DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

Author/requestor: Brian Stemwedel

Date: 5/10/2024

Email address: Bstemwedel@goldenvalleymn.gov

Model Code: 303.8, 303

Telephone number: (612)275-1436

Code or Rule Section: 1346.303.8

Firm/Association affiliation, if any: AMBO

Topic of proposal: Code or rule section to be changed: 303.8 MN Mechanical Code

Intended for Technical Advisory Group ("TAG"):

General Information	**Yes**	**No**
A. Is the proposed change unique to the State of Minnesota?	☐	☒
B. Is the proposed change required due to climatic conditions of Minnesota?	☐	☒
C. Will the proposed change encourage more uniform enforcement?	☒	☐
D. Will the proposed change remedy a problem?	☒	☐
E. Does the proposal delete a current Minnesota Rule, chapter amendment?	☒	☐
F. Would this proposed change be appropriate through the ICC code development process?	☒	☐

Proposed Language

1. The proposed code change is meant to:

   ☒ change language contained in the model code book? If so, list section(s).
   303.8 IMC

   ☒ change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).
   303.8 MN Mechanical Code (delete)

   ☐ delete language contained in the model code book? If so, list section(s).

   ☐ delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

   ☒ add new language that is not found in the model code book or in Minnesota Rule.

2. Is this proposed code change required by Minnesota Statute? If so, please provide the citation.
   NO

3. Provide *specific* language you would like to see changed. Indicate proposed new words with underlining and ~~strikethrough~~ words proposed for deletion. Include the entire code (sub) section or rule subpart that contains your proposed changes.

2020 MR1346.0303.8

~~303.8 Elevator shafts.~~
~~Deleted.~~

2024 IMC unamended language

~~[BF] 303.8 Elevator Shafts. Mechanical systems shall not be located in an elevator shaft.~~

303.8 Elevator Shafts.

303.8.1 Mechanical systems.
Mechanical systems and mechanical components in the hoistway shall be limited to those serving the hoistway. Mechanical systems serving the hoistway shall not serve other portions of the building.

303.8.2 Equipment Location.
Air conditioning equipment and condensate drains shall not be located directly above elevator equipment.

303.8.3 Installation.
Mechanical equipment shall be installed according to ASME A17.1

4. Will this proposed code change impact other sections of a model code book or an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.
   3002.9.2 MSBC

Need and Reason

1. Why is the proposed code change needed? Please provide a general explanation as well as a specific explanation for any changes to numerical values (heights, area, etc.)
   Due to the prevalence of MRL (Machine-room-less) elevators, there is still a need to provide heating and cooling capacity for the elevator hoistway. It should be noted that since the evolution of the Machine Room Less (MRL) applications, the hoistway has now become a machinery/control space.

2. Why is the proposed code change a reasonable solution?
   Without a machine room to locate mechanical equipment to condition the elevator hoistway, equipment located inside the hoistway provides a reasonable solution when installations comply with ASME A17.1

3. What other factors should the TAG consider?
   Due to the prevalence of MRL (Machine-room-less) elevators, there is still a need to provide cooling capacity for the elevator hoistway and heating capability if the hoistway is located on an exterior wall.

Cost/Benefit Analysis

1. Will the proposed code change increase or decrease costs? Please explain and provide estimates if possible.

Decrease costs by eliminating the need for Fire/ Smoke dampers and associated controls, ductwork, and electrical systems.

2. If there is an increased cost, will this cost be offset by a safety or other benefit? Please explain. If the benefit is quantifiable (for example energy savings), provide an estimate if possible.
   N/A

3. If there is a cost increase, who will bear the costs? This can include government units, businesses, and individuals.
   N/A

4. Are there any enforcement or compliance cost increases or decreases with the proposed code change? Please explain.
   Any access to the hoistway is strictly prohibited in the ASME A17.1 to elevator personnel (licensed elevator contractors). Accessing equipment may cause additional costs.

5. Will the cost of complying with the proposed code change in the first year after the rule takes effect exceed $25,000 for any one small business or small city (Minn. Stat. § 14.127)? A small business is any business that has less than 50 full-time employees. A small city is any statutory or home rule charter city that has less than ten full-time employees. Please explain.
   N/A

Regulatory Analysis

1. What parties or segments of industry are affected by this proposed code change?
   Mechanical Contractors, Designers, Elevator Contractors

2. Can you think of other means or methods to achieve the purpose of the proposed code change? What might someone opposed to this code change suggest instead? Please explain what the alternatives are and why your proposed change is the preferred method or means to achieve the desired result.
   Alternatives include running ductwork to supply air for environmental control of the hoistway. The penetrations into the hoistway would need to be protected with Fire/ Smoke dampers, associated detectors, and controls.

3. What are the probable costs or consequences of not adopting the code change, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals?
   The additional cost of installing protectives such as Fire/ Smoke dampers, related duct detectors, and fire alarm systems.

4. Are you aware of any federal or state regulation or requirement related to this proposed code change? If so, please list the federal or state regulation or requirement and your assessment of any differences between the proposed code change and the federal regulation or requirement.
   No

   N/A

***Note: Incomplete forms may be returned to the submitter with instruction to complete the form. Only completed forms can considered by the TAG.

DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

Author/requestor: Staff

Email address: chris.rosival@state.mn.us

Telephone number: 651-284-5510

Firm/Association affiliation, if any: DLI

Code or rule section to be changed: 1346.0306.5

Intended for Technical Advisory Group ("TAG"):

Date: May 8, 2024

Model Code: 2024 IMC

Code or Rule Section: IMC 306.5

Topic of proposal: *Roof access*

General Information	**Yes**	**No**
A. Is the proposed change unique to the State of Minnesota?	☒	☐
B. Is the proposed change required due to climatic conditions of Minnesota?	☒	☐
C. Will the proposed change encourage more uniform enforcement?	☒	☐
D. Will the proposed change remedy a problem?	☒	☐
E. Does the proposal delete a current Minnesota Rule, chapter amendment?	☐	☒
F. Would this proposed change be appropriate through the ICC code development process?	☒	☐

Proposed Language

1. The proposed code change is meant to:

   ☒ change language contained the model code book? If so, list section(s).
   306.5

   ☒ change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).
   1346.0306.5

   ☐ delete language contained in the model code book? If so, list section(s).

   ☐ delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

   ☐ add new language that is not found in the model code book or in Minnesota Rule.

2. Is this proposed code change required by Minnesota Statute? If so, please provide the citation.
   No

3. Provide *specific* language you would like to see changed. Indicate proposed new words with underlining and ~~strikethrough~~ words proposed for deletion. Include the entire code (sub) section or rule subpart that contains your proposed changes.

306.5 Mechanical equipment and appliances on roofs or elevated structures.

Where ~~mechanical *equipment* or appliances requiring periodic inspection, service, or maintenance are installed on roofs or elevated structures, a permanent stair ships ladder shall be provided for access.~~ mechanical *equipment* ~~requiring access~~ or *appliances* requiring access, service, or maintenance are located on an elevated structure or the roof of a *building* such that personnel will have to climb higher than 16 feet (4877 mm) above grade to access such *equipment* or *appliances*, an interior or exterior ships ladder ~~means of access~~ shall be provided. ~~Such access shall not require climbing over obstructions greater than 30 inches (762 mm) in height or walking on roofs having a slope greater than 4 units vertical in 12 units horizontal (33-percent slope). Such access shall not require the use of portable ladders. Where access involves climbing over parapet walls, the height shall be measured to the top of the parapet wall.~~

Exception: Replacing equipment and appliances on existing buildings. ~~A portable ladder may be used for dwellings, replacement equipment and appliances, on existing buildings, and exterior roof access points not exceeding 16 feet (4.9 m) above grade, unless the building official determines that the unique shape of the roof does not allow safe access with a portable ladder.~~

~~Permanent ladders installed to provide the required access shall comply with the following minimum design criteria:~~

~~1. The side railing shall extend above the parapet or roof edge or landing platform not less than 42 inches (1067 mm).~~

~~2. Ladders shall have rung spacing not less than 10 inches (254 mm) and not to exceed 14 inches (356 mm) on center. The uppermost rung shall be not greater than 24 inches (610 mm) below the upper edge of the roof hatch, roof or parapet, as applicable.~~

~~3. Ladders shall have a toe spacing not less than 7 inches (178 mm) and not more than 12 inches (305 mm) deep.~~

~~4. There shall be not less than 16 inches (406 mm) between rails.~~

~~5. Rungs shall have a diameter not less than 0.75-inch (19.1 mm) and be capable of withstanding a 300-pound (136 kg) load.~~

~~6. Ladders over 30 feet (9144 mm) in height shall be provided with offset sections and landings capable of withstanding 100 pounds per square foot (488 kg/m2). Landing dimensions shall be not less than 18 inches (457 mm) and not less than the width of the ladder served. A guard rail shall be provided on all open sides of the landing.~~

~~7. Climbing clearance. The distance from the centerline of the rungs to the nearest permanent object on the climbing side of the ladder shall be not less than 30 inches (762 mm) measured perpendicular to the rungs. This distance shall be maintained from the point of ladder access to the bottom of the roof hatch. A minimum clear width of 15 inches (381 mm) shall be provided on both sides of the ladder measured from the midpoint of and parallel with the rungs except where cages or wells are installed.~~

~~8. Landing required. The ladder shall be provided with a clear and unobstructed bottom landing area having a minimum dimension of 30 inches (762 mm) by 30 inches (762 mm) centered in front of the ladder.~~

~~9. Ladders shall be protected against corrosion by *approved* means.~~

~~10. Access to ladders shall be provided at all times.~~

~~11. Top landing required. The ladder shall be provided with a clear and unobstructed landing on the exit side of the roof hatch, having a minimum space of 30 inches (762 mm) deep and being the same width as the hatch. Catwalks installed to provide the required access shall be not less~~

The ~~permanent stair~~ ships ladder shall, at a minimum, meet the following:

1. The ~~stair~~ ships ladder shall be installed at an angle of ~~not more than 60~~ 50-70 degrees measured from the horizontal plane.
2. ~~The stair shall have flat treads at least 6 inches (152 mm) deep and a clear width of at least 18 inches (457 mm) with equally spaced risers at least 10.5 inches (267 mm) high and not exceeding 14 inches (356 mm).~~ Ship's ladders shall have a minimum tread depth of 5 inches (127 mm). The tread shall be projected such that the total of the tread depth plus the nosing

projection is not less than 8 1/2 inches (216 mm). The maximum riser height shall be 9 1/2 inches (241 mm).

~~3. The stair shall have intermediate landings not exceeding 18 feet (5.5 m) vertically.~~

3. ~~Continuous handrails shall be installed on both sides of the stair.~~ Handrails shall be provided on both sides of ship's ladders.

4. The minimum clear width at and below the handrails shall be 20" (508mm).

5. Ships ladders shall be designed for the live loads indicated in IBC Section 1607.10.

~~5. Interior stairs shall terminate at the under side of the roof at a hatch or scuttle of at least 8 square feet (0.74 m^2) with a minimum dimension of 20 inches (508 mm).~~

~~6. When a roof access hatch or scuttle is located within 10 feet (3.0 m) of a roof edge, a guard shall be installed in accordance with IMC Section 304.11.~~

6. ~~7.~~ Exterior stairs shall terminate at the roof access point or at a level landing of at least 8 square feet (0.74 m^2) with a minimum dimension of 20 inches (508 mm). ~~The landing shall have a guard installed in accordance with IMC Section 304.11.~~

4. Will this proposed code change impact other sections of a model code book or an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.
   Yes, IBC Section 1011.15

Need and Reason

1. Why is the proposed code change needed? Please provide a general explanation as well as a specific explanation for any changes to numerical values (heights, area, etc.)
   The ships ladder is referenced in the IBC and the phrase permanent stair is not. The changing dimensions of the existing amendment are necessary because of driving language in the building code and OSHA requirements.

2. Why is the proposed code change a reasonable solution?
   The 2024 IBC has a corresponding amendment that will be submitted by DLI staff.

3. What other factors should the TAG consider?
   The permanent stair is not referenced in the model code IMC or IBC language. The ships ladder is referenced in IBC section 1011.15.

Cost/Benefit Analysis

1. Will the proposed code change increase or decrease costs? Please explain and provide estimates if possible.
   No change

2. If there is an increased cost, will this cost be offset by a safety or other benefit? Please explain. If the benefit is quantifiable (for example energy savings), provide an estimate if possible.
   No change

3. If there is a cost increase, who will bear the costs? This can include government units, businesses, and individuals.
   No change

4. Are there any enforcement or compliance cost increases or decreases with the proposed code change? Please explain.
   No change

5. Will the cost of complying with the proposed code change in the first year after the rule takes effect exceed $25,000 for any one small business or small city (Minn. Stat. § 14.127)? A small business is

any business that has less than 50 full-time employees. A small city is any statutory or home rule charter city that has less than ten full-time employees. Please explain.
No change

Regulatory Analysis

1. What parties or segments of industry are affected by this proposed code change?
   Architects, engineers and designers

2. Can you think of other means or methods to achieve the purpose of the proposed code change? What might someone opposed to this code change suggest instead? Please explain what the alternatives are and why your proposed change is the preferred method or means to achieve the desired result.
   Model code language has differing code language that could be adopted. Sentiment from the TAG is that model code language is not a safe alternate to the code change proposal or the existing amendment.

3. What are the probable costs or consequences of not adopting the code change, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals?
   None

4. Are you aware of any federal or state regulation or requirement related to this proposed code change? If so, please list the federal or state regulation or requirement and your assessment of any differences between the proposed code change and the federal regulation or requirement.
   No

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DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

Author/requestor: Staff

Email address: chris.rosival@state.mn.us

Telephone number: 651-284-5510

Firm/Association affiliation, if any: DLI

Code or rule section to be changed: 1346.0306.5.1

Intended for Technical Advisory Group ("TAG"):

Date: May 8, 2024

Model Code: 2024 IMC

Code or Rule Section: 306.5.1

Topic of proposal: Sloped roofs

General Information	**Yes**	**No**
A. Is the proposed change unique to the State of Minnesota?	☒	☐
B. Is the proposed change required due to climatic conditions of Minnesota?	☒	☐
C. Will the proposed change encourage more uniform enforcement?	☒	☐
D. Will the proposed change remedy a problem?	☐	☒
E. Does the proposal delete a current Minnesota Rule, chapter amendment?	☐	☒
F. Would this proposed change be appropriate through the ICC code development process?	☒	☐

Proposed Language

1. The proposed code change is meant to:

   ☒ change language contained the model code book? If so, list section(s).
   IBC 306.5.1

   ☒ change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).
   1346.0306.5.1

   ☐ delete language contained in the model code book? If so, list section(s).

   ☒ delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).
   1346.0306.5.1

   ☐ add new language that is not found in the model code book or in Minnesota Rule.

2. Is this proposed code change required by Minnesota Statute? If so, please provide the citation.

3. Provide *specific* language you would like to see changed. Indicate proposed new words with underlining and ~~strikethrough~~ words proposed for deletion. Include the entire code (sub) section or rule subpart that contains your proposed changes.

   306.5.1 Sloped roofs. Where *appliances*, *equipment*, fans or other components that require service are installed on a roof having a slope of 3 units vertical in 12 units horizontal (25-percent slope) or greater and having an edge more than 30 inches (762 mm) above grade at such edge, a level platform shall be provided on each side of the *appliance* or *equipment* to which access is required for service, repair or maintenance. The platform shall be not less than 30 inches (762 mm) in any dimension and shall be provided with guards. The guards shall extend not less than 42 inches (1067 mm) above the platform, shall be constructed so as to prevent the passage of a 21-inch-diameter (533 mm) sphere and shall comply with the loading requirements for guards specified in the *International Building Code*. Access shall not require walking on roofs having a slope greater than 4 units vertical in 12 units horizontal (33-percent slope). ~~Where access involves obstructions greater than 30 inches (762 mm) in height, such obstructions shall be provided with ladders installed in accordance with Section 306.5 or stairways installed in accordance with the requirements specified in the *International Building Code* in the path of travel to and from *appliances*, fans or *equipment* requiring service.~~

4. Will this proposed code change impact other sections of a model code book or an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.
   No

Need and Reason

1. Why is the proposed code change needed? Please provide a general explanation as well as a specific explanation for any changes to numerical values (heights, area, etc.)
   The model code language has the same requirements as in the amended 1346.0306.5.1. The removed model code language will be addressed in 1346.0306.5.3

2. Why is the proposed code change a reasonable solution?
   Removing the amended section 1346.0306.5.1 more closely aligns with model code language.

3. What other factors should the TAG consider?
   None

Cost/Benefit Analysis

1. Will the proposed code change increase or decrease costs? Please explain and provide estimates if possible.
   No change

2. If there is an increased cost, will this cost be offset by a safety or other benefit? Please explain. If the benefit is quantifiable (for example energy savings), provide an estimate if possible.
   No change

3. If there is a cost increase, who will bear the costs? This can include government units, businesses, and individuals.
   No change

4. Are there any enforcement or compliance cost increases or decreases with the proposed code change? Please explain.
   No change

5. Will the cost of complying with the proposed code change in the first year after the rule takes effect exceed $25,000 for any one small business or small city (Minn. Stat. § 14.127)? A small business is any business that has less than 50 full-time employees. A small city is any statutory or home rule charter city that has less than ten full-time employees. Please explain.
   No change

Regulatory Analysis

1. What parties or segments of industry are affected by this proposed code change?
   Architects, engineers designers.

2. Can you think of other means or methods to achieve the purpose of the proposed code change? What might someone opposed to this code change suggest instead? Please explain what the alternatives are and why your proposed change is the preferred method or means to achieve the desired result.
   None

3. What are the probable costs or consequences of not adopting the code change, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals?
   None

4. Are you aware of any federal or state regulation or requirement related to this proposed code change? If so, please list the federal or state regulation or requirement and your assessment of any differences between the proposed code change and the federal regulation or requirement.
   None.

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DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

Author/requestor: Staff

Email address: chris.rosival@state.mn.us

Telephone number: 651-284-5510

Firm/Association affiliation, if any: DLI

Code or rule section to be changed: 1346.0306.5.3

Intended for Technical Advisory Group ("TAG"):

Date: May 8, 2024

Model Code: 2024 IMC

Code or Rule Section: 1346.0306.5.3

Topic of proposal: Permanent ladders

General Information	**Yes**	**No**
A. Is the proposed change unique to the State of Minnesota?	☐	☒
B. Is the proposed change required due to climatic conditions of Minnesota?	☒	☐
C. Will the proposed change encourage more uniform enforcement?	☒	☐
D. Will the proposed change remedy a problem?	☐	☒
E. Does the proposal delete a current Minnesota Rule, chapter amendment?	☒	☐
F. Would this proposed change be appropriate through the ICC code development process?	☒	☐

Proposed Language

1. The proposed code change is meant to:

   ☐ change language contained the model code book? If so, list section(s).

   ☒ change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s). 1346.0306.5.3

   ☐ delete language contained in the model code book? If so, list section(s).

   ☐ delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

   ☐ add new language that is not found in the model code book or in Minnesota Rule.

2. Is this proposed code change required by Minnesota Statute? If so, please provide the citation.

3. Provide *specific* language you would like to see changed. Indicate proposed new words with underlining and ~~strikethrough~~ words proposed for deletion. Include the entire code (sub) section or rule subpart that contains your proposed changes.

306.5.3 Permanent ladders.

Where a change in roof elevation greater than 30 inches (762 mm) but not exceeding 16 feet (4.9 m) exists, a permanent ladder or a ships ladder complying with Section 1346.0306.5 shall be provided. ~~The ladder shall be vertical. The ladder must, at a minimum, meet the following:~~ Permanent ladders installed to provide the required access shall comply with the following minimum design criteria:

~~1.Width shall be at least 16 inches (406 mm).~~
~~2.Rung spacing shall be a maximum of 14 inches (356 mm).~~
~~3.Toe space shall be at least 6 inches (152 mm).~~
~~4.Side railings shall extend at least 30 inches (762 mm) above the roof or parapet wall.~~

1. The side railing shall extend above the parapet or roof edge or landing platform not less than 42 inches (1067 mm).
2. Ladders shall have rung spacing not less than 10 inches (254 mm) and not to exceed 14 inches (356 mm) on center. The uppermost rung shall be not greater than 24 inches (610 mm) below the upper edge of the roof hatch, roof or parapet, as applicable.
3. Ladders shall have a toe spacing not less than 7 inches (178 mm) and not more than 12 inches (305 mm) deep.
4. There shall be not less than 16 inches (406 mm) between rails.
5. Rungs shall have a diameter not less than 0.75-inch (19.1 mm) and be capable of withstanding a 300-pound (136 kg) load.
6. Ladders over 30 feet (9144 mm) in height shall be provided with offset sections and landings capable of withstanding 100 pounds per square foot (488 kg/m2). Landing dimensions shall be not less than 18 inches (457 mm) and not less than the width of the ladder served. A guard rail shall be provided on all open sides of the landing.
7. Climbing clearance. The distance from the centerline of the rungs to the nearest permanent object on the climbing side of the ladder shall be not less than 30 inches (762 mm) measured perpendicular to the rungs~~.~~ ~~This distance shall be maintained from the point of ladder access to the bottom of the roof hatch.~~ A minimum clear width of 15 inches (381 mm) shall be provided on both sides of the ladder measured from the midpoint of and parallel with the rungs except where cages or wells are installed.
8. Landing required. The ladder shall be provided with a clear and unobstructed bottom landing area having a minimum dimension of 30 inches (762 mm) by 30 inches (762 mm) centered in front of the ladder.
9. Ladders shall be protected against corrosion by *approved* means.
10. Access to ladders shall be provided at all times.
~~11. Top landing required. The ladder shall be provided with a clear and unobstructed landing on the exit side of the roof hatch, having a minimum space of 30 inches (762 mm) deep and being the same width as the hatch.~~
~~Catwalks installed to provide the required access shall be not less than 24 inches (610 mm) wide and shall have railings as required for service platforms.~~
~~**Exception:** This section shall not apply to Group R-3 *occupancies*.~~

4. Will this proposed code change impact other sections of a model code book or an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.
No

Need and Reason

1. Why is the proposed code change needed? Please provide a general explanation as well as a specific explanation for any changes to numerical values (heights, area, etc.)
   Model code has language that address permanent ladders that should be applied to Minnesota

2. Why is the proposed code change a reasonable solution?
   The amendment would align more closely to model code language

3. What other factors should the TAG consider?
   None

Cost/Benefit Analysis

1. Will the proposed code change increase or decrease costs? Please explain and provide estimates if possible.
   Yes. The minimal cost increase will be for the extended side rail height from 30" to 42". The new section elaborates on a Minnesota amendment.

2. If there is an increased cost, will this cost be offset by a safety or other benefit? Please explain. If the benefit is quantifiable (for example energy savings), provide an estimate if possible.
   The added cost will increase safety.

3. If there is a cost increase, who will bear the costs? This can include government units, businesses, and individuals.
   Businesses

4. Are there any enforcement or compliance cost increases or decreases with the proposed code change? Please explain.
   None

5. Will the cost of complying with the proposed code change in the first year after the rule takes effect exceed $25,000 for any one small business or small city (Minn. Stat. § 14.127)? A small business is any business that has less than 50 full-time employees. A small city is any statutory or home rule charter city that has less than ten full-time employees. Please explain.
   No

Regulatory Analysis

1. What parties or segments of industry are affected by this proposed code change?
   Designers, architects, engineers

2. Can you think of other means or methods to achieve the purpose of the proposed code change? What might someone opposed to this code change suggest instead? Please explain what the alternatives are and why your proposed change is the preferred method or means to achieve the desired result.
   No

3. What are the probable costs or consequences of not adopting the code change, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals?
   Minimum worker safety could be compromised.

4. Are you aware of any federal or state regulation or requirement related to this proposed code change? If so, please list the federal or state regulation or requirement and your assessment of any differences between the proposed code change and the federal regulation or requirement.
   No

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DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

Author/requestor: Mike Moore

Model Code: 2024 IMC

Date: April 23, 2024

Code or Rule Section:
2024 IMC Section 401 and 403, Chpt 15

Email address: mmoore@statorllc.com

Telephone number: 303.408.7015

Firm/Association affiliation, if any: Stator LLC, Representing the Home Ventilating Institute

Code or rule section to be changed: 2024 IMC Sections 401 and 403, Chpt 15

Intended for Technical Advisory Group ("TAG"): Mechanical

General Information	**Yes**	**No**
1. Is the proposed change unique to the State of Minnesota?	☒	☐
2. Is the proposed change required due to climatic conditions of Minnesota?	☒	☐
3. Will the proposed change encourage more uniform enforcement?	☒	☐
4. Will the proposed change remedy a problem?	☒	☐
5. Does the proposal delete a current Minnesota Rule, chapter amendment?	☐	☒
6. Would this proposed change be appropriate through the ICC code development process?	☒	☐

Proposed Language

1. The proposed code change is meant to:

   ☒ change language contained in the model code book? If so, list section(s).
   2024 IMC Section 401, 403, and Chapter 15.

   ☐ change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

   ☒ delete language contained in the model code book? If so, list section(s).
   Various places in Section 401 and 403. See proposal.

   ☐ delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).
   This proposal does not propose to carry forward any amendments to Minnesota Rules 1346.

   ☒ add new language that is not found in the model code book or in Minnesota Rule.
   Most of the proposed language is either in the model code book or in the Minnesota Rules, but some of the language is new.

2. Is this proposed code change required by Minnesota Statute? If so, please provide the citation.

Adoption of this proposed code change, which is based on requirements in the model codes and Minnesota's Rules, is supported (but not required) by Sec. 29. Minnesota Statutes 2023, section 326B.106, subdivision 1 which states, "(c) Beginning with the 2018 edition of the model building codes and every six years thereafter, the commissioner shall review the new model building codes and adopt the model codes as amended for use in Minnesota, within two years of the published edition date. The commissioner may adopt amendments to the building codes prior to the adoption of the new building codes to advance construction methods, technology, or materials, or, where necessary to protect the health, safety, and welfare of the public, or to improve the efficiency or the use of a building."

3. Provide *specific* language you would like to see changed. Indicate proposed new words with underlining and ~~strikethrough~~ words proposed for deletion. Include the entire code (sub) section or rule subpart that contains your proposed changes.
   Please see the proposal appended to the end of this document.

4. Will this proposed code change impact other sections of a model code book or an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.
   No other sections are expected to be affected.

Need and Reason

1. Why is the proposed code change needed? Please provide a general explanation as well as a specific explanation for any changes to numerical values (heights, area, etc.)

Proposal Overview: Minnesota Rules currently require balanced mechanical ventilation for IRC buildings and for low-rise multifamily dwelling units. This proposal would extend this requirement to high-rise multifamily dwelling units, which currently have no requirement for mechanical ventilation. The following table provides a summary of current and proposed requirements.

Occupancy	Current Requirement	Proposed Requirement
IRC Buildings	Balanced ventilation system	This proposal: balanced ventilation system (no change) Energy Code TAG: HERV required*
R-2, R-3, and R-4 Dwelling Units, 3-stories or less	Balanced ventilation system	This proposal: balanced ventilation system (no change) Energy Code TAG: HERV required*
R-2, R-3, and R-4 Dwelling Units, more than 3 stories	Natural or mechanical ventilation	This proposal: balanced ventilation system Energy Code TAG: HERVs required in prescriptive path*

*The Minnesota Energy Code TAG recently recommended approval of proposals RE-7 and RE-19.1, which would modify the IECC-Residential energy code to require that the balanced ventilation system be a heat or energy recovery ventilator (HERV) for single-family, two-family, townhome, and low-rise multifamily dwelling units across all of Minnesota's climate zones. The Energy Code TAG recommended maintaining the ASHRAE 90.1 prescriptive path requirements for dwelling unit HERVs in all of Minnesota's climate zones (i.e., applicable to R-2, R-3, and R-4 non-transient dwelling units in buildings more than 3 stories).

If approved, this proposal would accomplish the following:

1. Relocate ventilation requirements for IRC buildings to the IRC. Additionally, a companion proposal is being submitted to relocate MN Rules chapter 1322 ventilation requirements to the IRC.
2. Clarify where mechanical ventilation is required for various applications.
3. Establish the same ventilation requirements for R-2, R-3, and R-4 dwelling units, regardless of building height (consistent with the objective of proposal M19, which was approved for the 2024 IMC).
4. Extend the current requirement for balanced mechanical ventilation systems in IRC buildings and low-rise dwelling units to also apply to high-rise dwelling units.
5. Align with ASHRAE 90.1 and IECC-C prescriptive requirement for HERVs in R-2, R-3, and R-4 dwelling units that are in buildings greater than 3 stories.

6. Align with the Energy Code TAG's recent recommendation to require an HERV for single-family, two-family, townhome, and low-rise R-2, R-3, and R-4 dwelling units.

Rationale supporting mechanical ventilation and balanced ventilation in R-2, R-3, and R-4 dwelling units that are in buildings greater than 3 stories

The IMC, IRC, and ASHRAE 62.2 require mechanical ventilation of all dwelling units within their scopes (with limited exceptions in very mild climates where windows are expected to be open almost continuously without significant energy penalty). By doing so, these codes and standards ensure that occupants are provided with equipment to control their air quality while minimizing the energy required to maintain a comfortable indoor environment. Increasingly, single-family and multi-family dwelling units are built very tightly. Since 2012, the IECC-R has required air sealing and blower door testing of low-rise dwelling units, and in 2021, the IECC-C began requiring blower door testing to confirm air sealing of high-rise dwelling units. Energy codes incentivize builders to seal their dwelling units even more tightly than the already stringent code-minimum requirements. Years before the I-codes required mechanical ventilation for all dwelling units, Minnesota was out front, requiring tight construction and balanced ventilation for single-family and low-rise multi-family dwelling units. However, since Minnesota's last code update, the IMC leapfrogged the Minnesota Mechanical Code when the 2021 IMC began requiring mechanical ventilation for not only low-rise dwelling units, but also for high-rise dwelling units. By doing so, the IMC ruled that access to mechanical ventilation and acceptable indoor air quality in a dwelling unit should no longer be determined by the number of stories that its building happens to occupy.

This proposal would update Minnesota Rules chapter 1346 by aligning with the 2021 and 2024 IMC requirements for mechanical ventilation of all energy-efficient dwelling units. Additionally, it proposes that a balanced ventilation system be provided, consistent with current Minnesota Rules' requirements for all low-rise dwelling units (both single-family and multi-family). By specifying a balanced ventilation system, it avoids exhaust-only and supply-only outdoor air ventilation systems that support pressure imbalances across a dwelling unit's boundary, which could limit the volume of fresh air provided or lead to contaminant and odor transfer between dwelling units and corridors. Note that exhaust-only outdoor air ventilation systems are no longer permitted by ASHRAE 62.2 for attached dwelling units on enclosed corridors.

Unlike exhaust-only and supply-only systems, balanced ventilation systems are not configured to induce pressure differentials across dwelling units. Additionally, balanced systems are able to provide filtered air directly from the outdoors and to temper the outdoor air (if provided with a heat or energy recovery core – as proposed by the Energy Code TAG to be required within Minnesota Rules 1322 for all IRC dwelling units and now required by the IECC-C and ASHRAE 90.1 for high-rise dwelling units following the prescriptive compliance path), increasing the likelihood of energy-efficient system operation by occupants.

2. Why is the proposed code change a reasonable solution?
   See answer to #1.

3. What other factors should the TAG consider?
   See answer to #1.

Cost/Benefit Analysis

1. Will the proposed code change increase or decrease costs? Please explain and provide estimates if possible.
   Where a balanced ventilation system is not currently installed, this will increase costs. Exhaust ventilation is typically provided in dwelling units, so no additional incremental costs are assumed for the exhaust component of the balanced ventilation system. Supply-side equipment can retail for $200 - $300, with additional costs for installing and for providing ducts. A rough estimate for the retail equipment price of an HERV is $1000.

2. If there is an increased cost, will this cost be offset by a safety or other benefit? Please explain. If the benefit is quantifiable (for example energy savings), provide an estimate if possible.
   Improvements in indoor air quality could improve health outcomes and reduce health costs. Where an HERV is specified for the balanced ventilation system, energy cost savings can result. The 2024 IECC-R has requirements for HERVs in climate zones 7 and 8; ASHRAE 90.1 and the 2024 IECC-C have requirements for HERVs in dwelling units following the prescriptive path in climate zones 6, 7, and 8. These requirements were adopted based on cost effectiveness studies.

3. If there is a cost increase, who will bear the costs? This can include government units, businesses, and individuals.
   The occupants and/or owners of dwelling units would bear the cost of the increase.

4. Are there any enforcement or compliance cost increases or decreases with the proposed code change? Please explain.
   Yes, introducing a requirement for mechanical ventilation of high-rise dwelling units where no such requirement currently exists could be expected to increase the cost of compliance for builders/developers/owners and increase the cost of enforcement for authorities having jurisdiction.

5. Will the cost of complying with the proposed code change in the first year after the rule takes effect exceed $25,000 for any one small business or small city (Minn. Stat. § 14.127)? A small business is any business that has less than 50 full-time employees. A small city is any statutory or home rule charter city that has less than ten full-time employees. Please explain.
   If a small city were to purchase a new high-rise apartment building, the cost of complying could exceed the $25,000 threshold. However, this situation is not expected to be typical.

Regulatory Analysis

1. What parties or segments of industry are affected by this proposed code change?
   Builders, developers, contractors, and tenants could all be affected by this proposed code change.

2. Can you think of other means or methods to achieve the purpose of the proposed code change? What might someone opposed to this code change suggest instead? Please explain what the alternatives are and why your proposed change is the preferred method or means to achieve the desired result.
   At a minimum, mechanical ventilation should be required for all dwelling units, consistent with the IMC. Consistent with ASHRAE 62.2, an exhaust-only outdoor air ventilation system should not be permitted (i.e., the outdoor air should be supplied directly to the dwelling unit). Consistent with longstanding Minnesota Rules requirements, supply ventilation should be tempered prior to introduction. This rationale leads to the specification of balanced ventilation systems with heat or energy recovery (HERVs); note that the Energy Code TAG has recommended that HERVs be required for all single-family, two-family, townhome, and low-rise multifamily dwelling units and that an HERV be required when following the energy code's prescriptive path for high-rise multifamily dwelling units.

3. What are the probable costs or consequences of not adopting the code change, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals?
   If MN does not adopt this code change proposal, tenants in high-rise multifamily dwelling units may not be provided with mechanical ventilation and may not be able to achieve acceptable indoor air quality. This could lead to poor health outcomes and associated health costs that are borne by tenants, corporations, institutions, and states.
4. Are you aware of any federal or state regulation or requirement related to this proposed code change? If so, please list the federal or state regulation or requirement and your assessment of any differences between the proposed code change and the federal regulation or requirement.

No.

***Note: Incomplete forms may be returned to the submitter with instruction to complete the form. Only completed forms can considered by the TAG.

Revise the 2024 IMC as follows:

BALANCED VENTILATION SYSTEM. A ventilation system that simultaneously supplies outdoor air to and exhaust air from a space, where the mechanical supply airflow rate and the mechanical exhaust airflow rate are each within 10 percent of the average of the two airflow rates.

[BG] PRIVATE GARAGE. A building or portion of the building in which motor vehicles used by the owner or tenants of the building or buildings on the premises are stored or kept, without provisions for repairing or servicing such vehicles for profit.

Commented [M1]: This definition is copied from the IBC to the IMC for clarity.

SECTION 401
GENERAL

401.2 Ventilation required. ~~Every occupied space shall be ventilated by natural means in accordance with Section 402 or by mechanical means in accordance with Section 403.~~ *Dwelling units* ~~complying with the air leakage requirements of the *International Energy Conservation Code* or ASHRAE 90.1~~ shall be ventilated by mechanical means in accordance with Section 403. Ambulatory care facilities and Group I-2 *occupancies* shall be ventilated by mechanical means in accordance with Section 407. Enclosed parking garages shall be ventilated by mechanical means in accordance with Section 403. Every other occupied space shall be ventilated by natural means in accordance with Section 402 or by mechanical means in accordance with Section 403.

Commented [M2]: In Minnesota, all dwelling units would need to comply with 90.1, so this clause can be deleted.

Commented [M3]: This is an existing requirement of IBC Section 406.6.2 and is stated here for clarity.

SECTION 403
MECHANICAL VENTILATION

403.1 Ventilation system. Mechanical ventilation shall be provided by a method of supply air and return or *exhaust air* ~~except that mechanical ventilation air requirements for Group R-2, R-3 and R-4 *occupancies* shall be provided by an exhaust system, supply system or combination thereof~~. The amount of supply air shall be approximately equal to the amount of return and *exhaust air*. The system shall not be prohibited from producing negative or positive pressure. The system to convey *ventilation air* shall be designed and installed in accordance with Chapter 6.

Commented [MM4]: This exception would no longer apply to dwelling units that are required to have balanced ventilation systems, so it can be deleted.

…

403.3 Outdoor air and local exhaust airflow rates. *Dwelling units* in Group R-2, R-3 and R-4 occupancies ~~three stories and less in height above grade plane~~ shall be provided with *outdoor air* and local exhaust in accordance with Section 403.3.2. Other spaces within *buildings* intended to be occupied shall be provided with *outdoor air* and local exhaust in accordance with Section 403.3.1.

Commented [MM5]: Use "spaces within buildings" because section 403.3.1 uses this term and because mechanical ventilation requirements are primarily determined on a space basis, not a building basis.

403.3.1 Spaces other than dwelling units in Group R-2, R-3, and R-4 occupancies ~~Other buildings intended to be occupied~~. The design of local exhaust systems and ventilation systems for *outdoor air* for spaces~~occupancies~~ other than *dwelling units* in Group R-2, R-3 and R-4 occupancies shall comply with Sections 403.3.1.1 through 403.3.1.4.

…

Table 403.3.1.1 MINIMUM VENTILATION RATES
Portions of table not shown remain unchanged.

OCCUPANCY CLASSIFICATION	OCCUPANT DENSITY #/1000 FT² [a]	PEOPLE OUTDOOR AIRFLOW RATE IN	AREA OUTDOOR AIRFLOW RATE IN	EXHAUST AIRFLOW RATE CFM/FT² [a]

		BREATHING ZONE, *Rp* CFM/PERSON	BREATHING ZONE, *Ra* CFM/FT² [a]	
Hotels, motels, resorts and dormitories; spaces in Group R-2, R-3, and R-4 occupancies other than dwelling units				
Bathrooms/toilet—private[g]	—	—	—	25/50[f]
Bedroom/living room	10	5	0.06	--
Conference/meeting	50	5	0.06	--
Dormitory sleeping areas	20	5	0.06	--
Kitchens, private[b]	—	—	—	50/100[f]
Laundry rooms, central	10	5	0.12	
Laundry rooms within dwelling units	10	5	0.12	--
Lobbies/prefunction	30	7.5	0.06	
Multipurpose assembly	120	56	0.06	
~~**Private dwellings, single and multiple**~~				
~~Garages, common for multiple units[b]~~	~~—~~	~~—~~	~~—~~	~~0.75~~
~~Kitchens[b]~~	~~—~~	~~—~~	~~—~~	~~50/100[f]~~
~~Living areas[e]~~	~~Based on number of bedrooms. First bedroom, 2; each additional bedroom, 1~~	~~0.35 ACH but not less than 15 cfm/person~~	~~—~~	~~—~~
~~Toilet rooms and bathrooms[e]~~	~~—~~	~~—~~	~~—~~	~~25/50[f]~~
Public spaces				
Toilet rooms – public[g]	—	—	—	50/70[e]
Storage				
Repair garages, enclosed public parking garages[b,d], enclosed *private garages* that are not accessory to one- and two-family dwellings[b]	—	—	—	0.75

b. Mechanical exhaust required and the recirculation of air from such spaces is prohibited. Recirculation of air that is contained completely within such spaces shall not be prohibited (see Section 403.2.1, Item 3).
d. Ventilation systems in enclosed public parking garages shall comply with Section 404.

…

403.3.2 Dwelling units in Group R-2, R-3 and R-4 occupancies. The design of local exhaust systems and ventilation systems for *outdoor air* for *dwelling units* in Group R-2, R-3 and R-4 occupancies shall comply with Sections 403.3.2.1 through 403.3.2.5.

403.3.2.1 Outdoor air for dwelling units. ~~An outdoor air ventilation system consisting of a mechanical exhaust system, supply system or combination thereof shall be installed for each *dwelling unit*. Local exhaust or supply systems, including outdoor air ducts connected to the return side of an air handler, are permitted to serve as such a system.~~ A *balanced ventilation system* shall be installed to provide *outdoor air* for each *dwelling unit*. The ~~outdoor air~~ *balanced ventilation system* shall be designed to provide the required rate of *outdoor air* continuously during the period that the *building* is occupied. The minimum continuous *outdoor air* ~~flow~~ rate shall be determined in accordance with Equation 4-9.

$Q_{OA} = 0.03A_{floor} + 7.5(N_{br} + 1)$ **(Equation 4-9)**

Commented [M6]: Adding this clause provides clarity regarding the ventilation rates required for spaces other that dwelling units in Group R-2, R-3,. And R-4 occupancies.

Commented [M7]: This is relocated from the requirements for private dwellings, single and multiple

Commented [M8]: Because all R2, R3, and R4 dwelling units are now addressed in Section 403.3.2, there is no need for the "private dwellings, single and multiple" header in this table. The requirements for private garages is moved under the storage header in the table. The requirements for private kitchens is moved under the "hotels, motels, resorts, and dormitories; spaces in Group R02, R-3, and R-4 occupancies other than dwelling units" header. Living areas, toilet rooms (private and public), and private bathrooms are addressed elsewhere within this table.

Commented [M9]: Align with IBC Section 406.6.2.

Commented [M10]: Align with IBC Section 406.6.2.

Commented [M11]: Align with IBC Section 406.6.2.

where:
Q_{OA} = *outdoor air*~~flow~~ rate, cfm
Afloor = conditioned floor area, ft^2
Nbr = number of bedrooms; not to be less than one

Exceptions:
1. The ~~outdoor air~~ *balanced ventilation system* is not required to operate continuously where the system has controls that enable operation for not less than 1 hour of each 4-hour period. The average *outdoor air*~~flow~~ rate over the 4-hour period shall be not less than that prescribed by Equation 4-9.
2. The minimum ~~mechanical ventilation~~ *outdoor air* rate determined in accordance with Equation 4-9 shall be reduced by 30 percent provided that ~~both of the following conditions apply:~~
~~2.1. A~~a ducted system supplies ventilation air directly to each bedroom and to one or more of the following rooms:
2.1.1. Living room.
2.1.2. Dining room.
2.1.3. Kitchen.
~~2.2. The whole-house ventilation system is a *balanced ventilation* system.~~

~~**403.3.2.2 Outdoor air for other spaces.** Corridors and other common areas within the conditioned space shall be provided with outdoor air at a rate of not less than 0.06 cfm per square foot [0.0003 m3/(s • m2)] of floor area.~~

Commented [MM12]: This section should be deleted, as it is now proposed to be addressed within Section 403.3.1, "Spaces other than dwelling units of Group R-2, R-3, and R-4 occupancies."

403.3.2.~~3~~ Local exhaust. Local exhaust systems shall be provided in kitchens, *bathrooms*, and *toilet rooms* and shall have the capacity to exhaust the minimum airflow rate determined in accordance with Table 403.3.2.~~3~~2.

TABLE 403.3.2.~~3~~2
MINIMUM REQUIRED LOCAL EXHAUST RATES FOR DWELLING UNITS IN GROUP R-2, R-3 AND R-4 OCCUPANCIES

AREA TO BE EXHAUSTED	EXHAUST RATE CAPACITY
Kitchens	100 cfm intermittent or 50 cfm continuous
Bathrooms and *toilet rooms*	50 cfm intermittent or 25 cfm continuous

403.3.2.~~4~~3 System controls. Where provided within a *dwelling unit*, controls for *outdoor air ventilation* systems shall include text or a symbol indicating the system's function.

403.3.2.~~5~~4 Ventilating equipment. Fans providing exhaust or *outdoor air* shall be *listed* and *labeled* to provide the minimum required air flow in accordance with ANSI/AMCA 210-ANSI/ASHRAE 51, HVI 916, or HVI 920.

Commented [M13]: Unitized dwelling unit HERVs are rated for airflow in accordance with HVI 920. Unitized local exhaust fans are rated for airflow in accordance with HVI 916.

403.3.2.5 Sound. Fans that are a component of the *balanced ventilation system* or that are configured for continuous operation shall have a sound rating not more than 1.0 sone. Local exhaust fans that are configured for intermittent operation shall have a sound rating not more than 3.0 sones. The sone rating shall be *listed* and determined based on testing in accordance with HVI 915, for one or more speed settings producing an airflow not less than the rate required by Section 403.3.2.1 or Section 403.3.2, as applicable.

Commented [M14]: This is aligned with ASHRAE 62.2 and with MN Rules chapter 1322 Section R403.5.7.

Exceptions: Sound ratings shall not be required for the following:
1. Space heating or cooling air handlers.
2. Fans located outside of living space and having not less than 4 feet of ductwork between the fan and connected inlets or outlets that terminate within the *living space*.
3. *Toilet room* exhaust fans configured for intermittent operation.

Commented [M15]: This section and its exceptions are aligned with ASHRAE 62.2.

Chapter 15
REFERENCED STANDARDS

1740 Dell Range Blvd., Suite H, PMB 450
Cheyenne, WY 82009

916—15: Airflow Test Procedure
403.3.2.4

920-2024: Product Performance Certification and Surveillance Procedure
403.3.2.4

DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

Author/requestor: Ardy Goudarzi

Date: 4/26/24

Email address: c.scott.anderson@minneapolismn.gov

Model Code: 2024 IMC

Telephone number: 612-246-7303

Code or Rule Section: 401.2 & 402

Firm/Association affiliation, if any: City of Minneapolis

Topic of proposal: 402 Natural Ventilation

Code or rule section to be changed: 401.2 & 402

Intended for Technical Advisory Group ("TAG"):

General Information	**Yes**	**No**
A. Is the proposed change unique to the State of Minnesota?	☒	☐
B. Is the proposed change required due to climatic conditions of Minnesota?	☒	☐
C. Will the proposed change encourage more uniform enforcement?	☒	☐
D. Will the proposed change remedy a problem?	☒	☐
E. Does the proposal delete a current Minnesota Rule, chapter amendment?	☒	☐
F. Would this proposed change be appropriate through the ICC code development process?	☐	☒

Proposed Language

1. The proposed code change is meant to:

   ☐ change language contained the model code book? If so, list section(s).

   ☐ change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

   ☒ delete language contained in the model code book? If so, list section(s). 402

   ☒ delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).
   401.2 & 401.2.3

   ☐ add new language that is not found in the model code book or in Minnesota Rule.

2. Is this proposed code change required by Minnesota Statute? If so, please provide the citation.

No

3. Provide *specific* language you would like to see changed. Indicate proposed new words with underlining and ~~strikethrough~~ words proposed for deletion. Include the entire code (sub) section or rule subpart that contains your proposed changes.

   401.2 Ventilation required. Every occupied space other than buildings constructed in accordance with the IRC and Group R-2, R-3, and R-4 occupancies three stories and less in height shall be ventilated ~~by natural means in accordance with Section 402 or~~ by mechanical ventilation in accordance with Section 403. Ambulatory care facilities and Group I-2 occupancies shall be ventilated by mechanical means in accordance with Section 407.

   ~~SECTION 402~~
   ~~NATURAL VENTILATION~~
   ~~[BG] 402.1 Natural ventilation. Natural ventilation of an occupied space shall be through windows, doors, louvers or other openings to the outdoors. The operating mechanism for such openings shall be provided with ready access so that the openings are readily controllable by the building occupants.~~
   ~~[BG] 402.2 Ventilation area required. The minimum open-able area to the outdoors shall be 4 percent of the floor area being ventilated. [BG] 402.3 Adjoining spaces. Where rooms and spaces without openings to the outdoors are ventilated through an adjoining room, the opening to the adjoining rooms shall be unobstructed and shall have an area not less than 8 percent of the floor area of the interior room or space, but not less than 25 square feet (2.3 m2). The minimum openable area to the outdoors shall be based on the total floor area being ventilated.~~
   ~~Exception: Exterior openings required for ventilation shall be permitted to open into a thermally isolated sun-room addition or patio cover, provided that the openable area between the sunroom addition or patio cover and the interior room has an area of not less than 8 percent of the floor area of the interior room or space, but not less than 20 square feet (1.86 m2). The minimum openable area to the outdoors shall be based on the total floor area being ventilated.~~
   ~~[BG] 402.4 Openings below grade. Where openings below grade provide required natural ventilation, the outdoor horizontal clear space measured perpendicular to the opening shall be one and one-half times the depth of the opening. The depth of the opening shall be measured from the average adjoining ground level to the bottom of the opening.~~

4. Will this proposed code change impact other sections of a model code book or an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.
   NO

Need and Reason

1. Why is the proposed code change needed? Please provide a general explanation as well as a specific explanation for any changes to numerical values (heights, area, etc.)
   Given the unique climatic conditions prevalent in Minnesota, characterized by exceedingly low temperatures for a significant portion of the year, the inclusion of certain provisions mandating natural ventilation systems may pose practical challenges and potentially inhibit the efficacy of building designs tailored to suit the climatic realities of our region.

In light of these considerations, and with the overarching goal of fostering sustainable, safe, and economically viable building practices, I respectfully request a review and reconsideration of the aforementioned section of code.

2. Why is the proposed code change a reasonable solution?
   Recognize the importance of maintaining rigorous standards to uphold public safety and environmental sustainability and also believe that regulatory frameworks must remain adaptive and responsive to the evolving needs and circumstances of the communities they serve.

3. What other factors should the TAG consider?
   None

Cost/Benefit Analysis

1. Will the proposed code change increase or decrease costs? Please explain and provide estimates if possible.
   No cost effect

2. If there is an increased cost, will this cost be offset by a safety or other benefit? Please explain. If the benefit is quantifiable (for example energy savings), provide an estimate if possible.
   No cost change

3. If there is a cost increase, who will bear the costs? This can include government units, businesses, and individuals.
   NA

4. Are there any enforcement or compliance cost increases or decreases with the proposed code change? Please explain.
   No

5. Will the cost of complying with the proposed code change in the first year after the rule takes effect exceed $25,000 for any one small business or small city (Minn. Stat. § 14.127)? A small business is any business that has less than 50 full-time employees. A small city is any statutory or home rule charter city that has less than ten full-time employees. Please explain.
   No

Regulatory Analysis

1. What parties or segments of industry are affected by this proposed code change?
   Architects, Engineers, Developers, Building Owners, Contractors, Building Officials

2. Can you think of other means or methods to achieve the purpose of the proposed code change? What might someone opposed to this code change suggest instead? Please explain what the alternatives are and why your proposed change is the preferred method or means to achieve the desired result.
   No

5. What are the probable costs or consequences of not adopting the code change, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals?
   Not adopting this change will result poor indoor air quality and waste of energy.

6. Are you aware of any federal or state regulation or requirement related to this proposed code change? If so, please list the federal or state regulation or requirement and your assessment of any differences between the proposed code change and the federal regulation or requirement.
   No

***Note: Incomplete forms may be returned to the submitter with instruction to complete the form. Only completed forms can considered by the TAG.

DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

Author/requestor: Frank Richie

Date: 4/25/24

Email address Frank.Richie@MinneaploisMN.Gov

Model Code:

Telephone number: 612-246-7303

Code or Rule Section: 1346

Firm/Association affiliation, if any: City of Minneapolis

Topic of proposal: Garage Ventilation.

Code or rule section to be changed: 1341

Intended for Technical Advisory Group ("TAG"):

General Information	**Yes**	**No**
A. Is the proposed change unique to the State of Minnesota?	☒	☐
B. Is the proposed change required due to climatic conditions of Minnesota?	☐	☒
C. Will the proposed change encourage more uniform enforcement?	☒	☐
D. Will the proposed change remedy a problem?	☒	☐
E. Does the proposal delete a current Minnesota Rule, chapter amendment?	☐	☒
F. Would this proposed change be appropriate through the ICC code development process?	☐	☒

Proposed Language

1. The proposed code change is meant to:

   ☐ change language contained the model code book? If so, list section(s).

   ☐ change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

   ☐ delete language contained in the model code book? If so, list section(s).

   ☒ delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).
   1346.0404

   ☒ add new language that is not found in the model code book or in Minnesota Rule.

2. Is this proposed code change required by Minnesota Statute? If so, please provide the citation.
   No

3. Provide *specific* language you would like to see changed. Indicate proposed new words with underlining and ~~strikethrough~~ words proposed for deletion. Include the entire code (sub) section or rule subpart that contains your proposed changes.

   Subpart 1. Section 404.1. IMC section 404.1 is amended to read as follows:
   404.1 Enclosed parking garages. Mechanical ventilation systems for enclosed parking garages shall operate automatically upon detection of certain gas concentrations. Enclosed parking garages shall be equipped with a carbon monoxide (CO) detector and a nitrogen dioxide (NO2) detector. The mechanical ventilation system shall activate upon detection of a CO level of 25 parts per million (ppm) ~~or greater~~, a NO2 level of 3 ppm ~~or greater~~, or both. Such detectors shall be listed in accordance with UL 2075 and installed in accordance with their listing and manufacturers' instructions.

4. Will this proposed code change impact other sections of a model code book or an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.
   NO

Need and Reason

1. Why is the proposed code change needed? Please provide a general explanation as well as a specific explanation for any changes to numerical values (heights, area, etc.)
   The indoor parking garage detectors need to activate the garage ventilation once 25 ppm CO or 3 ppm NO2 are detected, presumably to maintain a safe indoor air breathing environment. Once you add the words or greater, you eliminate the maximum buildup of those gases that are allowed in the garage before the detectors will activate. If you believe words need to be added after 25PPM CO or 3PMM NO2 you should consider the words OR LESS, which should result in providing a healthier indoor air environment than 25 PPM CO or 3 PMM NO2.

2. Why is the proposed code change a reasonable solution?
   It should clarify the amount of built-up gases allowed in the garage before triggering the ventilation system to be activated.

3. What other factors should the TAG consider?
   None

Cost/Benefit Analysis

1. Will the proposed code change increase or decrease costs? Please explain and provide estimates if possible.
   This is an editorial change and should not impact the cost of construction.

2. If there is an increased cost, will this cost be offset by a safety or other benefit? Please explain. If the benefit is quantifiable (for example energy savings), provide an estimate if possible.
   No cost change

3. If there is a cost increase, who will bear the costs? This can include government units, businesses, and individuals.
   NA

4. Are there any enforcement or compliance cost increases or decreases with the proposed code change? Please explain.
   No

5. Will the cost of complying with the proposed code change in the first year after the rule takes effect exceed $25,000 for any one small business or small city (Minn. Stat. § 14.127)? A small business is any business that has less than 50 full-time employees. A small city is any statutory or home rule charter city that has less than ten full-time employees. Please explain.
   No

Regulatory Analysis

1. What parties or segments of industry are affected by this proposed code change?
   Architects, Contractors, Developers, Building Owners, Contractors, Building Officials

2. Can you think of other means or methods to achieve the purpose of the proposed code change? What might someone opposed to this code change suggest instead? Please explain what the alternatives are and why your proposed change is the preferred method or means to achieve the desired result.
   No

3. What are the probable costs or consequences of not adopting the code change, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals? The consequences are related to creating an opportunity for higher than safe level of CO and NO2 build up in indoor parking garages.

4. Are you aware of any federal or state regulation or requirement related to this proposed code change? If so, please list the federal or state regulation or requirement and your assessment of any differences between the proposed code change and the federal regulation or requirement.

   No

***Note: Incomplete forms may be returned to the submitter with instruction to complete the form. Only completed forms can considered by the TAG.

DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

Author/requestor: Lewis Johnson, P.E. *Date:* May 10, 2024

Email address: ljohnson@allanmechanical.com *Model Code:* 2024 IMC

Telephone number: 952 934 3999 *Code or Rule Section:* Chapter Defintions

Firm/Association affiliation, if any: ASHRAE

Code or rule section to be changed: Section 501.2 Independent Systems Required

Intended for Technical Advisory Group ("TAG"): 1346 Mechanical and Fuel Gas Code

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General Information	**Yes**	**No**
1. Is the proposed change unique to the State of Minnesota?	☐	☒
2. Is the proposed change required due to climatic conditions of Minnesota?	☐	☒
3. Will the proposed change encourage more uniform enforcement?	☒	☐
4. Will the proposed change remedy a problem?	☐	☒
5. Does the proposal delete a current Minnesota Rule, chapter amendment?	☐	☒
6. Would this proposed change be appropriate through the ICC code development process?	☒	☐

Proposed Language

1. The proposed code change is meant to:

   change language contained the model code book? If so, list section(s).

   ☐ change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

   ☒ delete language contained in the model code book? If so, list section(s).

   Section 501.2 Independent Systems Required

   ☐ delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

   ☐ add new language that is not found in the model code book or in Minnesota Rule.

2. Is this proposed code change required by Minnesota Statute? If so, please provide the citation.
   No

3. Provide *specific* language you would like to see changed. Indicate proposed new words with underlining and ~~strikethrough~~ words proposed for deletion. Include the entire code (sub) section or rule subpart that contains your proposed changes.

   501.2 Independent System Required. Single or combined mechanical exhaust systems for *environmental air* shall be independent of all other exhaust systems. Dryer, ~~domestic~~ commercial kitchen and hazardous exhaust shall be independent of all other systems. Type I exhaust systems shall be independent of all other exhaust. ~~systems except as provided in Section 506.3.5.~~ Single or combined Type II exhaust systems for food-processing operations shall be independent of all other exhaust systems. Commercial kitchen exhaust systems shall be constructed in accordance with Section 506 through 509.

4. Will this proposed code change impact other sections of a model code book or an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.

   No

Need and Reason

1. Why is the proposed code change needed? Please provide a general explanation as well as a specific explanation for any changes to numerical values (heights, area, etc.)

   As written is interpreted as requiring domestic kitchens such as warming kitches in daycares and some schools to have independent exhaust whereas removing the current allowance of combining restroom exhaust and general kitchen exhaust onto the same exhaust system.

2. Why is the proposed code change a reasonable solution?

   Domestic kitchen exhaust takes general room air and exhausts it at a rate listed in Table 403.3.1.1. This air is not laden with grease and it is acceptable to mix this air with general restroom/general building exhaust.

3. What other factors should the TAG consider?

   No

Cost/Benefit Analysis

1. Will the proposed code change increase or decrease costs? Please explain and provide estimates if possible.

   Decrease Cost.

2. If there is an increased cost, will this cost be offset by a safety or other benefit? Please explain. If the benefit is quantifiable (for example energy savings), provide an estimate if possible.

   N/A

3. If there is a cost increase, who will bear the costs? This can include government units, businesses, and individuals.

   N/A

4. Are there any enforcement or compliance cost increases or decreases with the proposed code change? Please explain.

   Compliance cost will decrease.

5. Will the cost of complying with the proposed code change in the first year after the rule takes effect exceed $25,000 for any one small business or small city (Minn. Stat. § 14.127)? A small business is any business that has less than 50 full-time employees. A small city is any statutory or home rule charter city that has less than ten full-time employees. Please explain.

   No

Regulatory Analysis

1. What parties or segments of industry are affected by this proposed code change?

   Designers, contractors, building owners, inspectors.

2. Can you think of other means or methods to achieve the purpose of the proposed code change? What might someone opposed to this code change suggest instead? Please explain what the alternatives are and why your proposed change is the preferred method or means to achieve the desired result.

   My assumption is that the term “domestic kitchen” was used when the term “commercial kitchen” was intended.

3. What are the probable costs or consequences of not adopting the code change, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals?

   Cost increases by the tenant or building owner for the independent system… About $10,000 - $15,000.

4. Are you aware of any federal or state regulation or requirement related to this proposed code change? If so, please list the federal or state regulation or requirement and your assessment of any differences between the proposed code change and the federal regulation or requirement.

   No

***Note: Incomplete forms may be returned to the submitter with instruction to complete the form. Only completed forms can considered by the TAG.

DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

Author/requestor: John G. Smith, P.E.

Date: May 8, 2024
Rev May 13, 2024

Email address: jgsmith76@gmail.com

Model Code: 2024 IMC

Telephone number: 612 867 3145

Code or Rule Section: Chapter 5

Firm/Association affiliation, if any: ACEC

Code or rule section to be changed: 501.3-Exhaust Discharge

Intended for Technical Advisory Group ("TAG"): 1346 Mechanical and Fuel Gas Code

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General Information	**Yes**	**No**
1. Is the proposed change unique to the State of Minnesota?	☐	☒
2. Is the proposed change required due to climatic conditions of Minnesota?	☒	☐
3. Will the proposed change encourage more uniform enforcement?	☒	☐
4. Will the proposed change remedy a problem?	☒	☐
5. Does the proposal delete a current Minnesota Rule, chapter amendment?	☒	☐
6. Would this proposed change be appropriate through the ICC code development process?	☒	☐

Proposed Language

1. The proposed code change is meant to:

   ☒ change language contained the model code book? If so, list section(s).
   Chapter 5 Exhaust Systems, 501.3 Exhaust Discharge

   ☐ change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

   ☐ delete language contained in the model code book? If so, list section(s).

   ☒ delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).
   Repeal 1346.050, Section 501.3 as it is no longer necessary.

   ☒ add new language that is not found in the model code book or in Minnesota Rule.

2. Is this proposed code change required by Minnesota Statute? If so, please provide the citation.
   No

3. Provide *specific* language you would like to see changed. Indicate proposed new words with underlining and ~~strikethrough~~ words proposed for deletion. Include the entire code (sub) section or rule subpart that contains your proposed changes.

   501.3 Exhaust Discharge: The air removed by every mechanical exhaust system shall be discharged outdoors at a point where it will not cause a public nuisance and not less than the distance specified in Section 501.3.1. The air shall be discharged to a location from which it cannot again be readily drawn in by a ventilating system. Air shall not be exhausted into an attic or crawl space, or be directed onto walkways. Dampers shall be installed where exhaust systems penetrate the building envelope according to Minnesota Commercial Energy Code Chapter 1323.

   Exceptions:
   1. ~~Whole-house ventilation-type attic fans shall be permitted to discharge into the attic space of *dwelling units* having private attics.~~
   2. ~~2.~~ 1. Commercial cooking recirculating systems.
   3. ~~3.~~ 2. Where installed in accordance with the manufacturer's instructions and where mechanical or *natural ventilation* is otherwise provided in accordance with Chapter 4, *listed* and *labeled* domestic ductless range hoods shall not be required to discharge to the outdoors.

4. Will this proposed code change impact other sections of a model code book or an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.
   No

Need and Reason

1. Why is the proposed code change needed? Please provide a general explanation as well as a specific explanation for any changes to numerical values (heights, area, etc.)

   The new IMC Model Code includes essentially the same wording as the MN Statute, thereby making the MN Statute unnecessary. The need for dampers and their performance requirements is contained in the Minnesota Commercial Energy Code Chapter 1323.

2. Why is the proposed code change a reasonable solution?

   It adopts the IMC Model Code along with clarifying damper requirements. The term "building envelope" is defined in ASHRAE 90.1-2019 as follows:
   Building envelope: the exterior plus the semiexterior portions of a building. For the purposes of determining building envelope requirements, the classifications are defined as follows:
   Exterior building envelope: the elements of a building that separate conditioned spaces from the exterior.
   Semiexterior building envelope: the elements of a building that separate conditioned space from unconditioned space or that enclose semiheated spaces through which thermal energy may be transferred to or from the exterior, to or from unconditioned spaces, or to or from conditioned spaces.

3. What other factors should the TAG consider?
   None.

Cost/Benefit Analysis

1. Will the proposed code change increase or decrease costs? Please explain and provide estimates if possible.

Adopting the Model Code wording is essentially the same as the existing Minnesota Statute. The damper requirements are clarified to be in compliance with Minnesota Chapter 1323, so there should be no increase in costs over what is already a requirement,

2. If there is an increased cost, will this cost be offset by a safety or other benefit? Please explain. If the benefit is quantifiable (for example energy savings), provide an estimate if possible.

3. If there is a cost increase, who will bear the costs? This can include government units, businesses, and individuals.

4. Are there any enforcement or compliance cost increases or decreases with the proposed code change? Please explain.

   Enforcement should be easier because it clarifies damper requirements.

5. Will the cost of complying with the proposed code change in the first year after the rule takes effect exceed $25,000 for any one small business or small city (Minn. Stat. § 14.127)? A small business is any business that has less than 50 full-time employees. A small city is any statutory or home rule charter city that has less than ten full-time employees. Please explain.

Regulatory Analysis

1. What parties or segments of industry are affected by this proposed code change?

   Building owners, contractors, code officials.

2. Can you think of other means or methods to achieve the purpose of the proposed code change? What might someone opposed to this code change suggest instead? Please explain what the alternatives are and why your proposed change is the preferred method or means to achieve the desired result.
   No

3. What are the probable costs or consequences of not adopting the code change, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals?

   Not clarifying the damper requirements will result is poor performing dampers to be installed which will increase energy consumption and not be in compliance with Chapter 1323.

4. Are you aware of any federal or state regulation or requirement related to this proposed code change? If so, please list the federal or state regulation or requirement and your assessment of any differences between the proposed code change and the federal regulation or requirement.
   No

***Note: Incomplete forms may be returned to the submitter with instruction to complete the form. Only completed forms can considered by the TAG.

DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

Author/requestor: Dan Morehead

Date: 4-30-2024

Email address: danm@callmtg.com

Model Code: 2024 IMC

Telephone number: 952-564-5844

Code or Rule Section: 606.3

Firm/Association affiliation, if any: Minnesota Automatic Fire Alarm Association

Code or rule section to be changed: 606.3

Intended for Technical Advisory Group ("TAG"):

General Information	**Yes**	**No**
A. Is the proposed change unique to the State of Minnesota?	☐	☒
B. Is the proposed change required due to climatic conditions of Minnesota?	☐	☒
C. Will the proposed change encourage more uniform enforcement?	☒	☐
D. Will the proposed change remedy a problem?	☒	☐
E. Does the proposal delete a current Minnesota Rule, chapter amendment?	☐	☒
F. Would this proposed change be appropriate through the ICC code development process?	☐	☒

Proposed Language

1. The proposed code change is meant to:

   ☒ change language contained in the model code book? If so, list section(s).
   606.3

   ☐ change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

   ☐ delete language contained in the model code book? If so, list section(s).

   ☐ delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

   ☐ add new language that is not found in the model code book or in Minnesota Rule.

2. Is this proposed code change required by Minnesota Statute? If so, please provide the citation.

3. Provide *specific* language you would like to see changed. Indicate proposed new words with underlining and words proposed to be deleted. Include the entire code (sub) section or rule subpart that contains your proposed changes.

2024 IMC 606.3 Smoke detectors required by this section shall be installed in accordance with NFPA 72. A loss of power to air distribution system equipment shall not cause a loss of power to duct smoke detectors when connected to a fire alarm system. When connected to a fire alarm system duct detectors shall be resettable from the fire alarm system. The required smoke detectors shall be installed to monitor the entire airflow conveyed by the system including return air and exhaust or relief air. Access shall be provided to smoke detectors for inspection and maintenance.

4. Will this proposed code change impact other sections of a model code book or an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.
   Not aware

Need and Reason

1. Why is the proposed code change needed?

   When a duct detector is properly installed in accordance with NFPA 72 as required by 606.3 a trouble signal should be sent every time there is a loss of power to the detector. When detectors are powered from air distribution equipment, they typically do not meet the battery backup requirements of NFPA 72. If improperly powered by air distribution equipment and connected to a fire alarm system a power loss to a detector will cause many unnecessary signals to be sent to the fire alarm system. Every time filters are changed, or service is performed on air handling units the fire alarm will beep and report a trouble signal to the central station. Summer storms or area power outages flood supervised station providers with thousands of unnecessary signals. This proposed change intends to reinforce the existing code language of section 606.3 to ensure detectors are properly powered to reduce thousands of unnecessary trouble signals.

   The main reason to connect a duct detector to a fire alarm system is to leverage the capabilities of the fire alarm system. One of those capabilities is the ability to temporarily remove power from a device upon pressing the reset button. By adding the requirement for duct detectors to be resettable from the fire alarm system when connected to a fire alarm system duct detectors can be easily reset from a central location. Without this code change the detector reset process can be extremely time consuming, adding expenses and requiring unnecessary service calls. Technicians first, identify the location of each detector, then the power source for each detector needs to be located, lastly the proper reset procedure for each detector needs to be determined. This process is labor intensive and extremely costly compared to pressing the reset button on a fire alarm control unit that on-site staff may be able to perform.

2. Why is the proposed code change a reasonable solution?
   The proposed code change is reasonable because the proposed change reinforces existing requirements and leverages systems and components that are already required by other sections of various codes. These proposed changes reduce the cost of maintaining duct detectors and provides consistent and reliable duct detector functionality.

3. What other considerations should the TAG consider?
   The TAG should consider the confusion in the industry and the vast number of duct detectors that continue to be improperly installed in the state of Minnesota. Often the true impact of unclear code language is not fully realized until a tragedy occurs. Consider the consequences of impaired duct

detectors that do not shut down air handling units during a smoke event. The unrestricted spread of toxic smoke could have deadly results. A simple code language change will vastly improve the number of properly installed duct detectors and ultimately prevent tragedy.

Cost/Benefit Analysis

1. Will the proposed code change increase or decrease costs? Please explain.
   This proposed change it intended as a cost neutral proposal. Many duct detectors in Minnesota are being powered from associated air distribution equipment. A loss of power to the associated air distribution equipment would eliminate the need for a duct detector unfortunately when connected to a fire alarm system this creates other problems. Section 606.3 requires detectors to be installed in accordance with NFPA 72. NFPA 72 requires devices to have 24 hours of battery backup. This is not likely when the detectors are powered from air distribution equipment. It is possible to comply with this code change and not increase the total cost of the project. There are multiple options to comply with this code section. Compliance is condition specific.

   Scenario #1
   A duct detector is ordered as part of a roof top unit and installed at the factory. The detector is powered by the RTU and connected to a fire alarm system. This is a violation of **2024 IMC 606.3.** This code change would reinforce the NFPA 72 power requirements for duct detectors. Duct detectors would need to be disconnected from the RTU power and connected to a power source that has 24 hours of battery back-up. NFPA 72 also requires this power source to be monitored by the fire alarm system. The capability to reset the detector from the fire alarm control unit is typically a minor function that is built into the features of most fire alarm control panels. Section 606.4 already requires the fire alarm system to be connected to the duct detector. The cost of making the duct detectors resettable in this scenario is $0.00

   Scenario #2
   A duct detector provided and installed by the mechanical contractor and powered with 120VAC by the electrical contractor. This code change would reinforce that the provided duct detector needs to be disconnected from the 120VAC non-backed up power source and connected to a NFPA 72 compliant power source. NFPA 72 also requires this power source to be monitored by the fire alarm system. The capability to reset the detector from the fire alarm control unit is typically a minor function that is built into the features of most fire alarm control panels. Section 606.4 already requires the fire alarm system to be connected to the duct detector. The cost of making the duct detectors resettable in this scenario is $0.00

   Scenario #3
   A duct detector for an RTU is provided and installed by the fire alarm contractor and powered by the fire alarm system. Compliance with the proposed code change is possible at no extra charge.

2. If there is an increased cost, will this cost be offset by a safety or other benefit? Please explain.
   As stated above, the cost impact is condition specific. Costs will be dependent on building specifications and equipment capabilities. If there is an overall increase in cost, that cost would be offset by reducing nuisance trouble alarms, eliminating unnecessary service calls and simplifying the detector reset process saving time and money.

3. Are there any enforcement or compliance cost increases or decreases with the proposed code change? Please explain.
   Clarifying this code section will reduce confusion and eliminate wasted labor hours that code officials and contactors spend on corrective action orders and re-inspections.

4. Will the cost of complying with the proposed code change in the first year after the rule takes effect exceed $25,000 for any one small business or small city? A small business is any business that has less than 50 full-time employees. A small city is any statutory or home rule charter city that has less than ten full-time employees. Please explain.
   No

Regulatory Analysis

1. What parties or segments of industry are affected by this proposed code change?
   Mechanical Contractors, Electrical Contractors, Fire Alarm Installation Contractors, and building owners.

2. What are the probable costs to the agency and to any other State agencies of implementing and enforcing of the proposed rule? Is there an anticipated effect on state revenues?
   No change

3. Are there less costly intrusive methods for achieving the purpose of the proposed rule?
   The proposed change is the most cost-effective solution.

4. Can you think of other means or methods to achieve the purpose of the proposed code change? If so, please explain what they are and why your proposed change is the preferred method or means to achieve the desired result.
   Requiring all duct detectors to be addressable fire alarm detectors would provide the most reliable detector; however, this method could increase the overall cost of installation.

5. What are the probable costs of complying with the proposed rule, including the portion of the total costs that will be borne by identifiable categories of affected parties, such as separate classes of governmental units, businesses, or individuals?
   The financial and other consequences of not adopting this proposed change have been stated above in the Cost/Benefit Analysis.

6. What are the probable costs or consequences of not adopting the proposed rule, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals?
   The financial and other consequences of not adopting this proposed change have been stated above in the Cost/Benefit Analysis.

7. Are you aware of any federal regulation or federal requirement related to this proposed code change? If so, please list the federal regulation or requirement and your assessment of any differences between the proposed rule and the federal regulation or requirement.
   I am not aware of any impact that this proposed change would have.

8. Please include an assessment of the cumulative effect of the rule with other federal and state regulations related to the specific purpose of the rule.
   I am not aware of any impact that this proposed change would have.

   ***Note: Incomplete forms may be returned to the submitter with instruction to complete the form. Only completed forms can considered by the TAG.