeping units located in buildings that contain fuel-burning appliances or fuel burning fireplaces.

Exception:

1. Carbon monoxide alarms shall not be required in dwelling units and sleeping units if there are no communicating openings between the fuel-burning appliance or fuel burning fireplace and the dwelling unit or sleeping unit.
2. Carbon monoxide alarms shall not be required in dwelling units and sleeping units if a carbon monoxide alarm is provided:
 - 2.1 In an approved location between the fuel burning appliance or fuel burning fireplace and the dwelling unit or sleeping unit, or
 - 2.2 On the ceiling of the room containing the fuel burning appliance or fuel burning fireplace.

908.7.1.4 (IBC [F]908.7.1.4) Private garages. Carbon monoxide alarms shall be provided in dwelling units and sleeping units in buildings with attached private garages.

Exceptions:

1. Carbon monoxide alarms shall not be required if there are no communicating openings between the private garage and the dwelling unit or sleeping unit.
2. Carbon monoxide alarms shall not be required in dwelling units and sleeping units located more than one story above or below a private garage.
3. Carbon monoxide alarm shall not be required if the private garage connects to the building through an open-ended corridor.

908.7.1.4.1 (IBC [F]908.7.1.4.1) Exempt garages. For determining compliance with Section 908.7.1.4, an *open parking garage*, complying with Section 406.5 of the *International Building Code*, or an *enclosed*

parking garage complying with Section 406.6 of the *International Building Code* shall not be considered a private garage.

908.7.2 (IBC [F]908.7.2) Locations. Where required by Section 908.7.1, carbon monoxide alarms shall be installed in the locations specified in Sections 908.7.2.1 through 908.7.2.2.

908.7.2.1 (IBC [F]908.7.2.1) Dwelling units. Carbon monoxide alarms shall be installed in dwelling units outside of each separate sleeping area in the immediate vicinity of the bedrooms. Where a fuel-burning appliance is located within a bedroom or its attached bathroom, a carbon monoxide alarm shall be installed within the bedroom.

908.7.2.2 (IBC [F]908.7.2.2) Sleeping units. Carbon monoxide alarms shall be installed in sleeping units.

Exception: Carbon monoxide alarms shall be allowed to be installed outside of each separate sleeping area in the immediate vicinity of the sleeping unit where the sleeping unit or its attached bathroom do not contain a fuel burning appliance and are not served by a forced air furnace.

908.7.3 (IBC [F]908.7.3) Power source. Carbon monoxide alarms shall receive their primary power from the building wiring where such wiring is served from a commercial source, and when primary power is interrupted, shall receive power from a battery. Wiring shall be permanent and without a disconnecting switch other than that required for overcurrent protection.

Exception: Where installed in buildings without commercial power, battery powered carbon monoxide alarms shall be an acceptable alternative.

908.7.4 (IBC [F]908.7.4) Listings. Carbon monoxide alarms shall be listed in accordance with UL 2034.

908.7.5 (IBC [F]908.7.5) Combination alarms. Combination carbon monoxide/smoke alarms shall be an acceptable alternative to carbon monoxide alarms. Combination carbon monoxide/smoke alarms shall be listed in accordance with UL 2034 and UL 217.

908.7.6 (IBC [F]908.7.6) Carbon monoxide detection systems. Carbon monoxide detection systems shall be an acceptable alternative to carbon monoxide alarms and shall comply with Sections 908.7.6.1 through 908.7.6.3.

908.7.6.1 (IBC [F]908.7.6.1) General. Carbon monoxide detection systems shall comply with NFPA 720. Carbon monoxide detectors shall be listed in accordance with UL 2075.

908.7.6.2 (IBC [F]908.7.6.2) Locations. Carbon monoxide detectors shall be installed in the locations specified in Section 908.7.2. These locations supersede the locations specified in NFPA 720.

908.7.6.3 (IBC [F]908.7.6.3) Combination detectors. Combination carbon monoxide/smoke detectors installed in carbon monoxide detection systems shall be an acceptable alternative to carbon monoxide detectors, provided they are listed in accordance with UL 2075 and UL 268.

908.7.7 Maintenance. Carbon monoxide alarms and carbon monoxide detection systems shall be maintained in accordance with NFPA 720. Carbon monoxide alarms and carbon monoxide detectors that become inoperable or begin producing end-of-life signals shall be replaced.

Add new text as follows:

SECTION 202 GENERAL DEFINITIONS

[B] PRIVATE GARAGE. A building or portion of a building in which motor vehicles used by the tenants of the building or buildings on the premises are stored or kept, without provisions for repairing or servicing such vehicles for profit

Revise as follows:

1103.9 Carbon monoxide alarms. Existing Group I-1, I-4 and R occupancies located in a building containing a fuel-burning appliance or a building which has an attached garage shall be provided with be equipped with single-station carbon monoxide alarms in accordance with Section 908.7, except that the carbon monoxide alarms shall be allowed to be solely battery powered.

Reason: This proposal is submitted by the ICC Fire Code Action Committee (FCAC). This ICC committee was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the Fire-CAC has held 6 open meetings and numerous Regional Work Group and Task Group meetings and conference calls which included members of the committees as well as any interested party to discuss and debate the proposed changes. Related documentation and reports are posted on the FAC website at: <http://www.iccsafe.org/cs/CAC/Pages/default.aspx>.

This proposal clarifies the requirements for carbon monoxide alarm installations. The intent is to provide protection for occupants of dwelling units and sleeping units within Group I-1, I-4, and R occupancies, which are locations where occupants are likely to be sleeping. Protection is provided from carbon monoxide that may be generated from faulty fuel burning appliance both inside and outside of the dwelling unit or sleeping unit, or from motor vehicle exhaust emanating from vehicles in attached private garages. It is assumed that a fuel burning appliance also includes a fuel burning fireplace. Specific details on the proposal are as follows.

1. The definition of PRIVATE GARAGE is identical to the IBC definition that was approved as part of proposal G59-12.
2. The entire section was reformatted to provide requirements in a more logical order.
3. Section 908.7 clarifies that the section only applies to new constructions, and that Section 1103.9 applies to existing occupancies.
4. Section 908.7.1 now only requires CO alarms are to be provided in Group I-1, I-4 and R occupancies, not all Group I occupancies as required in the existing code. It was felt that CO alarms were not warranted in Group I-2 and I-3 occupancies.
5. The code currently requires CO alarms to be provided in buildings that contain fuel burning appliances, with no additional details. Sections 908.7.1.1 through 908.7.1.3 describe the specific conditions when CO alarms are and are not required with regard to fuel-burning appliances.
6. Section 908.7.1.3 covers situations where dwelling units and sleeping units do not contain a fuel burning appliance, but such an appliance is included in a common area of the building. A good example of this is a multistory hotel that has all electric HVAC in the sleeping units, but perhaps a fireplace in the lobby, forced air heating in the common area, and a boiler in an equipment room. In these situations it is not reasonable to provide CO alarms in every sleeping room on every floor of the hotel, where there are no sources of carbon monoxide. Having a few strategically located Co alarms in common areas will provide a reasonable level of protection for the sleeping units and dwelling units.

Exception 1 to this section covers situations where CO emanating from the fuel burning appliance has no direct path to a dwelling unit or sleeping unit, such as a water heater in an equipment room that only has access from the exterior of the building, and no openings through which the CO can get to dwelling units or sleeping units. An interior door, between this equipment room and a dwelling unit, even if it is self-closing, would not allow this exception to be used.

Exception 2 to this section requires the installation of a one or more CO alarms in approved locations between fuel burning appliances and the nearest dwelling unit or sleeping unit, or on the ceiling of the room in which a fuel burning appliance is located. CO alarms are only required where there are communicating openings including ducts, concealed spaces, interior hallways, stairs and spaces between the fuel-burning appliance or fuel burning fireplace and the dwelling unit or sleeping unit where air can flow from the appliance to the dwelling unit or sleeping unit.

7. The code currently requires CO alarms to be provided when the building has an attached garage, other than an open parking garages or enclosed parking garages that contain mechanical ventilation systems. The proposal keeps these basic concepts, but clarifies that CO alarms are required when the building has an attached private garage (which is defined in section 406.3 of the IBC). The proposal also does not require CO alarms to be provided when the private garage is attached to the building by an open ended corridor (a term used in the IBC and IFC, which is commonly called a breeze way).
8. The code currently deferred to NFPA 720 for identifying where CO alarms are to be located. In order to make the code more user friendly, Section 908.7.2 now describes the locations where CO alarms are to be provided. In some cases this differs from NFPA 720 required locations, but again is intended to provide protection for CO emanating from motor vehicles in attached private garages or from faulty fuel-burning appliances located either inside or outside of the dwelling unit or sleeping unit. .
9. Section 908.7.3 clarifies that CO alarms are required to be hard wired into building power, similar to smoke alarms, with one exception.
10. Section 908.7.5 addresses combination CO/smoke alarms, which are listed and readily available.
11. Section 908.7.6 includes more comprehensive requirements for CO detection systems as compared to the current code requirements. It requires these systems to comply with NFPA 720, but clarifies that detectors must be installed in the

locations specified in Section 908.7.2 (not as specified in NFPA 720). It also allows combination CO/smoke detectors to be used.

12. Section 908.7.7 covers maintenance of devices and requires inoperative and end-of-life CO alarms to be replaced.
13. Section 1103.9 was revised to avoid duplicating section 908.7 requirements, and to allow battery powered CO alarms to be used to retrofit existing buildings, which is consistent with the retrofit provisions in the IRC.

Cost Impact: This code change will not increase the cost of construction

PM16–13

705 (New)

Proponent: Rebecca Morley, representing National Center for Healthy Housing

Add new text as follows:

SECTION 705

CARBON MONOXIDE ALARMS

705.1 General. Carbon monoxide alarms shall be installed in accordance with Section 1103.9 of the *International Fire Code* in Group R occupancies and in dwellings not regulated as Group R occupancies.

Reason: Carbon monoxide (CO) is an odorless, tasteless, invisible gas that kills more than 300 people in homes each year. Thousands more are admitted to the hospital with carbon monoxide poisoning. This is a serious issue that affects people nationwide in all regions of the country.

The International Residential Code requires CO alarms for residences with fuel-fired appliances or attached garages. This change would make the IPMC consistent with the IRC.

This proposal expands on the requirement to specifically include portable fuel burning space heaters since these devices may not be considered an appliance, since these devices may be introduced by the property owner after construction.

The following states have required CO alarms in existing residences: Alaska, California, Colorado, Illinois, Massachusetts, Michigan, Minnesota, Montana, New Jersey, New York, North Carolina, Oklahoma, Oregon, Rhode Island, Vermont and Wisconsin. Deaths from CO are spread throughout the country as residents unwittingly use dangerous methods to stay warm in unusually cold weather.

Cost Impact: Yes, this code change proposal will increase the cost of property maintenance. A carbon monoxide alarm typically costs approximately \$25.
