**15-063**

**1. State Building Code to be Amended:**

x International Building Code  State Energy Code

ICC ANSI A117.1 Accessibility Code  International Mechanical Code

International Existing Building Code  International Fuel Gas Code

International Residential Code  NFPA 54 National Fuel Gas Code

x International Fire Code  NFPA 58 Liquefied Petroleum Gas Code

Uniform Plumbing Code  Wildland Urban Interface Code

**Section(s): 915**

**Title: Carbon Monoxide Detection**

(e.g: Footings for wood foundations)

**2. Proponent Name (Specific local government, organization or individual):**

**Proponent: Neil B. Hampson, MD**

**Title: Emeritus Physician, Virginia Mason Medical Center, Seattle**

**Clinical Professor of Medicine, University of Washington School of Medicine**

**Date: 2/28/15**

**3. Designated Contact Person:**

**Name: Self**

**Title: As above**

**Address: Center for Hyperbaric Medicine**

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**4. Proposed Code Amendment**. Reproduce the section to be amended by underlining all added language, striking through all deleted language. Insert new sections in the appropriate place in the code in order to continue the established numbering system of the code. If more than one section is proposed for amendment or more than one page is needed for reproducing the affected section of the code additional pages may be attached. (Examples on the SBCC [website](https://fortress.wa.gov/ga/apps/sbcc/Page.aspx?nid=191))

**Code(s)** 2015 IFC/IBC **Section(s)** 915.1.1 – 915.1.5

Enforceable code language must be used; see an example [by clicking here](https://fortress.wa.gov/ga/apps/SBCC/File.ashx?cid=1803).

Amend section to read as follows:

**[F] 915.1.1 Where required.** Carbon monoxide detection shall be provided in all Group ~~I-1, I-2, I-4~~ A, B, E, F, H, I 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.

**[F] 915.1.2 Fuel-burning appliances and fuel-burning fireplaces.** Carbon monoxide detection shall be provided in *all dwelling units, and sleeping units* in Group I and R occupanciesirrespective of the presence or absence of fuel-burning appliances or fireplaces. Carbon monoxide detection shall be provided in Group E ~~and~~ classrooms and Group A, B, F, and H facilities that contain a fuel-burning appliance, ~~or~~ a fuel-burning fireplace, an attached garage, or fuel-burning vehicles.

**[F] 915.1.3 Forced-air furnaces**. Carbon monoxide detection shall be provided in *dwelling units~~,~~ and sleeping units* irrespective of the presence or absence of a forced air furnace. Carbon monoxide detection shall be provided in ~~and~~ classrooms, Group A, B, F, and H facilities served by a fuel-burning, forced-air furnace.

**Exception:** Carbon monoxide detection shall not be required in *~~dwelling units, sleeping units~~* ~~and~~ classrooms, Group A, B, F, and H facilities if 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.

**[F] 915.1.4 Fuel-burning appliances outside of ~~dwelling units, sleeping units and~~ classrooms.** Carbon monoxide detection shall be provided in *~~dwelling units, sleeping unit~~*~~s and~~ classrooms and Group A, B, F, and H facilities 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 where 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 and Group A, B, F, and H facilities where 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.~~

**[F] 915.1.5 Private garages.** Carbon monoxide detection shall be provided in *dwelling units~~,~~ and sleeping units* irrespective of the presence or absence of an attached private garage. ~~and~~ Carbon monoxide detection shall be provided in classrooms and Group A, B, F, and H facilities 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 and Group A, B, F, and H facilities, carbon monoxide detection shall not be required in the ~~dwelling units, sleeping units or~~ classrooms.

1. **Briefly explain your proposed amendment, including the purpose, benefits and problems addressed.** Specifically note any impacts or benefits to business, and specify construction types, industries and services that would be affected. Finally, please note any potential impact on enforcement such as special reporting requirements or additional inspections required.

* All new facilities with potential sources of carbon monoxide should be required to have CO alarms.
* Gypsum wallboard is not a barrier to CO diffusion.
* All new Group I and R facilities with fuel-burning appliance, fuel-burning fireplaces, attached garages, or residences where occupants can bring in fuel-burning appliances should have CO alarms.
* CDC: Carbon Monoxide Poisoning: <http://www.cdc.gov/co/default.htm>
* Facilities and residences with, or where others will set up generators need CO alarms. Research shows that CO can travel more than 25 feet from generators and enter near-by buildings. <https://www.youtube.com/watch?v=jkO9PK4JvJI&list=TLcIY5jUMAafYb3jJO3XPlBf1bSE-Vn4mf>
* See list of supporting publications at end of proposal

1. **Specify what criteria this proposal meets.** You may select more than one.

x The amendment is needed to address a critical life/safety need.

x The amendment is needed to address a specific state policy or statute.

x The amendment is needed for consistency with state or federal regulations.

The amendment is needed to address a unique character of the state.

x The amendment corrects errors and omissions.

1. **Is there an economic impact:** x Yes      No

Explain:

If there is an economic impact, use the Table below to estimate the costs and savings of the proposal on construction practices, users and/or the public, the enforcement community, and operation and maintenance. If preferred, you may submit an alternate cost benefit analysis.

The changes between this proposed amendment and existing state law would be the addition of CO alarms in appropriate facilities. The cost is roughly $25/alarm. The number of appropriate facilities is unknown.

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| --- | --- | --- | --- | --- | --- | --- |
| Building Type | Construction[[1]](#footnote-1) | | Enforcement[[2]](#footnote-2) | | Operations & Maintenance[[3]](#footnote-3) | |
| Costs | Benefits[[4]](#footnote-4) | Costs | Benefits4 | Costs | Benefits4 |
| Residential |  |  |  |  |  |  |
| Single family |  |  |  |  |  |  |
| Multi-family |  |  |  |  |  |  |
| Commercial/Retail |  |  |  |  |  |  |
| Industrial |  |  |  |  |  |  |
| Institutional |  |  |  |  |  |  |

Please send your completed proposal to: [sbcc@ga.wa.gov](mailto:sbcc@ga.wa.gov)

All questions must be answered to be considered complete. Incomplete proposals will not be accepted.

Supporting publications:

* Gulati R, Kwan-Gett T, Hampson NB, Baer A, Shusterman D, Shandro J, Duchin J. A carbon monoxide epidemic among immigrant populations: King County, Washington, 2006. *Am J Pub Health* 2009; 99(9):1687-1692. Epub 2009 Jul 16.
* Hampson NB, Weaver LK. Residential carbon monoxide alarm use: Opportunities for poisoning prevention. *J Environ Health*; 2011 Jan-Feb; 73(6):30-33.
* Hampson NB, Courtney TG, Holm JR. Diffusion of carbon monoxide through gypsum drywall. *JAMA* 2013; 310(7):745-746.
* Hampson NB, Dunn SL. Carbon monoxide poisoning from portable electrical generators. *J Emerg Med* 2015; Manuscript in press.
* Vermizi I, Restuccia F, Walker-Ravena C, Rein G. Carbon monoxide diffusion through porous walls: A critical review of the literature and incidents. Fire Research Foundation Report. February 2015. <http://www.nfpa.org/research/fire-protection-research-foundation/reports-and-proceedings/detection-and-signaling/carbon-monoxide-detection/carbon-monoxide-diffusion-through-porous-walls>. Accessed February 28, 2015

1. $ / square foot of floor area or other cost. Attach data. **Construction** costs are costs prior to occupancy, and include both design and direct construction costs

   that impact the total cost of the construction to the owner/consumer. [↑](#footnote-ref-1)
2. Cost per project plan. Attach data. **Enforcement** costs include governmental review of plans, field inspection, and other action required for enforcement. [↑](#footnote-ref-2)
3. Cost to building owner/tenants over the life of the project. [↑](#footnote-ref-3)
4. Measurable benefit. [↑](#footnote-ref-4)