DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

Author/requestor: Brian Stemwedel

Date: 4/22/2024

Email address: Bstemwedel@goldenvalleymn.gov

Model Code: 2024 IMC

Telephone number: (612)275-1436

Code or Rule Section: 1346.0202

Firm/Association affiliation, if any: AMBO

Topic of proposal: Remove Definition

Code or rule section to be changed: MN Mechanical Code, Section 202

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).

   X delete language contained in the model code book? If so, list section(s).
   Section 202, General Definitions

   X delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).
   Section 202, Commercial Cooking Appliance (Definition)

   ☐ 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.

~~COMMERCIAL COOKING APPLIANCE. An appliance specifically designed to be used in a food-service-establishment kitchen, including but not limited to a restaurant or cafeteria kitchen. Appliances designed for residential use shall be treated as commercial appliances when installed in commercial food service establishments.~~

~~COMMERCIAL COOKING RECIRCULATING SYSTEM. Self-contained system consisting of the exhaust hood, the cooking equipment, the filters and the fire suppression system. The system is designed to capture cooking vapors and residues generated from commercial cooking equipment. The system removes contaminants from the exhaust air and recirculates the air to the space from which it was withdrawn.~~

~~COMMERCIAL KITCHEN HOODS.~~

~~Backshelf hood. A backshelf hood is also referred to as a low-proximity hood, or as a sidewall hood where wall mounted. Its front lower lip is low over the appliance(s) and is "set back" from the front of the appliance(s). It is always closed to the rear of the appliances by a panel where free-standing, or by a panel or wall where wall mounted, and its height above the cooking surface varies. (This style of hood can be constructed with partial end panels to increase its effectiveness in capturing the effluent generated by the cooking operation).~~

~~Double island canopy hood. A double island canopy hood is placed over back-to-back appliances or appliance lines. It is open on all sides and overhangs both fronts and the sides of the appliance(s). It could have a wall panel between the backs of the appliances. (The fact that exhaust air is drawn from both sides of the double canopy to meet in the center causes each side of this hood to emulate a wall canopy hood, and thus it functions much the same with or without an actual wall panel between the backs of the appliances).~~

~~Eyebrow hood. An eyebrow hood is mounted directly to the face of an appliance, such as an oven and dishwasher, above the opening(s) or door(s) from which effluent is emitted, extending past the sides and overhanging the front of the opening to capture the effluent.~~

~~Pass-over hood. A pass-over hood is a free-standing form of a backshelf hood constructed low enough to pass food over the top.~~

~~Single island canopy hood. A single island canopy hood is placed over a single appliance or appliance line. It is open on all sides and overhangs the front, rear and sides of the appliance(s). A single island canopy is more susceptible to cross drafts and requires a greater exhaust air flow than an equivalent sized wall-mounted canopy to capture and contain effluent generated by the cooking operation(s).~~

~~Wall canopy hood. A wall canopy exhaust hood is mounted against a wall above a single appliance or line of appliance(s), or it could be free-standing with a back panel from the rear of the appliances to the hood. It overhangs the front and sides of the appliance(s) on all open sides.~~

~~The wall acts as a back panel, forcing the makeup air to be drawn across the front of the cooking equipment, thus increasing the effectiveness of the hood to capture and contain effluent generated by the cooking operation(s).~~

~~COMPENSATING HOODS. Compensating hoods are those having integral (built-in) makeup air supply. The makeup air supply for such hoods is generally supplied from: short-circuit flow from~~

~~inside the hood, air curtain flow from the bottom of the front face, and front face discharge from the outside front wall of the hood. The compensating makeup airflow can also be supplied from the rear or side of the hood, or the rear, front or sides of the cooking equipment. The makeup airflow can be one or a combination of methods.~~

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, where these definitions are found, Sections 507.2 through 507.6.1, and 508.2, have been deleted and replaced with NFPA 96 and ASHRAE 154. These Standards define the terms within and in the context of the Standard(s) as incorporated by reference.

2. Why is the proposed code change a reasonable solution?
   The Model Code Sections(s) where the terms appear have been deleted in their entirety.

3. What other factors should the TAG consider?
   For uniformity and clarity, the terms as defined in the relevant Standards, NFPA 96 and ASHRAE Standard 154 should be used.

Cost/Benefit Analysis

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

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.
   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?
   Engineers, contractors, manufacturers, general public will be affected, but there is no change to the outcome of the code compared to the 2020 Minnesota Mechanical Code requirement.

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.
   There is no change to the outcome of the code compared to the 2020 Minnesota Mechanical Code requirement.

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?
   There is no change to the outcome of the code compared to the 2020 Minnesota Mechanical Code requirement.

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.
   There is no change to the outcome of the code compared to the 2020 Minnesota Mechanical Code requirement.

***Note: The information you provide in this code change proposal form is considered Public Data and used by the TAG to consider your proposed modification to the code. Any code change proposal form submitted to DLI may be reviewed at public TAG meetings and used by department staff and the Office of Administrative Hearings to justify the need and reasonableness of any proposed rule draft subject to administrative review and is available to the public.

****Note: Incomplete forms will be returned to the submitter with instruction to complete the form. Only completed forms will be accepted and considered by the TAG. The submitter may be asked to provide additional information in support of the proposed code change.

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

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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**
G. Is the proposed change unique to the State of Minnesota?	☒	☐
H. Is the proposed change required due to climatic conditions of Minnesota?	☒	☐
I. Will the proposed change encourage more uniform enforcement?	☒	☐
J. Will the proposed change remedy a problem?	☒	☐
K. Does the proposal delete a current Minnesota Rule, chapter amendment?	☐	☒
L. Would this proposed change be appropriate through the ICC code development process?	☒	☐

Proposed Language

5. 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.

6. 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."

7. 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.

8. 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

4. 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.

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

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

Cost/Benefit Analysis

6. 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.

7. 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.

8. 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.

9. 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.

10. 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

5. 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.

6. 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.

7. 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.
8. 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.

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.

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.

…

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.

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 FT^2 [a]	PEOPLE OUTDOOR AIRFLOW RATE IN	AREA OUTDOOR AIRFLOW RATE IN	EXHAUST AIRFLOW RATE CFM/FT^2 [a]

		BREATHING ZONE, *Rp* CFM/PERSON	BREATHING ZONE, *Ra* CFM/FT^{2} [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[g]~~	~~—~~	~~—~~	~~—~~	~~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.

$Q_{OA} = 0.03Afloor + 7.5(Nbr + 1)$ **(Equation 4-9)**

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.~~

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.

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.
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.

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: Kevin Johnson

Email address: kevin.johnson@ci.stcloud.mn.us

Telephone number: 320-255-7233

Firm/Association affiliation, if any: City of St. Cloud

Code or rule section to be changed: 404.1

Intended for Technical Advisory Group ("TAG"): 1346 Mechanical code

Date: 04/26/2024

Model Code: 2024 IMC

Code or Rule Section: 404.1

Topic of proposal: Enclosed parking garages clarification

General Information	**Yes**	**No**
M. Is the proposed change unique to the State of Minnesota?	☐	☒
N. Is the proposed change required due to climatic conditions of Minnesota?	☐	☒
O. Will the proposed change encourage more uniform enforcement?	☒	☐
P. Will the proposed change remedy a problem?	☒	☐
Q. Does the proposal delete a current Minnesota Rule, chapter amendment?	☐	☒
R. Would this proposed change be appropriate through the ICC code development process?	☐	☒

Proposed Language

9. 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).

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

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

11. 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.

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 (NO_2) detector. The mechanical ventilation system shall activate upon a detection of a CO level of 25 parts per million(ppm) or greater, a NO_2 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 manufacturer's instructions.

Exception: A building or enclosure or any part of a building or enclosure that can accommodate, store or keep 5 or less motor vehicles.

12. 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

7. 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 current Minnesota amendment and the base code does not clearly define what is a PARKING GARAGE.

8. Why is the proposed code change a reasonable solution?
   It gives the building owner, architect, engineer and code official direction on when CO and NO_2 detection is required.

9. What other factors should the TAG consider?
   How far a vehicle can travel in the enclosed parking garage before detection is required.

Cost/Benefit Analysis

11. Will the proposed code change increase or decrease costs? Please explain and provide estimates if possible.
    Potential decrease. A detection system could be required for a small garage as the code section is now written.

12. 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.
    None.

13. If there is a cost increase, who will bear the costs? This can include government units, businesses, and individuals.
    None.

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

15. 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

9. What parties or segments of industry are affected by this proposed code change?
   Building owners and designers

10. 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.
    A definition of **Enclosed Parking Garage** could be added to Chapter 2.

    When the phrase **Enclosed Parking Garage** is used in the code it refers the reader to code section 404, this clarification is best placed in this section.

11. 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 discussion and decision has to be made when a structure is built with an overhead garage door that can accommodate a motor vehicle if it is an **Enclosed Parking Garage** which could require gas detection.

12. 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: The information you provide in this code change proposal form is considered Public Data and used by the TAG to consider your proposed modification to the code. Any code change proposal form submitted to DLI may be reviewed at public TAG meetings and used by department staff and the Office of Administrative Hearings to justify the need and reasonableness of any proposed rule draft subject to administrative review and is available to the public.

****Note: Incomplete forms will be returned to the submitter with instruction to complete the form. Only completed forms will be accepted and considered by the TAG. The submitter may be asked to provide additional information in support of the proposed code change.