

2.3. Carbon Monoxide Alarms

2.2. Smoke Alarms

2.4. Auxiliary Lights

Carbon monoxide (chemical formula CO) is a poisonous, colorless, odorless, tasteless, flammable gas that is slightly less dense than air. Carbon monoxide is harmful when breathed because it displaces oxygen in the blood and deprives the heart, brain, and other vital organs of oxygen. Large amounts of CO can overcome a person in minutes without warning — causing loss of consciousness and suffocation.

It should be noted that this requirement does not extend to a number of HUD programs following NSPIRe standards.

HUD notes that the 2021 Consolidated Appropriations Act only adds carbon monoxide-related requirements to the HUD programs listed above and the USDA programs authorized by sections 514 and 515 of the Housing Act of 1949. HUD programs such as HUD-insured housing are not subject to an assistance contract, and the ESG, CoC, HOME, and HTF programs are not subject to statutory requirements concerning carbon monoxide detection.

The standards for CO alarm and detection in this protocol are based on Chapters 9 and 11 of the 2018 International Fire Code (IFC) publication published by the International Code Council (ICC). Where NPSIRE is non-specific (e.g., design, installation, type of equipment), ICC and IBC would be the governing standard unless the local code is more stringent. The essentials of these codes are listed below.

1. “Carbon Monoxide Detection shall be installed in dwelling units containing a fuel-burning appliance or a fireplace.” IFC – Chapter 9, Section 915.1.2 – Locations
2. “Carbon Monoxide detection shall be included in any dwelling units with attached private garages” IFC, Chapter 9, Section 915.1.5 Private Garages.
3. “Carbon Monoxide detectors shall be installed in dwelling units outside each sleeping area and in the immediate vicinity of the bedroom. If a fuel-burning appliance is installed in the bedroom, a CO detector must be installed in the bedroom” Section 915.2.1.

What Kind of CO Alarms are Required, and Where Do They Need to be Installed?

1. Carbon Monoxide detectors shall receive their primary power from the building’s wiring. When the primary power service is interrupted, they are serviced by a battery (i.e., a detector must be hard-wired and have a battery backup). Section 915.4.1 Power Source
2. The exception to Hard-Wiring: ICC Chapter 11 – 1103.09 Carbon Monoxide Alarms can be exclusively battery operated where the code in effect at the time of construction did not require carbon monoxide detectors to be provided.
3. The CO alarms must meet the UL 2034 standard for sensitivity and UL 217. When purchasing CO alarms, ensure they meet these standards for sensitivity. Combination smoke and CO alarms must comply with UL2075 and UL268.

4. IFC does not specify where CO detectors should be installed. Installation should follow the manufacturer's specifications. If no specifications can be located, the best practice is to install CO detectors approximately 5' from the floor and not within 6" of a conjoining wall. If wall placement is not feasible, place them on the ceiling no less than 6" from any wall. If the CO alarm is combined with a smoke alarm, follow the correct smoke alarm placement.

Common Examples of Housing Layout Scenarios and Their Need for CO Alarms

1. Does the unit have fuel-burning appliances, HVAC, or Domestic Hot Water Equipment located inside the unit?
 - a. Yes, the unit must have CO Alarms/Detectors.
2. Does the unit have an attached enclosed garage (i.e., does not have open walls)?
 - a. Yes, the unit must have CO Alarms/Detectors.
3. Does the unit have a central heating system that consists of gas-fired forced hot air distributed into the unit by a furnace and ductwork?
 - a. Yes, the unit must have CO Alarms/Detectors.
4. Does the unit have a central (i.e., not in the unit) fuel-fired forced hot water (i.e., steam or hot water) system for heating, no gas appliances, and no attached garage?
 - a. No, this unit does not have to have CO Alarms/Detectors under the NPSIRE standards.
5. Does the unit have all electric heat, HVAC, no attached garage, and all-electric appliances?
 - a. No, this unit does not have to have CO Alarms/Detectors under the NPSIRE standards.
6. Does the unit have a gas range and all electric heat and air conditioning?
 - a. Yes, the unit must have CO Alarms/Detectors.
7. Is the unit located directly below or above an attached garage?
 - a. Yes, the unit must have CO Alarms/Detectors.
8. Is the unit in a building that uses fuel-burning appliances to distribute forced hot air in the common hallways, and are there openings under the door into the units?
 - a. Yes, the unit must have CO Alarms/Detectors.
9. Does a unit with a wood-burning fireplace and no gas-burning equipment have to have CO detection?
 - a. Yes, the unit must have CO Alarms/Detectors
10. The Unit is located one story or less above or below a private attached garage that does not have ventilation.
 - a. Yes, the unit must have CO Alarms/Detectors

Def#	Deficiency	Severity	Repair Due	HCV Rating
1	CO alarm missing on the ceiling of a common area mechanical room with any fuel burning equipment	Life Threatening	24 Hours	Fail
1	Carbon Monoxide Alarm not present within 10 feet of bedroom(s) or in each bedroom	Life Threatening	24 Hours	Fail
1	Carbon Monoxide Alarm not present in a bedroom that contains fuel-burning equipment	Life Threatening	24 Hours	Fail
1	Carbon Monoxide Alarm not present in a unit located one story or less above/below an unventilated garage	Life Threatening	24 Hours	Fail

Def#	Deficiency	Severity	Repair Due	HCV Rating
2	Carbon monoxide alarm is obstructed	Life Threatening	24 Hours	Fail
3	Carbon monoxide alarm does not produce an audio or visual alarm when tested	Life Threatening	24 Hours	Fail

 [Where to Install Fire and CO Alarms](#)

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[Carbon Monoxide Alarm Standard V3.0, Updated 6/16/23](#)

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