



# State Fire Marshal Policy 14-001

## Alternate Method for 2012 Carbon Monoxide Detection Requirement



### SCOPE:

This policy will provide an official alternate method to the 2012 carbon monoxide (CO) requirements to Deputy State Fire Marshals and Resident Fire Marshals on regulations and codes pertaining to CO alarm and detection systems.

### PURPOSE:

The intent of this policy is to establish a consistent alternate method, for the newly adopted carbon monoxide standards, safeguarding South Carolinians to a reasonable degree from CO poisoning and/or death.

### BACKGROUND:

As recommended by the South Carolina Building Codes Council, the S.C. General Assembly adopted the 2012 International Building (IBC) and Fire Code (IFC) series on July 1, 2013. The codes were adopted with the intent to "safeguard to a reasonable degree, life and property, from fire, natural disasters, acts of terrorism, and other hazards associated with the construction, alterations, repair, use and occupancy of buildings, structures or premises." In the 2012 IBC and IFC, CO alarms & detection were applied to all new and existing Group "I" and Group "R" Occupancies.

### STATEMENT:

In accordance with regulation § 71-8300.3 A. (Subarticle 1), this Office has accepted the final authored version of the 2015 IBC/IFC carbon monoxide requirements, as voted on during the ICC final action hearings. This alternate method is driven by the ambiguous requirements of the 2012 I Codes (IBC/IFC § 908.7 & IFC § 1103.9), limited and insufficient guidance on the installation/location of devices and inconsistent statewide enforcement of adopted requirements.

To utilize this alternate method, all new Group "I", "E" and "R" occupancies permitted to the 2012 IBC/IFC, and built after July 1, 2013, shall meet the 2015 IBC, IFC and 2012 NFPA 720 requirements, when carbon monoxide detection is required:

### **SECTION 915** **CARBON MONOXIDE DETECTION**

**915.1 Carbon monoxide detection.** Carbon monoxide detection shall be installed in new buildings in accordance with Sections 915.1.1 through 915.6. Carbon monoxide detection shall be installed in existing buildings in accordance with Section 1103.9.

**915.1.1 Where required.** Carbon monoxide detection shall be provided in Group I-1, I-2, I-4 and R occupancies and in classrooms in Group E occupancies in the locations specified in Section 915.2 where any of the conditions in Sections 915.1.2 through 915.1.6 exist.

**915.1.2 Fuel-burning appliances and fuel-burning fireplaces.** Carbon monoxide detection shall be provided in *dwelling units, sleeping units* and classrooms that contain a fuel-burning appliance or a fuel-burning fireplace.

**915.1.3 Forced air furnaces.** Carbon monoxide detection shall be provided in *dwelling units, sleeping units* and classrooms served by a fuel-burning, forced air furnace.

**Exception:** Carbon monoxide detection shall not be required in *dwelling units, sleeping units* and classrooms where carbon monoxide detection is provided in the first room or area served by each main duct leaving the furnace, and the carbon monoxide alarm signals are automatically transmitted to an approved location.

**915.1.4 Fuel-burning appliances outside of dwelling units, sleeping units and classrooms.** Carbon monoxide detection shall be provided in *dwelling units, sleeping units* and classrooms located in buildings that contain fuel-burning appliances or fuel-burning fireplaces.

**Exceptions:**

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

**915.1.5 Private garages.** Carbon monoxide detection shall be provided in *dwelling units, sleeping units* and classrooms in buildings with attached private garages.

**Exceptions:**

1. Carbon monoxide detection shall not be required where there are no communicating openings between the private garage and the *dwelling unit, sleeping unit* or classroom.
2. Carbon monoxide detection shall not be required in *dwelling units, sleeping units* and classrooms located more than one story above or below a private garage.
3. Carbon monoxide detection shall not be required where the private garage connects to the building through an open-ended corridor.
4. Where carbon monoxide detection is provided in an approved location between openings to a private garage and *dwelling units, sleeping units* or classrooms, carbon monoxide detection shall not be required in the *dwelling units, sleeping units* or classrooms.

**915.1.6 Exempt garages.** For determining compliance with Section 915.1.5, 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.

**915.2 Locations.** Where required by Section 915.1.1, carbon monoxide detection shall be installed in the locations specified in Sections 915.2.1 through 915.2.3.

**915.2.1 Dwelling units.** Carbon monoxide detection 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, carbon monoxide detection shall be installed within the bedroom.

**915.2.2 Sleeping units.** Carbon monoxide detection shall be installed in *sleeping units*.

**Exception:** Carbon monoxide detection 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 does not contain a fuel-burning appliance and is not served by a forced air furnace.

**915.2.3 Group E occupancies.** Carbon monoxide detection shall be installed in classrooms in Group E occupancies. Carbon monoxide alarm signals shall be automatically transmitted to an on-site location that is staffed by school personnel.

**Exception:** Carbon monoxide alarm signals shall not be required to be automatically transmitted to an on-site location that is staffed by school personnel in Group E occupancies with an occupant load of 30 or less.

**915.3 Detection equipment.** Carbon monoxide detection required by Sections 915.1 through 915.2.3 shall be provided by carbon monoxide alarms complying with Section 915.4 or with carbon monoxide detection systems complying with Section 915.5.

**915.4 Carbon monoxide alarms.** Carbon monoxide alarms shall comply with Sections 915.4.1 through 915.4.3.

**915.4.1 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.

**915.4.2 Listings.** Carbon monoxide alarms shall be listed in accordance with UL 2034.

**915.4.3 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.

**915.5 Carbon monoxide detection systems.** Carbon monoxide detection systems shall be an acceptable alternative to carbon monoxide alarms and shall comply with Sections 915.5.1 through 915.5.3.

**915.5.1 General.** Carbon monoxide detection systems shall comply with NFPA 720. Carbon monoxide detectors shall be listed in accordance with UL 2075.

**915.5.2 Locations.** Carbon monoxide detectors shall be installed in the locations specified in Section 915.2. These locations supersede the locations specified in NFPA 720.

**915.5.3 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.

**915.6 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.

All existing Group "I" and Group "R", excluding one and two family dwellings, occupancies shall meet the 2015 IBC, IFC and 2012 NFPA 720, as an alternative method.

**1103.9 Carbon monoxide alarms.** Existing Group I-1, I-2, I-4 and R occupancies be provided with carbon monoxide alarms in accordance with Section 915, except that the carbon monoxide alarms shall be allowed to be solely battery powered.

**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.

**[B] SLEEPING UNIT.** A room or space in which people sleep, which can also include permanent provisions for living, eating, and either sanitation or kitchen facilities but not both. Such rooms and spaces that are also part of a *dwelling unit* are not sleeping units.

**[B] DWELLING UNIT.** A single unit providing complete, independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking and sanitation.

**GUIDANCE:**

- NFPA 720 (2012) 4.14.1.1 states: The authority having jurisdiction shall be notified prior to installation or alteration of equipment or wiring [72: 10.18.1.1]
- For "I" and "E" occupancies or "R" occupancies over 5000 sq. ft., please see SC Code of Laws § 40-22-280
- In all new facilities, CO alarms or detection systems must be hard wired into the AC electrical system and must have backup power. When more than one CO alarm is provided, the alarms must be interconnected so all alarm, or the detection system alarms as applicable.
- The CO device must be listed for commercial use in commercial occupancies. Refer to the user manuals to insure proper installation and adequacy for the occupancy type. Recommend owner retain the manual on file to insure adequate Testing, Maintenance, Inspection and replacement requirements along with adherence to NFPA 720 (2012) Chapter 8 for Testing, Maintenance and Inspection.
- CO Alarms must comply with UL 2034, Combination CO/smoke shall be listed in accordance with UL 2034 and UL 217, CO detection systems must comply with UL 2075
- 2015 IBC/IFC does not require installation of CO in I-3, however, it shall be installed in E occupancies, where required.
- Questions? Call, Chief Deputy State Fire Marshal, Shawn Stickle at 803-896-3970