STATE OF WASHINGTON

STATE BUILDING CODE COUNCIL

May 2018

Log No. _____

1. State Building Code to be Amended:

- ☐ International Building Code
- ☐ ICC ANSI A117.1 Accessibility Code
- ☐ International Existing Building Code
- ☐ International Residential Code
- ☐ International Fire Code
- ☐ Uniform Plumbing Code
- ☒ International Mechanical Code
- ☐ International Fuel Gas Code
- ☐ NFPA 54 National Fuel Gas Code
- ☐ NFPA 58 Liquefied Petroleum Gas Code
- ☐ Wildland Urban Interface Code

For the Washington State Energy Code, please see specialized energy code forms

Section(s): **2024 IMC Sections 1109.2.5, 1109.3.2, and Chapter 15 Definitions**

Title: **Chapter 11 and ASHRAE 15**

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

Proponent: **Eric Vander Mey, PE**
Title: **Principal**
Date: **9/19/2025**

3. Designated Contact Person:

Name: **Eric Vander Mey**
Company: **Delta E Consulting**

Cell: **(206) 321-1677**
E-Mail: **ericv@deltaeconsulting.com**

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.

Clearly state if the proposal modifies an existing amendment or if a new amendment is needed. If the proposal modifies an **existing amendment**, show the modifications to the existing amendment by underlining all added language and striking through all deleted language. If a new amendment is needed, show the modifications to the **model code** by underlining all added language and striking through all deleted language.

Code(s) **2024 International Mechanical Code (IMC)**
Section(s) **1109.2.5, 1109.3.2, and Chapter 15 Definitions**

Enforceable code language must be used.
Amend section to read as follows:

Base language in black text is from 2021 WSMC Emergency Rule
See revisions proposed below with track changes in blue text

1109.2.5 Refrigerant pipe shafts. Refrigerant piping that penetrates ~~two or more~~ multiple floor/ceiling assemblies shall be permitted to be enclosed in a fire-resistance-rated shaft enclosure. The fire-resistance-rated shaft enclosure shall comply with Section 713 of the *International Building Code*. Refrigerant pipe shafts that are naturally or mechanically ventilated shall be constructed as exterior building envelope walls with thermal insulation and air barrier construction required by the *Washington State Energy Code*.

Exceptions:

1. Refrigeration systems using R-718 refrigerant (water).
2. Piping in a direct refrigeration system where the refrigerant quantity does not exceed the limits of Table 1103.1 for the smallest occupied space through which the piping passes.
3. Piping located on the exterior of the building where vented to the outdoors. Natural ventilation openings shall be distributed vertically along the enclosure to prevent containment of refrigerant piping leaks and be located a minimum of 3 feet (914 mm) from operable openings into the building. Mechanical ventilation of exterior enclosures to comply with Section 1109.3.2.
4. ~~3.~~ Continuous refrigerant pipe or tube, including joints and connections, that have been tested in accordance with the more stringent requirements of Section 1110.1 or ASHRAE 15 Section 9.13.

Commented [EV1]: Clarify code language to correlate to ASHRAE 15-2024 Addendum b. See attached for details.

Commented [EV2]: Add exception 4 based on ASHRAE 15-2024 Addendum a clarifications. See attached for details.

1109.3.2: Shaft ventilation.

Refrigerant pipe installed within a fire-resistance-rated shaft~~s~~ enclosure with systems using Group A2L or B2L refrigerant shall be naturally or mechanically ventilated. Refrigerant pipe shafts with one or more systems using any Group A2, A3, B2 or B3 refrigerant shall be continuously mechanically ventilated and shall include a refrigerant detector. The shaft natural ventilation discharge outlet and mechanical ventilation discharge exhaust outlet shall comply with Sections 501.3.1 and 1105.7. Naturally ventilated shafts shall have a pipe, duct or conduit not less than 4 inches (102 mm) in diameter that connects to the lowest point of the shaft and extends to the outdoors. The pipe, duct or conduit shall be level or pitched downward to the outdoors. A *makeup air* opening shall be provided at the top of the shaft. Mechanically ventilated shafts shall have a minimum airflow velocity in accordance with Table 1109.3.2. The mechanical ventilation shall be continuously operated or activated by a refrigerant detector. *Makeup air* shall be provided at the inlet to the shaft for mechanically ventilated shafts. Systems utilizing a refrigerant detector shall activate the mechanical ventilation at a maximum refrigerant concentration of 25 percent of the lower flammable limit of the refrigerant. The detector, or a sampling tube that draws air to the detector, shall be located in an area where refrigerant from a leak will concentrate.

Exceptions:

4~~.~~5. The shaft shall not be required to be ventilated for double-wall refrigerant pipe where the interstitial space of the double-wall pipe is vented to the outdoors.

6. For refrigeration systems complying with ASHRAE 15.2 used in residential occupancies serving only a single dwelling unit or sleeping unit, shaft ventilation shall not be required where the pipe or tube is continuous without fittings in the shaft.

7. The shaft shall not be required to be ventilated where all the refrigerant pipe or tube is continuous and has been in accordance with the more stringent requirements of Section 1110.1 or ASHRAE 15 Section 9.13.

~~5.~~8. The shaft shall not be ventilated for systems using only Group A2L and B2L refrigerants where there are no hot surfaces exceeding 1290°F (700°C) in the shaft and the pipe, tubes, joints, or connections have been tested in accordance with the more stringent requirements of Section 1110.1 or ASHRAE 15 Section 9.13.

Commented [EV3]: Modify code language to correlate to ASHRAE 15-2024 Addendum b. See attached for details.

Commented [EV4]: Add exceptions from ASHRAE 15-2024 Addendum b. See attached for details.

Chapter 15—Referenced standards. The following referenced standards are amended or added to Chapter 15.

ASHRAE

15-~~2022~~2024 Safety Standard for Refrigeration Systems. 1101.6, 1104.3.5, 1105.8, 1106.4.2, 1108.1

15.2-~~2022~~2024 Safety Standard for Refrigeration Systems in Residential Ap- plications. 1101.1.1, 1107.4, 1107.5, 1109.2.7, 1109.3.2

34-~~2022~~2024 Designation and Safety Classification of Refrigerants. . . . 202, 1102.2.1, 1103.1

5. **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.

   Clarify IMC requirements to correlate to latest ASHRAE 15-2024 requirements and addenda.

   Note: This is associated with changes included in the following 2024 WSMC Code Change Proposals:
   24-GP1-103
   24-GP1-109
   24-GP1-110

6. **Specify what criteria this proposal meets.** You may select more than one.
   - ☒ The amendment is needed to address a critical life/safety need.
   - ☒ The amendment clarifies the intent or application of the code.
   - ☒ The amendment is needed to address a specific state policy or statute.
   - ☒ The amendment is needed for consistency with state or federal regulations.
   - ☐ The amendment is needed to address a unique character of the state.
   - ☒ The amendment corrects errors and omissions.

7. **Is there an economic impact:** ☒ Yes ☐ No

   If no, state reason:

   Clarifies IMC requirements to correlate to ASHRAE 15 a referenced standard in IMC Chapter 11 that is already required to be complied with.

   Cost savings based on projects not have to use alternate means and methods code alternate request with the Authority Having Jurisdiction to utilize the latest ASHRAE 15-2024 and ASHRAE 34-2024 requirements.

   As the 2024 IMC requires compliance with both IMC Chapter 11 and ASHRAE 15 this resolves conflicts between the code and the standards.

   Removes requirements for rated and vented shafts where continuous refrigerant pipe & tube including joints and connections are installed between refrigeration equipment.

   If yes, provide economic impact, costs and benefits as noted below in items a – f.

   Soft cost engineering and AHJ savings of a minimum of $2,500 per applicable project.

   See details below for construction cost savings.

   a. ***Life Cycle Cost.*** Use the OFM Life Cycle Cost **Analysis tool** to estimate the life cycle cost of the proposal using one or more typical examples. Reference these **Instructions;** use these **Inputs.** Webinars on the tool can be found **Here** and **Here**). If the tool is used, submit a copy of the excel file with your proposal submission. If preferred, you may submit an alternate life cycle cost analysis.

b. ***Construction Cost.*** Provide your best estimate of the construction cost (or cost savings) of your code change proposal.

Construction cost savings will be much greater for removing rated shafts with venting. Costs vary based on building height but $5000 to 20,000 per vertical shaft are typical construction cost savings to removed insulated rated shaft with mechanical venting exhaust fans, intakes, and refrigerant leak detection.

For residential projects, also provide construction cost of savings of $200 to $2000/(per dwelling unit or sleeping unit) for not having to install the rated, vented shaft system for mini-split units and not having construct shaft to meet exterior envelope requirements for thermal insulation and air barrier per energy code requirements.

Show calculations here, and list sources for costs/savings, or attach backup data pages

Costs savings will vary based on number of dwelling units or sleeping units served by each rated but unvented refrigerant piping shaft. The more units each rated shaft serves the lower the cost savings per unit.

c. ***Code Enforcement.*** List any code enforcement time for additional plan review or inspections that your proposal will require, in hours per permit application:

Utilizes latest ASHRAE 15-2024 addenda.

Does not require design professional to submit code alternate for AHJ review and approval saving engineering and code official costs.

d. ***Small Business Impact.*** Describe economic impacts to small businesses:
No impact as this provides cost savings and aligns with ASHRAE 15-2024 Addenda simplifying code compliance.

e. ***Housing Affordability.*** Describe economic impacts on housing affordability:
Lowers cost for split system air conditioning and heat pump units.

f. ***Other.*** Describe other qualitative cost and benefits to owners, to occupants, to the public, to the environment, and to other stakeholders that have not yet been discussed:

Allows for more cost effective transition to A2L and other refrigerants to meet Washington State Department of Ecology and US EPA requirements.

Please send your completed proposal to: sbcc@des.wa.gov

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