

## Support references for proposed revisions

### IFC Section 915

### CARBON MONOXIDE DETECTION

#### 915.1 General

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 A, B, E, F, H, I, M ~~1, 2, 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.<sup>1,2</sup>

##### 915.1.2 ~~Fuel-burning appliances and~~ Fuel-burning fireplaces.

Carbon monoxide detection shall be provided in rooms, areas, dwelling units, sleeping units and classrooms in Group E occupancies that contain a ~~fuel-burning appliance or a~~ fuel-burning fireplace.<sup>1</sup>

##### 915.1.3 Fuel-burning forced-air furnaces.

Carbon monoxide detection shall be provided in ~~dwelling units, sleeping units, and~~ classrooms the following locations served by a fuel-burning forced-air furnace:

1. In a central or otherwise approved location in each HVAC zone on every floor level that is served by a fuel-burning forced-air furnace.<sup>1,2</sup>
2. In dwelling units, sleeping units, classrooms in Group E occupancies and areas containing a swimming pool that are served by a fuel-burning forced-air furnace.

**Exception:** Carbon monoxide detection shall not be required to be installed in accordance with Section 915.1.3, Items 1 or 2, dwelling units, sleeping units, and classrooms where a carbon monoxide detector 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 on-site location or to an approved off-premises location in accordance with NFPA 72.

##### 915.1.4 Fuel-burning appliances.

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.~~ the following locations in buildings that contain fuel-burning appliances:

1. In rooms, areas, dwelling units, sleeping units and classrooms in Group E occupancies that contain a fuel-burning appliance.<sup>1,2</sup>
2. In rooms, areas, dwelling units, sleeping units and classrooms in Group E occupancies that have communicating openings between the fuel-burning appliance and the room, area, dwelling unit, sleeping unit or classroom; or in an approved location between the fuel-burning appliance and the room, area, dwelling unit, sleeping unit or classroom.
3. In dwelling units, sleeping units, classrooms in Group E occupancies, and areas containing a swimming pool<sup>4</sup> . ~~located in buildings that contain a fuel-burning appliances or fuel-burning fireplaces.~~

**Exception:** Carbon monoxide detection shall not be required to be installed in accordance with Section 915.1.4, Item 3, where a carbon monoxide detector is provided in each room or area that shares a common wall, ceiling or floor with the room or area containing the fuel-burning appliance, and the carbon monoxide alarm signals are automatically transmitted to an approved on-site location or to an off-premises location in accordance with NFPA 72.<sup>3,4,5</sup>

**Exceptions:**

- ~~1. Carbon monoxide detection shall not be required in dwelling units, sleeping units, and classrooms without communicating openings between the fuel-burning appliance or fuel-burning fireplace and the dwelling unit, sleeping unit, and classroom.~~
- ~~2. Carbon monoxide detection shall not be required in dwelling units, sleeping units, and classrooms where a carbon monoxide detector 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 rooms, areas, dwelling units, sleeping units, and classrooms in Group E occupancies, in buildings with attached private garages.

**Exceptions:**

1. Carbon monoxide detection shall not be required in rooms, areas, dwelling units, sleeping units, and classrooms in Group E occupancies without communicating openings between the private garage and the room, area, dwelling unit, sleeping unit or classroom.
2. Carbon monoxide detection shall not be required in rooms, areas, dwelling units, sleeping units, and classrooms in Group E occupancies 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 a carbon monoxide detector is provided in an approved location between openings to a private garage and rooms, areas, dwelling units, sleeping units, or classrooms in Group E occupancies.

**915.1.6 Exempt garages.**

For determining compliance with Section 915.1.5, an open parking garage complying with Section 406.5 of the IBC or an enclosed parking garage complying with Section 406.6 of the IBC shall not be considered a private garage.

**915.2 Locations.**

Where required by Section 915.1.1, carbon monoxide detection shall be installed in locations specified in Sections 915.2.1 through 915.2.34.

**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 Areas containing a swimming pool.**

Carbon monoxide detection shall be installed in areas containing a swimming pool.<sup>4</sup>

**Exception:** Where there is a conflict between the requirements of this code and the manufacturer's installation instructions, the manufacturer's installation instructions shall govern.

**915.2.34 Group E occupancies.**

Carbon monoxide detectors 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 Carbon monoxide detection.**

Carbon monoxide detection required by Sections 915.1 through 915.2.34 shall be provided by carbon monoxide alarms complying with Section 915.4 or carbon monoxide detection systems complying with Sections 915.5.

**915.4 Carbon monoxide alarms.**

Carbon monoxide alarms shall comply with Sections 915.4.1 through 915.4.45

**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-operated~~ carbon monoxide alarms powered by a 10-year battery<sup>2</sup> shall be an acceptable alternative.

**915.4.2 Listings.**

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

**915.4.3 Locations.**

Carbon monoxide alarms shall only be installed in dwelling units and sleeping units. They shall not be installed in locations where the code requires carbon monoxide detectors to be used.

#### **915.4.4 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.

#### **915.4.5 Installation requirements.**

Where required by Sections 915.1.1 through 915.5.3, carbon monoxide alarms shall be installed in accordance with Section 915, NFPA 72, and the manufacturer's installation instructions. Where there is a conflict between the requirements of this code, NFPA 72, and the manufacturer's installation instructions, the manufacturer's installation instructions shall govern.<sup>2</sup>

#### **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~~ 72. Carbon monoxide detectors shall be listed in accordance with UL 2075.

##### **915.5.2 Locations.**

Carbon monoxide detectors shall be installed in locations specified in Section 915.2. These locations supersede the locations specified in NFPA ~~720~~ 72.

##### **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 that 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~~ 72. Carbon monoxide alarms and carbon monoxide detectors that become inoperable or begin producing end-of-life signals shall be replaced.

##### **915.6.1 Enclosed parking garages**

Carbon monoxide and nitrogen dioxide detectors installed in enclosed parking garages in accordance with the International Mechanical Code, Section 404.1 shall be maintained in accordance with the manufacturer's instructions and their listing. Detectors that become inoperable or begin producing end-of-life signals shall be replaced.

## References

1. Development of a Technical Basis for Carbon Monoxide Detector Siting: [NFPA Fire Protection Research Foundation, 2007](#)
2. [New York State Fire Code, 2020](#)
3. [Diffusion of Carbon Monoxide Through Gypsum Drywall. JAMA, 2013](#)
4. Pool Area CO Incident Log (*attachment to proposal*)
5. [Commercial building CO Incident log. Jenkins Foundation](#)