Joint Advisory Memo Regarding Carbon Monoxide Detectors Now Required under the Ohio Fire Code

New provisions in the 2017 Ohio Fire Code (OFC) address the risk of carbon monoxide (CO) poisoning in educational buildings, certain residential structures (including apartments, dormitories and hotels), and health care institutional facilities. This life saving detection equipment is required in new and existing buildings in certain instances where CO sources exist. When required in new buildings, CO alarms must be interconnected and receive power from the buildings wiring. However, when required in existing buildings, in an effort to minimize costs to property owners, the OFC only requires battery operated CO alarms without interconnection to building alarm systems.

This advisory statement is an overview only of these new CO provisions, but will serve as a good starting point for determining when and where CO is required. However, code enforcement officials and property owners/operators should analyze each building on a case by case basis when determining if CO detection is required or where detectors must be placed. **For a full analysis of all CO related OFC provisions, please see OFC §§ 915 and 1103.9, and review the Ohio Department of Commerce, Division of State Fire Marshal's (SFM) Technical Bulletin 18-001 "*Carbon Monoxide Detectors in New and Existing Buildings*"** (TB 18-001). This and other technical bulletins can be found on the SFM's website (https://www.com.ohio.gov/fire/, under the "Ohio Fire Code" and then "Technical Bulletins" tabs).

First and foremost, when determining if CO detection is required, it is important to determine what occupancy category a building is. As stated above, the new rules only apply to health care institutional facilities (i.e., I-1, I-2, and I-4 occupancies), residential structures including apartments, dormitories and hotels (i.e., R occupancies), and educational buildings (i.e., E occupancies). The new CO rules do not affect any other occupancy categories. So, if a particular building does not fall into one of these occupancy categories, the new CO provisions will not apply.

If a building is one of the relevant occupancies, CO detection may now be required; but it will only be required if one of four specific conditions exist in the building. Therefore, the second determination to be made is whether or not one of the four conditions exist in the building. The four conditions are:

1. A dwelling unit, sleeping unit, or classroom **contains** a fuel burning appliance or a fuel-burning fireplace. See OFC § 915.1.2.

2. A dwelling unit, sleeping unit or classroom is **served by** a fuel-burning, forced-air furnace. See OFC § 915.1.3.

3. A dwelling unit, sleeping unit or classroom is **located in a building that contains** a fuel-burning appliance or fuel-burning fireplace. See OFC § 915.1.4.

4. A dwelling unit, sleeping unit, or classroom is **located in a building with an attached private garage**. See OFC § 915.1.5.

If one of these conditions does exist in a building, CO will be required in the affected dwelling units, sleeping units, and classrooms within that building. However, conditions 2, 3, and 4 all have exceptions. So, the next question will be – do any of the exceptions apply? **The exceptions are fully reviewed in TB 18-001 but they boil down to one over-riding principle: if the first area served by the CO generating appliance has a CO detector or if there are no communicating openings between the appliance and the dwelling unit, sleeping unit or classroom, the provisions of the OFC will be met and separate CO detectors will not also have to be placed in each dwelling unit, sleeping unit or classroom served by that same appliance.** To put it another way – if the CO will be detected at the source (via a detector installed per manufacturer's specifications in the room where the appliance is) or if there are no pathways (i.e., ducts) for the CO to travel to the units or rooms, the individual units and rooms do not require additional CO detectors.

If there are communicating openings and CO detection is not provided in the room where the appliance is located, CO detection will have to be installed in dwelling units, sleeping units or classrooms. So, if CO is required in a sleeping unit, dwelling unit, or classroom because there is no detection in the first area served, the final question is: where does the detector have to be installed? Detectors should be installed as follows:

Dwelling Units (See OFC § 915.2.1.)

If a dwelling unit is required to have CO detection, the detection has to be installed in the dwelling unit outside of each separate sleeping area in the immediate vicinity of the bedrooms.

If a fuel-burning appliance is located within a bedroom or its attached bathroom, the detection must be installed within the bedroom.

Sleeping Units (See OFC § 915.2.2.)

If a sleeping unit is required to have CO detection the detection must be installed in the sleeping unit.

The only exception to this provision is where the sleeping unit or its attached bathroom does not contain a fuel-burning appliance and is not served by a forced air furnace. If the sleeping unit or its attached bathroom does not contain a fuel-burning appliance and are not served by a forced air furnace the CO detection can be installed outside of each separate sleeping area in the immediate vicinity of the sleeping unit. If the sleeping unit or an attached bathroom does contain a fuel-burning appliance or is served by a forced air furnace, the CO detection will have to be located in the sleeping unit.

Classrooms in Group E (See OFC § 915.2.3.)

If a classroom is required to have CO detection, the detection must be installed in the classroom. Unless the occupant load is 30 or less, alarm signals must be automatically transmitted to an on-site location that is staffed by school personnel. If the occupant load

is 30 or less, the signal does not have to be automatically transmitted. If the occupant load is over 30, automatic transmission is required.

If carbon monoxide detection is required, it must be provided by either a CO alarm or a CO detection system. (See OFC § 915.3.) The new code provisions set forth specific parameters that each must meet, including they must be listed and they must be maintained in accordance with applicable NFPA standards (i.e., 2015 NFPA 720). See OFC §§ 915.3 - 915.6.

If you have any questions regarding the new CO rules contained in OFC §§ 915 and 1103.9 or their application to a particular building or CO detector placement, please contact the SFM's Code Enforcement Bureau: 8895 E. Main Street, Reynoldsburg, OH 43068; Phone: (614) 728-5460; Fax: (614) 728-5168; E-mail: sfm_codeenf@com.state.oh.us.

For additional resources regarding these new OFC CO detection requirements, please see the Q and A page and the flow chart attached below and TB 18-001.

DETERMINING IF CO DETECTION IS REQUIRED

Question 1: Am I in a relevant occupancy (I-1, I-2, I-4, R occupancy or in a Classroom in an E occupancy)?

NO: CO detection requirements are not applicable

YES: Go to Question 2

Question 2: Is one of the following relevant conditions present?

- A dwelling unit, sleeping unit or classroom contains a fuel-burning appliance/fireplace
- A dwelling unit, sleeping unit or classroom is served by a fuel-burning forced air furnace
- A dwelling unit, sleeping unit or classroom is in a building that contains a fuel-burning appliance/fireplace
- A dwelling unit, sleeping unit or classroom is in a building that contains an attached private garage

NO: CO detection requirements are not applicable

YES: Go to Question 3

Question 3: Is there an applicable exception?

- For a unit or room that contains a fuel-burning appliance/fireplace:
  – There are no exceptions; CO is required
- For a unit or room that is served by a fuel-burning forced air furnace:
  – Does the first area served by each main duct have CO detection and is the detection automatically transmitted to an approved location?

    NO: CO is required

    YES: CO is not required
- For a unit or room that is in a building that contains a fuel-burning appliance/fireplace:
  – Are there any communicating openings between the unit or room and the appliance or fireplace?

    NO: CO is not required

    YES: CO is required

  – Is there CO detection in an approved location between the room or unit and the appliance or fireplace, OR is there CO detection on the ceiling of the room where the appliance or fireplace is located?

    NO: CO is required

    YES: CO is not required
- For a unit or room that is in a building that contains an attached private garage:
  – Are there any communicating opening between the appliance/fireplace and the unit or room?

NO: CO not is required

YES: CO is required

– Is the unit or room more than one-story above or below the garage?

NO: CO is required

YES: CO is not required

– Is the garage connected to the building through an open-ended corridor?

NO: CO is required

YES: CO is not required

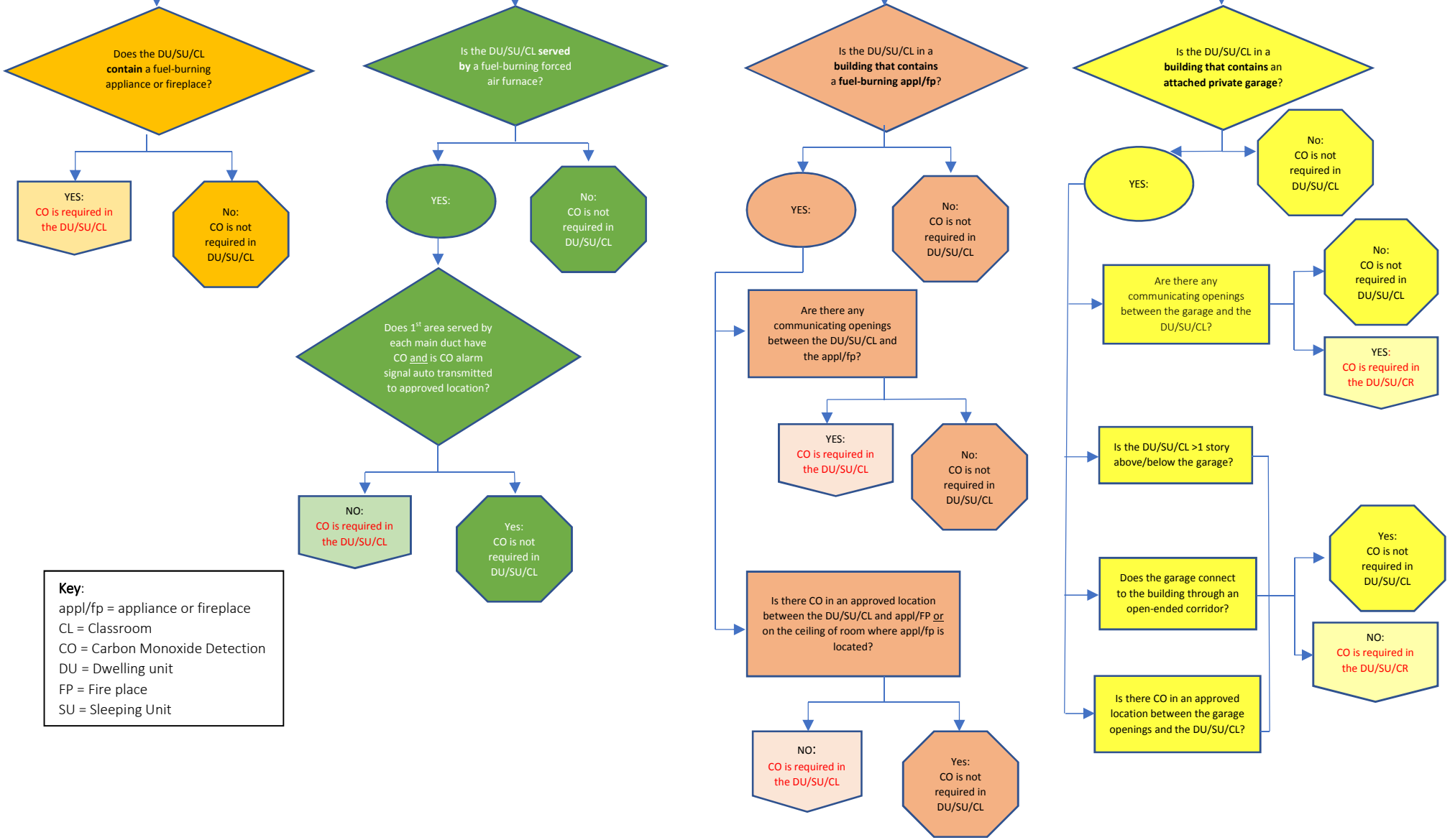
– Is there CO detection in an approved location between garage openings and the unit or room?

NO: CO is required

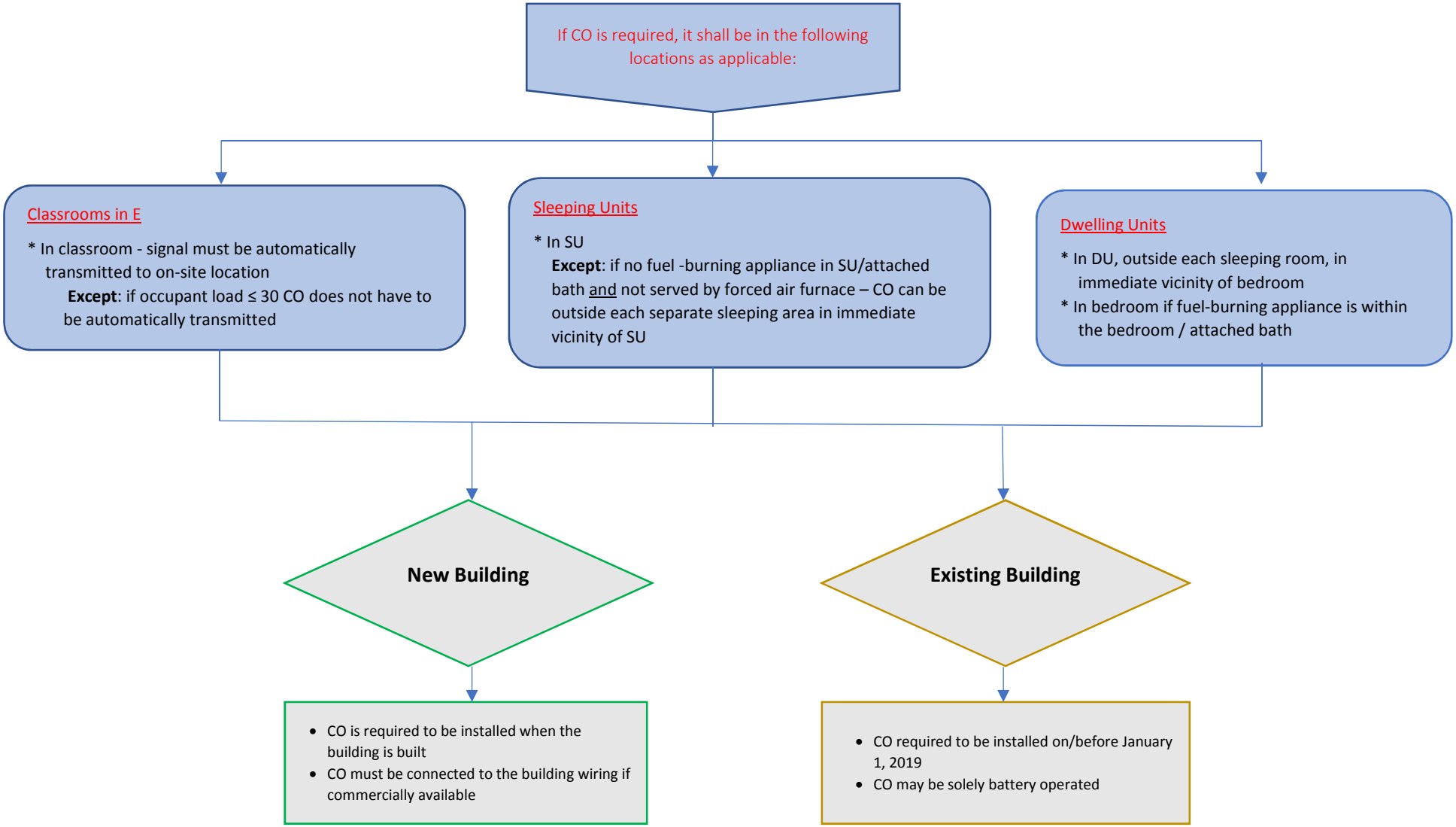
YES: CO is not required

REQUIRED CARBON MONIXIDE DETECTION UNDER 2017 OFC §§ 320, 1103.9

Is inspector in a relevant occupancy (I-1, I-2, I-4, R occupancy or in a classroom in an E occupancy)? **If yes**, CO will be required if any one or more of the following **four relevant conditions** is present and none of the exceptions apply



Key:
appl/fp = appliance or fireplace
CL = Classroom
CO = Carbon Monoxide Detection
DU = Dwelling unit
FP = Fire place
SU = Sleeping Unit



NOTE: This flow chart only outlines CO requirements pursuant to OFC sections 320 and 1103.9; CO may be required under other OFC provisions / when other conditions are present. In addition, even if CO is not required under these provisions, CO can be installed.

NOTE: Compliance with the above CO requirements does not ensure building safety; all applicable OFC/OBC rules must be complied with.