

Minnesota Department of Labor and Industry

STATEMENT OF NEED AND REASONABLENESS

Proposed Amendment to Rules Governing the Adoption of the International Mechanical and Fuel Gas Codes, Minnesota Rules, Chapter 1346; Revisor's ID Number R-04515

INTRODUCTION

The Commissioner of the Department of Labor and Industry ("Commissioner") proposes to amend rules governing the Minnesota Mechanical and Fuel Gas Codes, Minnesota Rules, chapter 1346, within the Minnesota State Building Code.

The Minnesota State Building Code consists of twenty-two separate chapters of Minnesota Rules.¹ Chapter 1346 incorporates by reference the International Mechanical Code ("IMC"), with amendments, and the International Fuel Gas Code ("IFGC"), with amendments, for use in Minnesota. The current chapter 1346 incorporates by reference, with amendments, the 2012 editions of the IMC and IFGC. The proposed rules incorporate by reference, with amendments, the 2018 editions of the IMC and IFGC.

The International Code Council ("ICC") publishes the IMC and IFGC. The ICC is an association that develops several model construction codes "used in the design, build and compliance process to construct safe, sustainable, affordable and resilient structures."² These model codes are used throughout the nation. The IMC regulates the design, installation, maintenance, alteration, and inspection of mechanical systems that are permanently installed and provide control of environmental conditions within a building. The IFGC regulates the design and installation of fuel-gas piping systems, fuel gas appliances, gaseous hydrogen systems and related accessories.

Minnesota Statutes, section 326B.106, subdivision 1, requires the Department to consult with the Construction Codes Advisory Council ("CCAC") in adopting amendments to the Minnesota State Building Code.³ In consultation with the CCAC, the Department of Labor and Industry ("Department") utilized a Technical Advisory Group ("TAG") to review existing rule chapter 1346 and the 2018 editions of the IMC and IFGC to propose necessary and reasonable changes to the mechanical and fuel gas provisions in chapter 1346.⁴ The CCAC reviewed the TAG committee's report.⁵ This consultation is discussed in detail on page 3 of this Statement of Need And Reasonableness.

ALTERNATIVE FORMAT

Upon request, this information can be made available in an alternative format, such as large print, braille, or audio. To make a request, contact Amanda Spuckler at the Department of

¹ A complete list of the chapters making up the Minnesota State Building Code can be found at Minnesota Rules, part [1300.0050 \(2018\)](#).

² See <https://www.iccsafe.org/about/who-we-are/>

³ A complete list of the CCAC members is attached as Exhibit A.

⁴ A complete list of the 1346 TAG members is attached as Exhibit B.

⁵ See a copy of the TAG committee's report [here](#).

Labor and Industry, 443 Lafayette Road N., St. Paul, Minnesota 55155, phone: 651-284-5006, and email: dli.rules@state.mn.us.

STATUTORY AUTHORITY

The Department's statutory authority to adopt the rules is stated in the following Minnesota Statutes:

326B.02, Subdivision 5. General rulemaking authority. The commissioner may, under the rulemaking provisions of chapter 14 and as otherwise provided by this chapter, adopt, amend, suspend, and repeal rules relating to the commissioner's responsibilities under this chapter, except for rules for which the rulemaking authority is expressly transferred to the Plumbing Board, the Board of Electricity, or the Board of High Pressure Piping Systems.

326B.101. Policy and purpose. The State Building Code governs the construction, reconstruction, alteration, repair, and use of buildings and other structures to which the code is applicable. The commissioner shall administer and amend a state code of building construction which will provide basic and uniform performance standards, establish reasonable safeguards for health, safety, welfare, comfort, and security of the residents of this state and provide for the use of modern methods, devices, materials, and techniques which will in part tend to lower construction costs. The construction of buildings should be permitted at the least possible cost consistent with recognized standards of health and safety.

326B.106, Subdivision 1. Adoption of code. Subject to paragraphs (c) and (d) and sections 326B.101 to 326B.194, the commissioner shall by rule and in consultation with the Construction Codes Advisory Council establish a code of standards for the construction, reconstruction, alteration, and repair of buildings, governing matters of structural materials, design and construction, fire protection, health, sanitation, and safety, including design and construction standards regarding heat loss control, illumination, and climate control. The code must also include duties and responsibilities for code administration, including procedures for administrative action, penalties, and suspension and revocation of certification. The code must conform insofar as practicable to model building codes generally accepted and in use throughout the United States, including a code for building conservation. In the preparation of the code, consideration must be given to the existing statewide specialty codes presently in use in the state. Model codes with necessary modifications and statewide specialty codes may be adopted by reference. The code must be based on the application of scientific principles, approved tests, and professional judgment. To the extent possible, the code must be adopted in terms of desired results instead of the means of achieving those results, avoiding where possible the incorporation of specifications of particular methods or materials. To that end the code must encourage the use of new methods and new materials. Except as otherwise provided in sections 326B.101 to 326B.194, the commissioner shall administer and enforce the provisions of those sections.

Under these statutes, the Department has the necessary statutory authority to adopt the proposed rules.

CONSULTATION WITH THE CONSTRUCTION CODES ADVISORY COUNCIL

Minnesota Statutes, section 326B.106, subdivision 1(a), requires the Commissioner to consult with the CCAC in connection with the adoption of rules, codes, and standards relating to building construction. Minnesota Statutes, section 326B.07, subdivision 1, sets forth the requirements for membership of the CCAC.⁶ Minnesota Statutes, section 326B.07, subdivision 2, directs the CCAC to review code changes and provide recommendations to the Commissioner on proposed changes to the rule chapters that comprise the Minnesota State Building Code.

In consultation with the CCAC, the Department utilized a TAG to review the existing rule chapter and the 2018 ICC model codes and to comment and propose reasonable and needed changes to Chapter 1346. The Chapter 1346 TAG committee members were appointed by the CCAC and consisted of representatives from the Minnesota Association of Plumbing and Mechanical Officials (MAPMO), Minnesota Mechanical Contractors Association (MMCA), American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), and department staff.⁷ The TAG committee members were charged to review and comment on the 2018 IMC and 2018 IFGC model codes and propose changes as part of the Minnesota State Building Code. The proposed rules incorporate by reference the 2018 editions of the IMC and IFGC with proposed changes recommended by the Mechanical and Fuel Gas TAG members and supported by the CCAC. Upon completion of the TAG's review, a report detailing the TAG's evaluation of the 2018 ICC model codes and recommended changes to existing chapter 1346 was submitted to the CCAC and reviewed by that council at a public meeting on June 21, 2018.⁸ The CCAC's comments and recommendations concerning changes to Chapter 1346 were then forwarded to the Commissioner for his consideration in proposing this rulemaking.⁹

REGULATORY ANALYSIS

Minnesota Statutes, section 14.131, sets out eight factors for a regulatory analysis that must be included in the SONAR. Paragraphs (1) through (8) below quote these factors and then give the Department's response.

(1) a description of the classes of persons who probably will be affected by the proposed rule, including classes that will bear the costs of the proposed rule and classes that will benefit from the proposed rule

⁶ See Exhibit A.

⁷ See Exhibit B.

⁸ A Report detailing the Chapter 1346 TAG review of the 2018 ICC model codes is available at http://www.dli.mn.gov/sites/default/files/pdf/TAG_review_2018_icode.pdf. The report including recommendations of the TAGs and comments received in response to the May 15, 2018, report is available at <http://www.dli.mn.gov/sites/default/files/pdf/2018%20International%20Model%20Codes%20Review%20and%20Report%20to%20CCAC.pdf>.

⁹ The Report including recommendations of the TAGs, public comments, and CCAC comments and concerns is available <http://www.dli.mn.gov/sites/default/files/pdf/report062618.pdf>.

The classes of persons who probably will be affected by the proposed rules include municipal building officials, engineers, architects, building contractors, mechanical contractors, mechanical system product manufacturers, building owners and managers and the general public.

Those that will likely bear the costs of the proposed rules are building owners.

Those that will likely benefit from the proposed rules include building owners, building managers and the general public by providing the most efficient methods and current materials for mechanical and fuel gas systems.

(2) the probable costs to the agency and to any other agency of the implementation and enforcement of the proposed rule and any anticipated effect on state revenues

The probable costs to the agency for the implementation and enforcement of the proposed rules include costs to purchase 2018 code books for staff and any educational expenses necessary for staff to become familiar with the changes to the proposed rules.

The probable costs to any other agency for the implementation and enforcement of the proposed rules includes costs for 2018 code books for building officials and other entities involved with the enforcement of the rules and any educational expenses necessary for training on the proposed rules. New code books are not anticipated to exceed \$450 per person. Training costs necessary for officials to maintain their certification is not anticipated to exceed \$170 per person. These costs would not have an effect on state revenues.

There is no anticipated effect on state revenues as a result of the implementation and enforcement of the proposed rules.

(3) a determination of whether there are less costly methods or less intrusive methods for achieving the purpose of the proposed rule

There are no less-costly or -intrusive methods for achieving the purpose of the proposed rules. The adoption of these rules will provide uniform application and enforcement of the Mechanical and Fuel Gas Codes. Uniform application and enforcement will result in more predictable code application and enforcement, which will tend to lower costs by reducing the need for review by local and state boards and other entities responsible for code interpretation and review.

(4) a description of any alternative methods for achieving the purpose of the proposed rule that were seriously considered by the agency and the reasons why they were rejected in favor of the proposed rule

The Department did not review or consider any other national model codes because previous editions of the IMC and the IFGC have been adopted in Minnesota and the IMC and the IFGC coordinate with other International Code Council codes that are incorporated by reference into the Minnesota State Building Code.

(5) 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 probable costs of complying with the proposed rules are negligible. The proposed rule newly requires carbon monoxide alarms be placed in new and existing rooms of commercial buildings that contain a fuel burning appliance used to control environmental conditions. The cost to install a carbon monoxide alarm in an existing building is anticipated to be between \$20 and \$40 and to be between \$30 and \$50 for a new building. Any costs incurred by the costs of the purchase and installation of a carbon monoxide alarm for a room containing a fuel burning appliance is minimal particularly when compared to the life-safety protection provided by the carbon monoxide alarm.

Any additional costs associated with complying with the proposed rules are most likely to be associated with necessary repair or replacement of existing installations, control devices, and materials to achieve compliance with new standards. Existing installations are not required to be removed, altered or abandoned and can continue use if lawfully in existence at the time of code adoption. That is, this code is not retroactive except to the extent a mechanical system has additions, alterations, renovations or repairs. There may also be costs associated with education related to the amended portions of Mechanical and Fuel Gas Codes.

While some specific requirements of the proposed rules may be considered more restrictive than the current rules, others are less restrictive. Similarly, some proposed rules have aspects that could add cost but result in cost savings. For example, requiring the carbon monoxide and nitrogen dioxide system to trigger the ventilation system might cost more for the initial installation/equipment but there is cost savings because the ventilation will not run continuously as it does under the current rule. Any increase in costs will be passed along to the building owner or manager.

(6) 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 Department anticipates the probable consequences of not adopting the proposed rules include confusion with application and enforcement of outdated codes. The family of ICC Codes is designed to work together as they reference each other within the body of each individual model code provision. The Department is in the process of adopting several of the 2018 ICC Codes. Therefore, if these proposed rules are not adopted, it could create confusion or conflict with other rule chapters that adopt and incorporate the 2018 ICC model codes, particularly when they reference the Mechanical and Fuel Gas Codes.

Another consequence of not adopting the proposed rule would be using outdated materials and methods and the costs associated with that because the Department currently administers and enforces the 2012 IMC and IFGC. Older methods may prove to be less efficient and outdated materials might be more difficult to obtain. Additionally, the IMC and IFGC book publisher might discontinue publishing the older code book editions because it is no longer cost-effective to keep in print. Therefore, failure to update the Mechanical and Fuel Gas Codes would

have a negative impact on the administration, safety, application and enforcement of Minnesota's mechanical and fuel gas rules.

(7) an assessment of any differences between the proposed rule and existing federal regulations and a specific analysis of the need for and reasonableness of each difference

CFR Title 24, part 3280, subpart H, regulates gas piping, oil piping and heating and air-conditioning for manufactured homes. In Minnesota Rules, chapter 1350, the Department has authority to administer these regulations on behalf of the United States Department of Housing and Urban Development. As a result, the Federal regulations supersede the requirements in the proposed rules for gas piping, oil piping, and heating and air-conditioning in manufactured homes. There are no federal regulations that address the scope of the mechanical and fuel gas codes for permanent structures such as in chapter 1346.

(8) an assessment of the cumulative effect of the rule with other federal and state regulations related to the specific purpose of the rule. . . . '[C]umulative effect' means the impact that results from incremental impact of the proposed rule in addition to other rules, regardless of what state or federal agency has adopted the other rules. Cumulative effects can result from individually minor but collectively significant rules adopted over a period of time.

There is no cumulative effect related to the specific purpose of the rules. The purpose of the proposed Mechanical and Fuel Gas Codes are to regulate the design, installation, maintenance, alteration and inspection of mechanical systems that are permanently installed and utilized to provide control of environmental conditions and related processes within buildings and the installation of fuel gas piping systems, fuel gas appliances, gaseous hydrogen systems and related accessories in accordance with the IFGC. There are no other rules or statutes that regulate mechanical and fuel gas systems. Although there is no cumulative effect related to the specific purpose of the rule, it is one chapter of the twenty-two chapters that make up the Minnesota State Building Code, which is a single set of coordinated building construction regulations that apply throughout the state of Minnesota. There are no other building codes that can be used or enforced in this state. These rules are coordinated as part of the Minnesota State Building Code and with other state agencies' non-building regulations, when applicable.

PERFORMANCE-BASED RULES

Minnesota Statutes, section 326B.106, subdivision 1, authorizes the Department to establish by rule a code of standards for construction. This statute requires the code to "conform insofar as practicable to model building codes generally accepted and in use throughout the United States." At the same time, this statute mandates that, "to the extent possible, the code must be adopted in terms of desired results instead of the means of achieving those results, avoiding wherever possible the incorporation of specifications of particular methods or materials."

The 2018 IMC and IFGC establish minimum regulations for mechanical and fuel gas systems using both prescriptive and performance-based provisions, with an emphasis on performance-based provisions. The proposed rules that contain amendments to the 2018 IMC

and IFGC incorporate the philosophy required by Minnesota Statutes, section 326B.106, subdivision 1 to the extent possible while also maintaining a clear, enforceable, user-friendly code.

ADDITIONAL NOTICE

This Additional Notice Plan was reviewed by the Office of Administrative Hearings and approved in an order dated October 3, 2019, issued by Administrative Law Judge Eric L. Lipman.

Our Notice Plan also includes giving notice required by statute. We will mail or email the Dual Notice of Intent to Adopt to Rules to everyone who has registered to be on the Department's rulemaking mailing list under Minnesota Statutes, section 14.14, subdivision 1a. We will also give notice to the Legislature per Minnesota Statutes, section 14.116.

The Department will mail or email the Dual Notice to the following interested parties:

1. American Institute of Architects Minnesota (AIA Minnesota)
2. American Society of Mechanical Engineers -Minnesota Section
3. Association of Minnesota Building Officials (AMBO)
4. Builders Association of Minnesota (BAM)
5. Builders Association of the Twin Cities – Housing First (BATC)
6. Building Owners and Managers Association - Greater Minneapolis (BOMA)
7. CCAC Interested Parties List
8. Fire Marshals Association of Minnesota
9. Hospitality Minnesota
10. League of Minnesota Cities
11. Minnesota Lodging Association
12. Minnesota Manufactured Housing Association (MMHA)
13. Minnesota Mechanical Contractors Association (MMCA)
14. Minnesota Pipe Trades Association
15. Minnesota Plumbing-Heating-Cooling Contractors Association (PHCC)
16. Minnesota Resort and Campground Association
17. Minnesota Restaurant Association
18. Minnesota State Fire Marshal Division
19. Minnesota State Fire Chiefs Association
20. Minnesota Plumbing Board
21. Minnesota Society of Professional Engineers
22. Minnesota Utility Contractors Association
23. UNITE HERE Local 17 (Minneapolis)
24. UNITE HERE Local 21 (Rochester)

The Additional Notice Plan does not include notifying the Commissioner of Agriculture because the rules do not affect farming operations per Minnesota Statutes, section 14.111.

CONSULTATION WITH MMB ON LOCAL GOVERNMENT IMPACT

As required by Minnesota Statutes, section 14.131, the Department consulted with the Commissioner of Minnesota Management and Budget (MMB) concerning the fiscal impact and benefits the proposed rules may have on units of local government. This was done on August 20, 2019, by providing MMB with copies of the Governor's Office Proposed Rule and SONAR Form, the proposed rules, and the near-final SONAR. On October 2, 2019, the Department received a memorandum dated the same day from MMB Executive Budget Officer Laurena Schlottach-Ratcliff which provided general comments and concluded that "local governments will be required to place carbon monoxide alarms in new and existing rooms of commercial buildings that contain a fuel burning appliance used to control environmental conditions. A battery powered alarm usually costs between \$20 and \$40 and a hard wired alarm costs between \$30 and \$50 and must be installed by an electrician. Additionally, local governments may also have costs associated with purchasing new code books (\$450 per person maximum) and any educational expenses (\$170 per person maximum) necessary for the training of enforcement officials."

The Department will submit a copy of its correspondence with MMB and the October 2, 2019, response it received from that agency to OAH at the hearing or with the documents it submits for ALJ review.

DETERMINATION ABOUT RULES REQUIRING LOCAL IMPLEMENTATION

As required by Minnesota Statutes, section 14.128, subdivision 1, the agency has considered whether these proposed rules require a local government to adopt or amend any ordinance or other regulation in order to comply with these rules. Pursuant to Minnesota Statutes, section 14.128, the Department has determined that a local government will not be required to adopt or amend an ordinance or other regulation to comply with these proposed rules. The State Building Code is the standard that applies statewide. Minnesota Statutes, section 326B.121, subdivision 1, mandates compliance with the State Building Code whether or not a local government adopts or amends an ordinance. As a result, an ordinance or other regulation is not required for compliance. If a city wishes that its ordinances accurately reflect legal requirements in a situation in which the State Building Code has superseded the ordinances, then the city may want to amend or update its ordinances.

COST OF COMPLYING FOR SMALL BUSINESS OR CITY

Agency Determination of Cost

As required by Minnesota Statutes, section 14.127, the Department has considered whether the cost of complying with the proposed rules in the first year after the rules take effect will exceed \$25,000 for any small business or small city.¹⁰ The Department has determined that the cost of complying with the proposed rules in the first year after the rules take effect will not exceed \$25,000 for any small business or small city

The proposed amendments adding parts 1346.0313 and 1346.5311 newly requires carbon monoxide alarms to be installed in new and existing rooms of commercial buildings that contain

¹⁰ A small business is "any one business that has less than 50 full-time employees." [Minnesota Statutes, section 14.127](#). A small city is "any one statutory or home rule charter city that has less than ten full-time employees." [Id.](#)

a fuel burning appliance used to control environmental conditions. The purchase and installation of carbon monoxide alarms is an expense for small businesses and cities that own buildings. To mitigate those costs, the proposed rule permits the installation of battery-powered carbon monoxide alarms in existing buildings. A battery-powered carbon monoxide alarm typically costs between \$20 and \$40 and is easily installed. The alternative is a carbon monoxide alarm that receives its power from the building wiring (a.k.a. “hard-wired”) and costs between \$30 and \$50 and must be installed by an electrician. An electrician must install a hard-wired carbon monoxide alarm because the wiring is not exposed and walls may have to be opened up to access building wiring. The cost to have an electrician install a hard wired carbon monoxide alarm in an existing building can be several hundred dollars, in addition to costs to repair the wall that was opened up. In new buildings, a hard-wired carbon monoxide alarm is to be placed in the room with the fuel-burning appliance. However, the building’s wiring is exposed and the International Building Code (“IBC”) requires carbon monoxide alarms installed in other parts of new buildings to be hard-wired. As a result, there is little additional expense to require hard-wired carbon monoxide alarms in new buildings.

The costs associated with the purchase and installation of a carbon monoxide alarm in a room containing a fuel-burning appliance is minimal particularly when compared to the life-safety protection provided by the carbon monoxide alarm. A malfunctioning or poorly-vented fuel-burning appliance may elevate carbon monoxide levels in a room to hazardous levels. Prolonged exposure to carbon monoxide can result in permanent heart and brain damage, and possibly death. This is especially dangerous for technicians who service fuel burning appliances but also poses risks to building occupants.

LIST OF WITNESSES

If these rules go to a public hearing, the Department anticipates having the following witnesses testify in support of the need for and reasonableness of the rules:

1. Staff from the Department of Labor and Industry; and
2. Members of the 1346 Technical Advisory Group.

RULE-BY-RULE ANALYSIS

2018 International Mechanical Code

NOTE.

Many code sections in the 2012 IMC have been renumbered in the 2018 IMC so the rule is amended to reflect these renumbered sections where applicable. Throughout the rule, grammatical changes are made to clarify the requirements. This includes modifying numeric formats to provide clarity to the user. The term “modify” (and its derivations) is generally used to describe the changes to the IMC by the rules; and “amend” (and its derivations) is generally used to refer to the rules or changes to the current rules.

1346.0050 TITLE; INCORPORATION BY REFERENCE.

The proposed rule amendment changes the rule range from 1346.0050 to 1346.1606 because sections 1346.1503 through 1346.1606 are part of the Minnesota Mechanical Code but is incorrectly not included in the current rule. The language replaced prior language through Revisor edit. It is necessary and reasonable to amend the rule to reflect the accurate rule part range that includes the entire Minnesota Mechanical Code.

The proposed rule amendment incorporates by reference the 2018 edition of the IMC to replace the 2012 edition, incorporates by reference the 2017 edition of the NFPA 96 Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations (“NFPA 96”) to replace the 2012 edition, newly incorporates by reference the 2016 edition of ANSI/ASHRAE 62.2 Ventilation and Acceptable Indoor Air Quality in Residential Buildings (“ASHRAE 62.2”) and newly incorporates by reference chapters 1 through 9 of the 2016 edition of ANSI/ASHRAE 154 Ventilation for Commercial Cooking Operations (“ASHRAE 154”).¹¹ ASHRAE 62.2 is an acceptable alternative to the ventilation requirements for residential dwellings located in Minnesota Rules, chapter 1322, Residential Energy Code. *See* part 1346.0401 below for a full explanation of this change and statement of why it is necessary and reasonable. The IMC contains requirements for ventilation of commercial cooking operations but these provisions conflict with the provisions of NFPA 96, resulting in confusion for designers, building officials, and fire safety officials. As a result, the proposed amendments to this chapter replace the IMC requirements for commercial kitchens with the requirements in ASHRAE 154. The 2011 edition of ASHRAE 154 is included as a supplemental standard in the existing Minnesota Rules, part 1346.1500. The requirements in ASHRAE 154 are consistent with the requirements of NFPA 96.

ASHRAE 154 is the product of scientific research conducted by ASHRAE, the leading organization on commercial kitchen ventilation research and standards development. ASHRAE 154 provides a more comprehensive set of standards for commercial kitchen ventilation than the IMC. Design professionals use ASHRAE 154 to design commercial kitchen ventilation systems, which includes the design for ducts serving Type II hoods. Because ASHRAE 154 is an industry recognized standard with comprehensive requirements for ducts serving Type II hoods, it is reasonable to require ducts to comply with ASHRAE 154.

Both ASHRAE 154 and NFPA 96 address hood vents in food service establishments however there are some complementary differences. For example, ASHRAE 154 covers both Type I and Type II hoods while NFPA 96 covers only Type I hoods. NFPA 96 has some fire suppression standards that are not included in ASHRAE 154. Therefore, while there is some overlap between the two standards, they really complement each other to provide clear, comprehensive standards for hoods and ducts in food service establishments. *See* parts 1346.0506, 1346.0507, and 1346.0508 below for a full explanation of this change and why it is necessary and reasonable.

¹¹ “ANSI” is the abbreviation for the American National Standards Institute, the institute that “oversees the creation, promulgation and use of thousands of norms and guidelines that directly impact businesses in nearly every sector.” *See* https://www.ansi.org/about_ansi/overview/overview?menuid=1. “ASHRAE” is the abbreviation for the American Society of Heating, Refrigerating and Air-Conditioning Engineers, an organization whose mission is to “advance the arts and sciences of heating, ventilating, air conditioning and refrigerating to serve humanity and promote a sustainable world.” *See* <https://www.ashrae.org/about>.

1346.0202 GENERAL DEFINITIONS.

Commercial cooking appliance. The proposed rule amendment replaces the definition for “commercial cooking appliance” in the 2018 IMC with the definition in ASHRAE 154. The modification clarifies commercial cooking appliances are appliances used in a food-service-establishment kitchen and appliances intended for residential use are considered commercial appliances when installed in a commercial food-service-establishment. These modifications are necessary to clarify any cooking appliance used in a food-service-establishment kitchen is a commercial cooking appliance and must be ventilated as such.

Ready access (to). The definition for “ready access (to)” is being deleted because the term is defined in the 2018 IMC. The definition in the Minnesota amendment defines “ready access (to)” as “without requiring the use of portable access equipment,” meaning that equipment or appliances attached to the ceiling and requiring the use of ladders or lifts to access are not considered equipment or appliance a person has “ready access (to).” The Minnesota amendment conflicts with other sections of the code that consider appliances or equipment requiring ladders or lifts to reach as appliances and equipment a person has “ready access (to).” As a result, the definition for “ready access (to)” in the rule part conflicts with other sections of the code. It is reasonable to delete the current definition of “ready access (to)” from subpart 1 and use the definition in the IMC to provide consistency.

1346.0303 SECTION 303 EQUIPMENT AND APPLIANCE LOCATION.

Section 303.8. Section 303.8 does not allow mechanical systems to be located in an elevator shaft. The proposed rule deletes section 303.8 for consistency with Minnesota Rules, chapter 1307, the Minnesota Elevator Code. Section 303.8 conflicts with the provisions of ASME A17.1/CSA B44-2010, Safety Code for Elevators and Escalators (“ASME A17.1/CSA B44-2010”) as incorporated by reference in Minnesota Rules, chapter 1307.¹² ASME A17.1/CSA B44-2010 permits mechanical equipment, specifically air conditioning equipment, in the elevator shaft in order to cool elevator components and machinery. In a separate rulemaking, Minnesota Rules, chapter 1305, the Minnesota Building Code, is being amended to permit mechanical equipment in the elevator shafts in order to heat or cool the equipment within the elevator shaft.¹³ The proposed deletion of section 303.8 is necessary for consistency with other chapters of the Minnesota State Building Code and for the cooling or heating of elevator components and machinery so they function safely and correctly.

1346.0306 SECTION 306, ACCESS AND SERVICE SPACE.

Subpart. 1. Section 306.5, Mechanical equipment and appliances on roofs or elevated structures. The proposed rule renumbers subsection 306.5.1 Permanent ladders to

¹² See [Minn. R. 1307.0020](#). Chapter 1307 is currently undergoing rulemaking. The proposed rule updates the reference to ASME A17.1/CSA B44-2010 to ASME A17.1/CSA B44-2016. The 2016 edition also permits mechanical equipment in the elevator shaft.

¹³ See [1305 rulemaking docket](#). Specifically, proposed rule part 1305.3302, subpart 4 amends IBC section 3002.9.2 to read: “Mechanical systems and mechanical components in hoistways shall be limited to those serving the hoistway. Mechanical systems serving the hoistway shall not serve other portions of the building.” The term “hoistway” means elevator shaft.

subsection 306.5.3 for consistency with numbering in the 2018 IMC.

Subsection 306.5.3 Sloped roofs has been renumbered to 306.5.1 for consistency with numbering in the 2018 IMC.

All subpart numbering is deleted because the modified subsections in the subparts fall under the umbrella created in subpart 1 where section 306.5 is amended, which includes all 306.5 subsections.

1346.0307 SECTION 307, CONDENSATE DISPOSAL.

The proposed rule adds this new rule part to delete section 307.3 to permit the equipment and appliance to continue to operate in the event their condensate pump fails. IMC section 307.3 requires that equipment and appliances turn off if the condensate pump fails. In Minnesota, the equipment and appliance are necessary to control and maintain the temperature within the building. If the equipment and appliance are prevented from operating, then the temperature within the building can drop below freezing during the winter months. Equipment, appliances, and systems can be damaged by freezing temperatures within the building. For example, the water distribution system could fail from low temperatures and consequently require extensive repairs with large costs. The damage to freezing equipment, appliances, and systems can be more extensive and costly than the damage caused by equipment and appliances continuing to operate when the condensate pump fails. If equipment and appliances continue to operate when the condensate pump fails, condensation can gather and potentially cause some water to pool but the building temperature will not fall below freezing. It is reasonable to delete section 307.3 because it is necessary for buildings to be heated during the winter months to prevent damage to building equipment, appliances, and systems.

1346.0313 SECTION 313, CARBON MONOXIDE ALARMS.

Section 313.1, General The proposed rule modifies the 2018 IMC by adding section 313 to require carbon monoxide alarms in new and existing rooms containing fuel-burning appliances, such as furnaces and boilers, that are used to control environmental conditions. A malfunctioning or poorly-vented fuel-burning appliance can elevate carbon monoxide levels in a room to hazardous levels. Prolonged exposure to carbon monoxide can result in permanent heart and brain damage, and possibly death. Technicians servicing fuel-burning appliances are at particular risk of carbon monoxide poisoning due to the time they spend in enclosed spaces with the fuel-burning appliance. Requiring carbon monoxide alarms in rooms containing fuel burning appliances that control environmental conditions is a cost-effective safety measure that alerts technicians and building occupants to unsafe levels of carbon monoxide in a room with fuel-burning appliances.

The two exceptions to section 313.1 are for boilers that are regulated by Minnesota Rules, chapter 5225, and for fuel-burning appliances that are located in residential buildings and regulated by Minnesota Rules, chapter 1309, the International Residential Code. Chapter 5225 regulates boilers of a greater capacity than those regulated by this chapter. As result, boilers regulated by chapter 5225 are inspected by different inspectors than those who enforce chapter 1346 and the boilers are regulated under their own statutes and standards. Minnesota Rules,

chapter 1309, contains requirements for carbon monoxide alarms for residential dwellings, and therefore residential dwellings are exempt from this section.

Section 313.2, Carbon monoxide alarms. This section is added to specify that carbon monoxide alarms subject to 313.1 must comply with the requirements described in sections 313.2.1 through 313.2.1.4 as described below.

Section 313.2.1 Power Source. Section 313.2.1 requires the carbon monoxide alarms installed in rooms of new buildings containing the fuel-burning appliance to receive their power from the building wiring and to be equipped with a battery as a back-up power source. Specifically, the rule refers to “commercial source” and “commercial power.” “Commercial source” and “commercial power” simply means power provided to a building by a public utility (e.g., Xcel Energy, CenterPoint Energy, etc.). This is consistent with the power source requirements for carbon monoxide detectors located in section 915 of the International Building Code (“IBC”).¹⁴ It is reasonable to require carbon monoxide alarms to receive their power from the building’s wiring when they are installed in new rooms with fuel-burning appliances when possible because that is the most reliable power source. When a building is new construction, it is easy and cost-effective to plan for this wiring from the beginning or to add this during construction as the wiring is already exposed, allowing for easy installation of hard-wired carbon monoxide alarms. Requiring a battery backup power source is an inexpensive way to ensure the carbon monoxide alarm always has power.

The exceptions to section 313.2.1 permit the use of battery-powered carbon monoxide alarms in buildings without commercial power and existing rooms that contain a fuel-burning appliance. It is reasonable to exempt buildings without a commercial power source from the requirement because the building does not have wiring to provide power to the carbon monoxide alarm. Adding wiring and commercial power service could cost thousands of dollars and would be unduly burdensome. It is also reasonable to allow battery-powered carbon monoxide alarms in existing buildings because hard wiring carbon monoxide alarms can cost several hundred dollars due to the electrical work required to access the wiring in the walls. The added expense to install wiring in an existing building shifts the cost-benefit analysis as compared to a new room. Without a battery-powered option for existing rooms, the cost of wiring an existing room might deter people from complying with this requirement and result in no carbon monoxide alarm at all. Battery-powered carbon monoxide alarms are a cost-effective means of alerting building occupants to the presence of dangerous levels of carbon monoxide. The first exception is consistent with the IBC, which allows for battery-powered carbon monoxide alarms when a commercial energy source is not available. The second exception is consistent with the International Existing Building Code (“IEBC”) and the International Fire Code (“IFC”) that allow carbon monoxide alarms that are solely battery operated in existing rooms. Both the IEBC and the IFC are incorporated by reference into Minnesota rules.¹⁵ It is necessary and reasonable to have consistent requirements for similar circumstances across the various chapters of the Minnesota State Building Code.

¹⁴ The IBC is adopted, with amendments, in Minnesota and is chapter 1305 of the Minnesota State Building Code.

¹⁵ See Minnesota Rules, chapter 1311 for the IEBC, as amended in Minnesota, and chapter 7511 for the IFC, as amended in Minnesota.

Section 313.2.1.2, Listings. This section requires carbon monoxide alarms to be listed in accordance with UL 2034, Standard for Single and Multiple Station Carbon Monoxide Alarms (“UL 2034”). A UL-listed device is one that UL has tested and determined meets specific safety requirements.¹⁶ It is reasonable to require the carbon monoxide alarm device to meet a commonly-used life safety standard to ensure it was designed properly and meets industry-accepted benchmarks. Other ICC codes that are incorporated by reference into the Minnesota State Building Code require carbon monoxide alarms to be listed in accordance with UL.¹⁷

Section 313.2.1.3, Carbon monoxide alarms. This section permits the use of combination devices that are both a carbon monoxide alarm and smoke alarm in place of single device carbon monoxide alarms. The combination carbon monoxide and smoke alarm must be listed in accordance with UL 2034 and UL 217 Standard for Smoke Alarms. Again, other ICC codes incorporated by reference into the Minnesota State Building Code require combination carbon monoxide and smoke alarms to be listed in accordance with UL. Combination carbon monoxide and smoke alarms perform the same function as carbon monoxide alarms but also provides fire safety without additional wiring or visual clutter. Therefore, combination alarms are a reasonable, acceptable alternative to alarms that alert building occupants only to the presence of abnormal levels of carbon monoxide.

Section 313.2.1.4, Carbon monoxide detection systems. This section permits the use of a carbon monoxide detection system in place of a carbon monoxide alarm. A carbon monoxide detection system consists of separate devices that are interconnected and alerts a central monitoring station of the presence of abnormal levels of carbon monoxide in any part of the building where the devices are placed. The carbon monoxide detection system must comply with NFPA 720 – Standard for the Installation of Carbon Monoxide (CO) Detection and Warning Equipment, and be listed in accordance with UL 2075. NFPA 720 and UL 2075 are commonly-used life-safety standards for carbon monoxide detection systems. Carbon monoxide detection systems are significantly more expensive than carbon monoxide alarms because they have a notification component that notifies a person at a continuously occupied location. Carbon monoxide detection systems are not reasonably necessary in most cases. Therefore, it is reasonable to permit the use of carbon monoxide detection systems and not require them where alarms are sufficient. It is necessary and reasonable to allow a carbon monoxide detection system in lieu of an alarm because it provides the same protection as an alarm but has added benefits such as the interconnected alert system.

1346.0401 SECTION 401, GENERAL.

Subpart 1. Section 401.2, Ventilation required. Section 401.1 of the 2012 IMC was renumbered to section 401.2 in the 2018 IMC; the 2018 numbering is proposed. The current rule adds an exception to the scope of section 401 that exempts residential buildings that comply with the ventilation requirements in chapter 1322.¹⁸ The proposed rule modifies section 401.2 “Ventilation required,” of the 2018 IMC by deleting some language and modifies the exception.

¹⁶ UL is a “global independent safety science company with more than a century of expertise innovating safety solutions from the public adoption of electricity to new breakthroughs in sustainability, renewable energy and nanotechnology.” https://standardscatalog.ul.com/standards/en/standard_2034

¹⁷ See Minnesota rules, chapters 1305 (IBC) and 1309 (IRC).

¹⁸ The current exception refers only to “residential buildings” but this term includes “dwelling units.”

The deleted language addresses ventilation requirements in dwelling units, which is addressed in the proposed exception. Residential buildings and dwelling units continue to be excluded from the scope of 401.2 because ventilation for residential buildings and dwelling units is addressed in Minnesota Rules, chapter 1322, the Residential Energy Code. However, the proposed rule adds an additional compliance option, ASHRAE 62.2. The proposed rule amends section 401.2 for consistency with the exception and amends the exception to clarify that dwelling units are included and that they must comply with the ventilation requirements of chapter 1322 or ASHRAE 62.2.

The proposed rule allows ASHRAE 62.2 Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings (“ASHRAE 62.2”) as an alternative to residential ventilation requirements located in Minnesota Rules, chapter 1322, because it is an industry-accepted standard for residential ventilation. Minnesota Rules, chapter 1322, and ASHRAE 62.2 have the same requirements for ventilation air change rates, ventilation controls, and ventilation system installation. ASHRAE 62.2 permits designers more flexibility in the design of the ventilation system and how to achieve the requirements. Chapter 1322 is a more prescriptive option while ASHRAE 62.2 is the more performance-based option. Because ASHRAE 62.2 has the same performance requirements for ventilation as Minnesota Rules, chapter 1322, it is reasonable to permit the use of ASHRAE 62.2 as an alternative.

Subp. 2. Section 401.4, Intake opening location. The proposed rule amendment corrects the reference to “501.2.1” by replacing it with a reference to “501.3.1.” There is no section 501.2.1 in the 2012 IMC, the current Minnesota Mechanical Code or the 2018 IMC. This is a typo. The correct reference is section 501.3.1. Section 501.3.1 is not amended in chapter 1346 currently or in the proposed rule. There is no substantive change. The proposed rule is necessary and reasonable as it corrects a typo.

1346.0404 SECTION 404, GARAGES.

Subpart 1. Section 404.1, Enclosed parking garages. The proposed rule amendment clarifies that this regulation applies to enclosed parking garages. The proposed rule amendment also requires all enclosed parking garages to be equipped with both a carbon monoxide detection device and a nitrogen dioxide detection device. The current rule describes conditions that, if met, triggers the requirement to have a carbon monoxide detector and/or a nitrogen dioxide detection device that will activate the ventilation system. Gas-powered vehicles emit both carbon monoxide and nitrogen dioxides gases, which are hazardous to human life and safety in high concentrations. All enclosed parking garages will accommodate gas-powered vehicles thereby requiring both a carbon monoxide detector and nitrogen dioxide detector. Even if some vehicles using enclosed parking garages will be electric, the number of gas-powered vehicles far surpass the number of electric vehicles. Therefore, it is reasonable to amend this subpart to require ventilation systems in enclosed parking garages to activate upon detection of abnormally high concentrations of either or both gases.

The subpart is also amended to include UL listing and installation requirements for carbon monoxide detection devices and nitrogen dioxide devices. These requirements correspond with the listing and installation requirements in the 2018 IMC. It is reasonable to require the

carbon monoxide detection devices and nitrogen dioxide devices to meet a commonly-used life safety standard to ensure they are properly designed for the intended function.

Subp. 2. Section 404.2, Occupied spaces accessory to public garages. The proposed rule amendment is renumbered to subpart 3 because the section pertaining to this subject was renumbered in the 2018 IBC. The section reference number “403.3” is renumbered to “403.3.1” because the corresponding section reference number was changed in the 2018 IMC. Otherwise, the language remains unchanged.

Subp. 3. Section 404.3, Minimum exhaust. The proposed amendment is renumbered to subpart 2 because of renumbering and reformatting changes to the 2018 IMC. The language is modified to add “served” following “floor area” to clarify the requirements are referring to the floor area served by the mechanical ventilation system.

1346.0501 Section 501, GENERAL

Subp. 2. Section 501.4 Pressure equalization. The proposed rule amends subpart 2 by deleting “IMC” before “Table 501.4.1,” “Table 501.4.2,” and “section 501.4.2” because these tables and sections are not part of the 2018 IMC but rather are added by Minnesota Rules, chapter 1346. Referring to these tables as “IMC tables” and “IMC section” has caused confusion with code users who are uncertain as to whether the tables are modified IMC tables or completely added by Minnesota rule amendment. The proposed elimination of “IMC” before these references will clarify to code users that the tables are not original to the IMC. For the same reason, Section 501.4.1 is modified to remove “IMC” before a reference to “section 501.4.2” because there is no section 501.4.2 in the original 2018 IMC.

The proposed rule further amends subpart 2 by replacing the phrases “dwelling unit” and “dwelling units” with “dwelling” and “dwellings,” respectively, in sections 501.4.1 and 501.4.3 and tables 501.4.1, 501.4.2, 501.4.3(1), 501.4.3(2), and 501.4.3(3). Section 202 of the 2018 IMC defines the term “dwelling” as “a building or portion thereof that contains not more than two dwelling units.” For example, one- or two-family homes. “Dwelling unit” is defined as “a single unit providing complete, independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking and sanitation.” Examples of dwelling units include individual apartment units and individual condominium units. Prior to the adoption of the 2012 IMC, Section 501.4 applied only to one- and two-family homes. During the adoption of the 2012 IMC, this subpart was amended to apply to apartments and condominiums (a.k.a. dwelling units).

The application of Section 501.4 and its subsections to apartments and condominiums (dwelling units) resulted in unintended consequences. For example, using the Tables to determine makeup air for some dwelling unit arrangements meant some heating/cooling equipment could not be used because the equipment manufacturer’s specifications conflicted with the tables. In particular, this was an issue because of the increase in the number of small “efficiency” units being built. Some builders were able to use the heating/cooling equipment they preferred to use by getting it approved as an alternate method. One reason a builder would choose heating/cooling equipment that does not comply with the tables in dwelling units is because the equipment was not appropriate for that particular building and as a result, too much

makeup air would be added to dwelling units, particularly to dwelling units equipped with electric appliances (e.g., electric dryers). This can result in an air pressure imbalance within the dwelling unit.

The other possible consequence of using heating/cooling equipment compliant with the tables in dwelling units is more expensive equipment. That is, the air pressure within the dwelling unit is fine but came at a higher cost than if other equipment was used that did not comply with the tables. Because the current code was either not used when applied to dwelling units and alternate methods were used instead or the more expensive option that complied with the tables was used, there is little concern that dwelling units were constructed with inappropriate equipment.

By amending this subpart so it no longer applies to apartments and condominiums (dwelling units), dwelling units will be treated like all other buildings as described in part 1346.0040, Scope. There are many considerations to take into account when determining makeup air for a dwelling unit including the size of the building containing the dwelling unit, the number of dwelling units, the size of the dwelling units, and the appliances within the dwelling units. The size of dwelling units can range from small 350 square foot apartments to condominiums over 5,000 square feet in size. Buildings often contain dwelling units of different sizes as well. For example, an apartment building can contain units that are between 350 square feet to over 1,000 square feet. The dwelling unit can contain all vented combustion appliances, no vented combustion appliances, or a combination of vented combustion appliances and electric appliances. Because of these factors, it is difficult to use prescriptive requirements, such as the tables, or methods to determine makeup air for dwelling units. The Minnesota Mechanical Code addresses all these issues. The application of Section 501.4 to dwelling units can result in too much or too little makeup air in dwelling units.

The proposed amendment deletes the exception to subsection 501.4.1. The exception to section 501.4.1 permits makeup air for new dwellings to be determined using a test in accordance with ASTM Standard E1998-02, Standard Guide for Assessing Depressurization-Induced Backdrafting and Spillage from Vented Combustion Appliances or a test approved by the building official. The exception applies only to arrangements with vented combustion appliances and should not be used to determine makeup air for arrangements with only electric appliances or both vented combustion appliances and electric appliances. This has caused confusion about whether the exception applies when both types of appliances are present. Applying the exception incorrectly (e.g., to dwelling units with both vented combustion appliances and electric appliances) is costly. The cost of incorrect application could mean changing the heating/cooling equipment to meet the criteria in the tables. Deleting the exception and the change from “dwelling units” to “dwellings” means combustion air for new dwellings must be determined using Table 501.4.1. Table 501.4.1 has a column that can be used to determine makeup air for dwellings with both types of appliances.¹⁹ The proposed deletion of the exception to Section 501.4.1 is necessary and reasonable because it caused more confusion than the good it offered.

¹⁹ See column titled “Multiple appliances that are atmospherically vented gas or oil appliances or solid fuel appliances.”

1346.0505 SECTION 505, DOMESTIC KITCHEN EXHAUST APPLIANCES.

This rule part is amended by renumbering section number “505.1” to “505.2” and deleting the existing rule language. The existing rule language is replaced with the 2018 IMC section 505.2 language with an added item, item number 5. Item number 5 is added to the 2018 IMC language to direct the code user to other rule parts to clarify the requirements for make-up air and capacities for domestic kitchen exhaust hoods not covered in items 1-4. The deleted rule language is no longer necessary because it is addressed in section 505.3 of the 2018 IMC. This modification to section 505.2 is necessary and reasonable because all domestic kitchen exhaust hood types should be addressed and this clarifies where code users can find additional, existing requirements for this type of domestic cooking exhaust equipment.

1346.0506 SECTION 506, COMMERCIAL KITCHEN HOOD VENTILATION SYSTEM DUCTS AND EXHAUST EQUIPMENT.

This rule part is modified by replacing the word “appliances” in the title with the word “equipment” for consistency with the title of section 506 of the 2018 IMC.

Subpart 1. Section 506.3, Ducts serving Type I hoods. The current rule requires ducts serving Type I hoods to comply with NFPA 96, Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations (“NFPA 96”). The proposed rule adds that the ducts must also comply with ASHRAE 154 Ventilation for Commercial Cooking Operations. The proposed rule is not a substantive change to the requirements for ducts serving Type I hoods because the existing rule already requires compliance with ASHRAE 154 in part 1346.0507, subp. 2. The proposed rule moves the two requirements into one section. It is easier for the code user to see and understand all the necessary requirements when they are in one section part as presented in this proposed amendment. NFPA 96 provides a more comprehensive set of standards for ducts serving Type I hoods and the ventilation of commercial kitchens. Type I hoods are placed above commercial cooking appliances that produce smoke and grease so ducts serving Type I hoods become grease laden. Grease has ignition potential so ducts serving Type I hoods must comply with NFPA 96 to ensure a minimum level of life-safety in commercial kitchens. Functionally, the proposed rule replaces IMC section 506.3 and all its subsections. There is a proposed amendment to part 1346.0507, subp. 2, below so this requirement will not be duplicated in both sections. Compliance with both NFPA 96 and ASHRAE 154 is necessary and reasonable because NFPA provides standards for hoods in general, particularly for fire safety precautions, and ASHRAE 154 provides standards for Type I and Type II hoods specifically as well as testing requirements.

Subp. 2. Section 506.4, Ducts serving Type II hoods. The current rule deletes sections 506.3.1 to 506.3.2.4 and replaces the requirements with chapters 1 to 10 and 12 to 15 of NFPA 96. Because the proposed rule, in subpart 1 above, already deletes sections 506.3.1 to 506.3.2.4, the current rule as written is no longer necessary. The proposed rule instead modifies section 506.4 of the 2018 IMC, ducts serving Type II hoods, by adding a reference to ASHRAE 154. ASHRAE 154 was written and coordinated with NFPA 96 to address the areas not covered in the NFPA 96. Although Type I hoods are covered in the NFPA 96, Type II hoods are not. ASHRAE 154 provides testing requirements of ductwork for Type II hood systems. It is necessary and

reasonable to require Type II hoods to comply with the testing requirements in ASHRAE 154 to ensure the ductwork is installed and functioning correctly.

Section 506.4.1, Ducts. The Ducts section has been renumbered from 506.4.2 (see subpart 3 of the current rule) to section 506.4.1. The proposed rule modifies section 506.4.1 of the 2018 IMC to clarify that ducts subject to both positive pressure and conveying moisture-laden air are included and to require ducts meeting certain conditions to be tested. The 2018 IMC requires ducts “subject to positive pressure and ducts conveying moisture-laden air or waste-heat-laden air” to meet the requirements of section 506.4.1; however, ducts may be both subject to positive pressure and convey moisture laden air. The proposed rule clarifies that ducts subject to both positive pressure and that convey moisture laden air are subject to this requirement. The proposed rule also requires the ducts to be tested, as described in subsection 506.4.1.1. Specifically, testing will determine if there is any leakage in the ducts. It is necessary and reasonable to modify the code language to clarify that ducts that are both subject to positive pressure and conveying moisture-laden air must comply with the requirements of this section and to require testing of the ducts to ensure successful construction and installation.

Section 506.4.1.1, Testing. The proposed rule adds this subsection to explain the specific testing requirement referenced in section 506.4.1. Specifically, it requires duct leakage testing in accordance with ASHRAE 154 for duct conditions listed in section 506.4.1. Because of this amendment, subpart 3, “Requirements for existing duct leakage testing,” is no longer necessary and is proposed for repeal. Type II hoods are placed above appliances, such as dishwashers and stoves, that produce heat and steam so duct-leakage testing is necessary to ensure the duct is airtight to remove warm, moisture-laden air from the building.

This modification is necessary and reasonable to ensure uniform testing and enforcement of requirements for ducts serving Type II hoods. Furthermore, it is necessary and reasonable to require ducts serving Type II hoods to comply with ASHRAE 154 in addition to sections 506.4.1 and 506.4.2 to have comprehensive regulation from hood to termination. Specifically, ASHRAE 154 regulates the hood itself, section 506.4.1 provides testing criteria, and section 506.4.2 adds clarity about exhaust terminations.

Subp. 2a. Section 506.5, Exhaust equipment. The current rule deletes section 506.3.2.5. All section 506.3 (including subsections) modifications are addressed in subpart 1 above so the current rule is no longer necessary. The proposed rule amends subpart 2a to delete IMC section 506.5, including the subsections. Section 506.5 addresses exhaust equipment. The proposed rule requires exhaust equipment to be in compliance with NFPA 96 and ASHRAE 154. The proposed amendment is based on input from multiple code users that the current rule is difficult to follow. The proposed rule essentially maintains the same requirements in a clearer format. Rule 1346.0506, subpart 4, which is proposed for repeal below, deletes section 506.5. The proposed rule deletes the same section but relocates the deletion to subpart 2a and adds the explicit requirement to comply with NFPA 96 and ASHRAE 154. The current code requires compliance with NFPA 96 and ASHRAE 154 for exhaust equipment.²⁰ The current rule requirements are piecemeal from multiple sources: Minnesota Rules, ASHRAE 154, and NFPA 96. The proposed

²⁰ See parts 1346.0506 and 1346.0507, which require a Type I or Type II hood to be installed at or above all commercial cooking appliances in accordance with ASHRAE 154.

rule streamlines these requirements into a simple, streamlined rule that requires compliance with ASHRAE 154, NFPA 96, and Minnesota Rules. This streamlined approach is easy for code users to follow. Based on feedback from TAG members, this proposed amendment was one of the most supported amendments to the rule.

Subp. 2b. Sections 506.3.3 to 506.3.13.3. The current rule deletes subsections 506.3.3 to 506.3.13.3. All modifications to subsection 506.3.3 et al. are addressed in subpart 1 above. This rule part is no longer necessary. Therefore, this subpart is proposed to be repealed.

Subp. 3. Section 506.4.2, Ducts. The proposed rule repeals this subpart because the content is in the 2018 IMC whereas it was not in the 2012 IMC.²¹ As a result, this rule part is no longer necessary.

Subp. 4. Sections 506.5 to 506.5.5. The proposed rule repeals this subpart because the amendment to sections 506.5 to 506.5.5 is addressed in subpart 2a as discussed above.

1346.0507 SECTION 507, COMMERCIAL KITCHEN HOODS.

Subpart 1. Section 507.1, General. The proposed rule deletes the existing rule language and adds language requiring Type I hood construction and installation to comply with ASHRAE 154 and NFPA 96 and Type II hood construction and installation to comply with ASHRAE 154.

Like in section 506, the proposed rule maintains essentially the same net requirements but more clearly conveys the requirements. That is, parts of ASHRAE 154, NFPA 96 and Minnesota rules are required currently and in the proposed rule. Instead of the confusing piecemeal format that the current rule uses, the proposed rule clearly states the requirements.

The proposed amendments to this rule part simplify the description of requirements for Type I and Type II hood design, construction, and installation by directing code users to NFPA 96 and ASHRAE 154 rather than incorporating the relevant requirements of NFPA 96 and ASHRAE 154 into the text of the rule. NFPA 96 and ASHRAE 154 are code books that are very familiar to people in the industry. Therefore, it is easier for them to be referred to NFPA 96 and ASHRAE 154 instead of piecemeal explanations in the Minnesota Mechanical Code and IMC, as amended.

The requirements for Type II hood materials in section 507.1.2.1 are relocated from existing subpart 7. It is necessary and reasonable to move this language as a subsection under section 507.1 for logical, consistent organization of the commercial kitchen exhaust hood requirements.

Subp. 2. Sections 507.2 to 507.6.1. The existing language of subpart 2 is deleted and the subpart is amended to delete sections 507.2 to 507.6.1 of the 2018 IMC. Deleted sections 507.2 to 507.6.1 are replaced with NFPA 96 and ASHRAE 154. Specifically, sections 507.1.1, 507.1.2, and 507.1.2.1 require users to comply with NFPA 96 and ASHRAE 154 for the installation of Type I and Type II hoods over commercial kitchen appliances in addition to requirements for hood sizing, exhaust capacity, and performance testing. The existing rule incorporates language

²¹ See section 506.4.1 of the 2018 IMC.

and tables from ASHRAE 154 in addition to language from the 2012 IMC. The proposed amendment simplifies requirements for Type I hoods and Type II hoods by eliminating IMC language and refer code users directly to ASHRAE 154 and NFPA 96. There are not significant substantive differences between the current requirements and the proposed requirements. It is necessary and reasonable to refer to NFPA 96 and ASHRAE 154 in this format instead of the current rule because it is clear when NFPA 96 must be followed and when ASHRAE 154 must be followed.

Subp. 6. Section 507.4, Type I material. The existing rule deletes 2012 IMC section 507.4. The proposed rule repeals this subpart because section 507.4 was renumbered to section 507.2.3 in the 2018 IMC and subpart 2 above deletes section 507.2.3. As a result, this subpart is no longer necessary. There is no resulting substantive change to the existing rule.

Subp. 7. Section 507.5, Type II hood materials. The existing rule amends 2012 IMC section 507.5. The proposed rule repeals this subpart because this language was moved to subsection 507.1.2.1 above. As a result, this subpart is no longer necessary. There is no resulting substantive change to the existing rule.

Subp. 8. Section 507.7, Hood joints, seams, and penetrations. The existing rule amends 2012 IMC section 507.7. The proposed rule repeals this subpart because hood joints, seams and penetrations are addressed in ASHRAE 154 and covered in the proposed rule in subparts 507.1.1 and 507.1.2.

Subp. 9. Section 507.7.1, Type I hoods. This existing rule requires Type I hoods to be in compliance with Chapter 5 of the NFPA. There is no section 507.7.1 in the 2018 IMC. The proposed rule repeals this subpart because the proposed amendment to subpart 1 above already requires the construction and installation of Type I hoods to comply with NFPA 96 and adds ASHRAE 154. It is necessary and reasonable to add ASHRAE 154 as described above. As a result, this subpart is no longer necessary.

Subp. 10. Section 507.8 to 507.11.12. The existing rule deletes 2012 IMC section 507.8 to 507.11.2. There is are no sections 507.8 to 507.11.12 in the 2018 IMC. The proposed rule repeals this subpart because it deletes sections that do not exist. As a result, this subpart is no longer necessary.

Subp. 12. Section 507.14, Noncanopy size and location. This existing rule deletes 2012 IMC section 507.14. There is no section 507.14 in the 2018 IMC. The proposed rule repeals this subpart because it deletes a section that does not exist. As a result, this subpart is no longer necessary.

1346.0508 SECTION 508, COMMERCIAL KITCHEN MAKEUP AIR.

Subpart 1. Section 508.1, Makeup air. The proposed rule amends the current rule language to match the 2018 IMC text except the phrase, “that are provided for commercial cooking appliances” because makeup air should be provided for all commercial kitchen exhaust systems. In commercial kitchen exhaust systems, there are Type I hoods (e.g., over a stove) and Type II hoods (e.g., over a dishwasher) and both need makeup air but Type II hoods might be used to vent (exhaust for) a dishwasher, which is not a “commercial cooking appliance.” Makeup

air is necessary for all exhaust systems, regardless of what specific appliance it is venting (exhausting).

Subp. 2. Section 508.2, Compensating hoods. The existing rule amends section 508.2 by replacing it with general language from ASHRAE 154. The proposed rule deletes the language in the subpart and states section 508.2 is deleted and that compensating hoods shall comply with NFPA 96 and ASHRAE 154. NFPA 96 and ASHRAE 154 provide standards for the location and temperature of makeup air for commercial kitchen cooking operations, which is critical to the proper operation of the exhaust hood system. The makeup air must be supplied in the same space as the exhaust hood, but cannot be too close to create turbulence within the exhaust hood. In winter in Minnesota, the makeup air must also be supplied at a high enough temperature to prevent cold drafts that create turbulence within the exhaust hood, which can cause inadequate capture and containment of the exhaust effluent by the exhaust hood system. The provisions for tempered makeup air and restriction on compensating hoods in NFPA 96 and ASHRAE 154 are similar to the requirements in the current Minnesota Mechanical Code. However, because industry professionals are familiar with both NFPA 96 and ASHRAE 154, it is easier for industry professionals to simply follow those two standards. Furthermore, NFPA 96 addresses fire protection and ASHRAE 154 allows compensating hoods to provide up to 10% makeup air, which is consistent with the rest of ASHRAE 154. Compliance with NFPA 96 is necessary to maintain minimum levels of life-safety and ASHRAE 154 includes regulations for compensating hoods. The proposed rule replacing the existing rule with NFPA 96 and ASHRAE 154 is reasonable because they provide more comprehensive standards than the IMC or the current mechanical code.

1346.0601 SECTION 601, GENERAL. [REPEAL]

This rule part is proposed for repeal for two reasons. First, the 601.1 language in the current rule is identical to the 2018 IMC language. Therefore, the Minnesota amendment is no longer necessary. Second, in the exception, the current rule requires linen chutes and trash chutes to comply with NFPA 82 requirements but does not require that chutes be open to the atmosphere. Both the current rule and the 2018 IMC language provide an exception for ducts discharging combustible material directly into any combustion chamber. The proposed repeal of this rule part will therefore eliminate the exception as applied to linen chutes and trash chutes. Linen chutes and trash chutes are not part of the mechanical system. Section 601 as a whole contains the requirements for duct systems used in HVAC systems and some exhaust systems, which convey air from one part of the building to another, and does not include requirements for linen chutes or trash chutes. Linen chutes and trash chutes are addressed in the IBC because they convey linen and trash²². Therefore, this rule part is no longer necessary and reasonable. Repeal of this rule part is necessary and reasonable.

1346.0602 SECTION 602, PLENUMS.

²² See section 713.13.

Section 602.2.1.7 is renumbered to section 602.2.1.9 to coordinate with numbering changes made in the 2018 IMC. The language of this rule part remains unchanged.

1346.0603 SECTION 603, DUCT CONSTRUCTION AND INSTALLATION.

Subpart 2. Table 603.4. This subpart is repealed because the 2018 IMC contains a similar table addressing minimum sheet metal thickness for the construction of ducts used in single dwelling units.²³ Therefore, this modification is no longer necessary.

Subp. 2a. Section 603.4, Metallic ducts. This subpart is repealed because the 2018 IMC contains similar language addressing construction of metallic ducts. Therefore, this modification is no longer necessary.²⁴

Subp. 3. Section 603.7, Rigid duct penetrations. This subpart is repealed because the 2018 IMC contains language similar to the current rule.²⁵ It is clearer and more user-friendly for the code user to have as few amendments to the 2018 IMC as possible. Therefore, this modification is no longer necessary.

Subp. 4. Section 603.8, Underground ducts. This subpart is repealed because the 2018 IMC is consistent with the current rule language.²⁶ It is clearer and more user-friendly for the code user to have as few amendments to the 2018 IMC as possible. Therefore, this modification is no longer necessary.

Subp. 5. Section 603.8.1, Slope. This subpart is repealed because the 2018 IMC is consistent with the current rule language.²⁷ It is clearer and more user-friendly for the code user to have as few amendments to the 2018 IMC as possible.

Subp. 6. Section 603.8.2, Sealing. This subpart is repealed because the requirement in the 2018 IMC more performance-based than the current rule language. The 2018 IMC language is also clear that the leak test must be consistent with International Energy Conservation Code, also known as the “commercial energy code.” The commercial energy code is a part of the Minnesota State Building Code in Minnesota Rules, chapter 1323.²⁸ Consistent with Minn. Stat. §§ 326B.106, subd. 1 and 14.002, performance-based rules are preferred over prescriptive rules when feasible.²⁹ The modification is no longer necessary.

²³ Minnesota was ahead of the industry when it added the table. The 2012 IMC that is currently incorporated by reference into chapter 1346 also contains a similar table. The conversion to the IMC table instead of the Minnesota amendment is intended to minimize the number of amendments to the 2018 IMC.

²⁴ The 2012 IMC contained similar language as well. The 2018 IMC even more closely followed Minnesota rule language. Conversion to the IMC language instead of the Minnesota amendment is intended to minimize the number of amendments to the 2018 IMC.

²⁵ The 2012 IMC contained similar language as well. Conversion to the IMC language instead of the Minnesota amendment is intended to minimize the number of amendments to the 2018 IMC.

²⁶ The 2012 IMC contained similar language as well. Conversion to the IMC language instead of the Minnesota amendment is intended to minimize the number of amendments to the 2018 IMC.

²⁷ The 2012 IMC contained similar language as well. Conversion to the IMC language instead of the Minnesota amendment is intended to minimize the number of amendments to the 2018 IMC.

²⁸ See <https://www.revisor.mn.gov/rules/1323/>. Specifically, see <https://www.revisor.mn.gov/rules/1323.0403/>.

²⁹ Minn. Stat. § 326B.106, subd. states in relevant part, “To the extent possible, the code must be adopted in terms of

Subp. 7. Section 603.8.3, Plastic ducts and fittings. The current rule allows plastic ducts to be constructed of PVC or high-density polyethylene. The 2018 IMC allows plastic ducts to be constructed of PVC or high-density polyethylene. This subpart is repealed because the 2018 IMC is consistent with the Minnesota modification; the modification is no longer necessary.

Subp. 9. Section 603.9, Joints, seams, and connections. This subpart is repealed because the 2018 IMC contains similar language. In particular, the rule addressed pressure-sensitive tape and other methods when used as a sealant. The 2018 IMC now addresses pressure-sensitive tape and other methods used as a sealant. Therefore, this modification is no longer necessary.

1346.0604 SECTION 604, INSULATION.

Subpart 1.General. The proposed rule amends the first paragraph to add subpart numbering. Currently, there is only one IMC section under 604 modified. The proposed rule modifies another section 604. Therefore, it is necessary and reasonable to indicate the two separate modified sections with subpart numbering.

Subpart 2. Section 604.3, Coverings and linings. The body of section 604.3 is verbatim from section 604.3 of the 2018 IMC. This section provides flammability standards for duct coverings and linings. ASTM E84 and UL 723, ASTM E2231 and ASTM C411 are referenced. ASTM E84 and UL 723 are recognized testing and safety standards for determining the combustibility of material and the amount of smoke it produces. ASTM E84 and UL 723 are thresholds for material and their classification for minimal flame and smoke propagation of the material being used for coverings and linings while, ASTM E2231 is the specimen preparation and mounting procedures to complete the testing. ASTM C411 is the testing method developed to verify the performance of the different forms of thermal insulating materials when exposed to simulated hot-surface application conditions. These standards and testing methods are used to determine the safety and appropriateness of materials and methods in various circumstances. In this case, we are looking at duct coverings and linings. The TAG recommended it be added to the Code because it is already being used as an alternate method, it is effective, safe, and cost-effective. As an exception, it can be used without individual approval each time it is used. Class A rating means the material is less likely to spread fire and produces less smoke than other materials. The other end of the spectrum is Class C materials, meaning the material is highly likely to spread fire and produces much smoke.³⁰

The proposed rule modifies section 604.3 of the 2018 IMC by adding an exception that allows the use of certain spray polyurethane foam as insulating duct covering in residential dwellings where the ducts are located within the floors of spaces that are not heated or cooled, such as a garage, without additional ignition or thermal barrier protection. Spray polyurethane

desired results instead of the means of achieving those results, avoiding wherever possible the incorporation of specifications of particular methods or materials.” Minn. Stat. § 14.002 states in relevant part, “Therefore, whenever feasible, state agencies must develop rules and regulatory programs that emphasize superior achievement in meeting the agency's regulatory objectives and maximum flexibility for the regulated party and the agency in meeting those goals.”

³⁰ See IBC section 803.1.2, showing Class A is Flame spread index 0-25; smoke-developed index 0-450.

foam is different and should be given a special exception. This proposed rule is necessary and reasonable because spray polyurethane foam is a closed-cell insulation that provides adequate insulation without posing moisture risks. Because it is a closed-cell material, no moisture can enter the insulation as the entire piece becomes solid. Comparatively, other insulations are open-cell material. Open-cell materials dry and form a skin covering. If the skin breaks, air gets in, which means humidity and moisture get in. The air gets to the metal duct that it is covering and once the dew point is reached, moisture results, leading to mold and negatively affecting air quality. Because the closed-cell material does not allow air in, even if broken, then no moisture forms, which means no mold to affect air quality. Spray polyurethane foam also provides adequate insulation of the ducts consistent.

Spray polyurethane foam is potentially combustible. When used in living areas of a dwelling, a thermal or ignition barrier is required to prevent ignition of the spray foam. The International Residential Code³¹ requires areas such as garages attached to dwellings to have a thermal or ignition barrier to prevent the spread of fire to living spaces within the dwelling. The ducts addressed in the exception are located in a floor assembly over areas that are not used for living purposes, such as garages. The floor assembly construction provides a sufficient thermal and ignition barrier. Therefore, an additional thermal or ignition barrier is not necessary.

Items 1 and 2 of the exception require the spray polyurethane foam to have sufficient insulating properties to prevent condensation buildup. Condensation in ductwork contributes to mold growth, and ultimately results in poor air quality within the dwelling as described above. It is necessary and reasonable to require the spray polyurethane foam to have qualities that prevent condensation buildup.

The fire hazard posed by spray polyurethane foam is mitigated by item 3 of the exception. Requiring the spray polyurethane foam to have a flame spread index of 25 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E84 or UL 723 is consistent with industry standards.³² A material with flame spread index of 25 or less and a smoke-developed index of 450 or less is ranked as Class A, meaning the spray polyurethane foam is less likely to spread fire and produces less smoke than other materials.

The proposed rule is reasonable because the use of polyurethane spray foam as insulating duct covering will improve the air quality in dwellings and the potential fire hazards are mitigated by requiring the spray polyurethane foam to be ranked as Class A.

1346.1003 SECTION 1003, PRESSURE VESSELS.

The current rule modifies subsection 1003.3 of the 2012 IMC. The proposed rule repeals this part because the 2018 IMC similar language regarding welding on pressure vessels but is updated to current industry standards. There is no substantive difference between the current rule and the 2018 IMC. It is clearer and more user-friendly for the code user to have as few amendments to the 2018 IMC as possible. As a result, this rule part is no longer necessary.

³¹ The International Residential Code is part of the Minnesota State Building Code. *See* Minn. R. 1309.0010, <https://www.revisor.mn.gov/rules/1309.0010/>.

³² See IBC section 803.

1346.1206 SECTION 1206, PIPING INSTALLATION.

Subpart 2. Section 1206.12, Mixing of radiation. The current rule amends IMC section 1206 by adding a new subsection that prohibits mixing radiation with different rates of heat transfer. The proposed rule repeals this subpart because changes in technology and radiators, have made this requirement obsolete. As a result, this subpart is no longer necessary and is being repealed.

Subp. 3. Section 1206.12, Draining and venting. This subpart is amended by renumbering the section reference number from “1206.13” to “1206.12” for consistency with section reference numbers in the 2018 IMC. The 2018 IMC has subsections through 1206.11 and the proposed rule repeals the rule part that currently adds a subsection 1206.12. The language of this amendment is unchanged. Therefore, the proposed rule amendment is necessary and reasonable.

1346.1500 CHAPTER 15, REFERENCED STANDARDS.

Subpart 2. Supplemental standards. This subpart is amended by revising the editions of the supplemental standards to reflect the most current edition of the standard. This subpart also adds a standard to the list, ASHRAE 62.2-2016, as subitem A, because this standard is referenced in the proposed rules and is not in the 2018 IMC list of referenced standards. The subsequent listed standards are re-lettered as a result of adding a new item A. Subitems K and L are two added referenced standards, UL 2034 and UL 217. These two referenced standards have been added because this proposed rule references UL 2034 and UL 217 in part 1346.0313.

2018 INTERNATIONAL FUEL GAS CODE

NOTE.

Throughout the rule, references to the 2012 IFGC have been changed to 2018 IFGC because the Department is incorporating the 2018 edition of this code. Many code sections have been renumbered in the 2018 IFGC so the rule is revised to reflect these renumbered sections.

1346.5050 TITLE; INCORPORATION BY REFERENCE.

This rule part is modified to incorporate by reference the 2018 edition of the International Fuel Gas Code, replacing the 2012 edition.

1346.5202 SECTION 202, GENERAL DEFINITIONS.

Subpart 1. Section 202. The proposed rule deletes the definition for “power vent appliance” because the definition for “appliance, vented” in the 2018 IFGC is sufficiently similar but also clarifies that the vent system must be approved. Using the terminology in the IFGC is preferable to creating terms when possible as the IFGC terms are used throughout the document. Therefore, this definition is no longer necessary. It is reasonable to delete the current definition from subpart 1 and use the definition in the IFGC for consistency and ease of use.

The proposed rule deletes “Subpart 1” because there are currently two subparts. However

Subpart 2. Definition amended. The proposed rule repeals this subpart because the modification to the definition for “ready access (to)” is no longer necessary and reasonable.³³ The current Minnesota amendment does not allow the use of portable equipment, such as a ladder, to be used to reach mechanical equipment and meet the definition of “ready access (to).” However, the key difference between “access (to)” and “ready access (to)” in the IFGC is whether there is an access panel or other similar barrier on the equipment itself. The Minnesota amendment, while necessary and reasonable at the time, has unintended consequences.³⁴ It is reasonable to delete the current definition of “ready access (to)” from subpart 2 and use the definition in the IFGC to provide consistency and ease of use.

1346.5303 SECTION 303, APPLIANCE LOCATION.

Subpart 1. Section 303.3. The proposed rule amends the first paragraph to add subpart numbering. Currently, there is only one IFGC section under 303 modified. The proposed rule modifies another section 303. Therefore, it is necessary and reasonable to indicate the two separate modified sections with subpart numbering.

Subpart 2. Section 303.3.1, Fireplaces and decorative appliances in Group I-1, Condition 2 and Group I-2, Condition 2 occupancies. Section 303.3.1 of the 2018 IFGC is modified to permit direct-vent gas fireplaces inside the smoke compartments of Group I-1, Condition 2 occupancies, such as assisted living facilities and group homes, and Group I-2, Condition 2 occupancies, such as hospitals.³⁵ This modification is necessary to prevent conflicts with the Minnesota Department of Health (“MDH”) rules, and the Minnesota State Fire Code. MDH licenses these occupancies and enforces the NFPA 101 Life Safety Code in chapter 4658, as does the state fire marshal in the Fire Code in chapter 7511.³⁶ NFPA 101 permits direct-vent gas fireplaces inside the smoke compartments of Group I-1, Condition 2 occupancies and Group I-2, Condition 2 occupancies, in areas such as waiting rooms, lobbies, and shared living spaces. The five conditions direct-vent gas fireplaces must meet are consistent with the NFPA 101 safety requirements for direct-vent gas fireplaces in these occupancies. These five conditions are necessary to prevent injury to persons receiving care or visitors to these occupancies.

1346.5304 SECTION 304, COMBUSTION, VENTILATION AND DILUTION AIR.

Subpart 1. Section 304.1, General. The proposed rule deletes and relocates the language added to section 304.1. The proposed rule incorporates the 2018 IFGC language in the body of section 304.1, retains three of the six existing exceptions in 1346.5304, and adds two new exceptions. Specifically, the proposed rule deletes exceptions 1, 3, and 4 and renumbers existing exceptions 2, 5, and 6 to 1, 2, and 3 respectively. Existing exception 1 is deleted because it is addressed in the body of section 304.1 and is therefore no longer necessary. Existing exception 3

³³ See section 306.5.

³⁴ The Minnesota amendment was added in 2004. See https://www.revisor.mn.gov/state_register/28/14/#page=5

³⁵ “Smoke compartments” are “A space within a building enclosed by smoke barriers on all sides, including the top and bottom.” See the 2018 IBC, as adopted into the Minnesota Building Code per Minn. R. 1305.0011.

³⁶ See the MDH rule in Minnesota Rules, part 4658.3500, subp. 4, and part 7511.0102, subp. 4, of the Fire Code. DLI has rulemaking authority for the Fire Code but the State Fire Marshal enforces chapter 7511.

conflicts with the combustion air requirements located in Table 304.1 of this subpart, Worksheet E-1 located in part 1346.6012, and Minnesota Rules chapter 1322. Chapter 1322 allows 40% oversizing while existing exception 3 allows only 30% oversizing. Existing exception 4 is revised and relocated to new exception 4. New exception 4 modernizes the requirement. Existing exceptions 3 and 4 are deleted because as written, they conflict with the combustion air requirements located in Table 304.1 of this subpart and Worksheet E-1 located in part 1346.6012. The proposed rule corrects these unintended conflicts.

The language of renumbered exceptions 2 and 3 (existing exceptions 5 and 6) is modified because the language conflicts with the combustion air requirements located in Table 304.1 of this subpart and Worksheet E-1 located in part 1346.6012. Exception 4 directs the code user to determine combustion air for Category I, III, and IV gas-fired appliances by using Table 304.1. The proposed rule corrects these unintended conflicts.

The proposed rule amends Table 304.1 to specify it contains the combustion air requirements for Category I, III, and IV appliances. Because there are four appliance categories, it is reasonable to amend the table to specify which appliance categories it addresses. Exception 5 is added to direct the code user to parts 1346.6012 and 1346.6014 to calculate the combustion air requirements for appliances located in residential dwellings. It is reasonable in the rule part describing combustion air requirements for buildings to direct code users to the other rule parts specifically addressing residential dwellings.

Subp. 3. Section 304.6.2, One permanent opening method. The proposed rule deletes a portion of the last sentence that reads, “and shall have a minimum free area of 1 inch²/3,000 Btu/hr (700 mm²/kW) of the total input rating of all appliances located in the enclosure.” The free area requirement of 1 square inch per 3,000 Btu per hour conflicts with combustion air requirements contained in Table 304.1, Worksheet E-1 in part 1346.6012, and Table E-1 in part 1346.6012. The proposed rule corrects this unintended conflict. The free area requirement is no longer necessary because they create unnecessarily large air openings to the outside of the building for Category I and IV appliances. Deleting the free area requirement reduces the combustion air opening to the outside for Category I, III, and IV appliances and appliances located in residential dwellings. This reduction in the size of the opening for outside combustion air will prevent unnecessary drafts in buildings. The proposed rule is necessary and reasonable because it increases building efficiency while maintaining building safety.

1346.5306 SECTION 306, ACCESS AND SERVICE SPACE.

Subp. 3. Section 306.6, Guard. The proposed rule adds subpart 3 to modify the exception to section 306.6 of the 2018 IFGC. The proposed modification coordinates this exception with the exception to the section addressing guards in the 2018 IMC.³⁷ Specifically, the exception here is modified by simply requiring fall arrest/restraint anchorage connector devices to be installed pursuant to ANSI/ASSE Z 359.1. ANSI/ASSE Z 359.1 is a nationally recognized standard regarding restraining individuals near potential fall hazards. It is necessary and reasonable to coordinate the requirements between the mechanical and fuel gas codes to provide uniform application and enforcement of the consistent requirements. The 2018 IFGC

³⁷ See IMC section 304.11.

language that is modified out of the proposed rule is redundant because the required compliance with ANSI/ASSE Z 359.1 provides sufficient guidance. It is reasonable to provide the most succinct, clear language.

1346.5307 CONDENSATE DISPOSAL

The proposed rule deletes IFGC section 307.6 in its entirety. Section 307.6 is new to the IFGC. Like the IMC, section 307.6 requires that equipment and appliances stop working if the condensate pump fails. In Minnesota, the equipment and appliance are necessary to control and maintain the temperature within the building. If the equipment and appliance are prevented from operating, then the temperature within the building can drop below freezing during the winter months. Equipment, appliances, and systems can be damaged by freezing temperatures within the building. The damage to freezing equipment, appliances, and systems can be more extensive and costly than the damage caused by equipment and appliances continuing to operate when the condensate pump fails. For example, if the temperature of the building falls below freezing, sprinkler systems could be damaged by sprinkler heads freezing and popping or pipes bursting. If equipment and appliances continue to operate when the condensate pump fails, condensation can gather and potentially cause some water to pool but the building temperature will not fall below freezing. It is reasonable to delete section 307.6 because it is necessary for buildings to be heated during the winter months to prevent damage to building equipment, appliances, and systems.

1346.5311 SECTION 311, CARBON MONOXIDE ALARMS.

Section 311.1, General. The proposed rule adds section 311 to require carbon monoxide alarms in new and existing rooms containing fuel burning appliances, such as furnaces and boilers. A malfunctioning or poorly-vented fuel-burning appliance might elevate carbon monoxide levels in a room to hazardous levels. Prolonged exposure to carbon monoxide can result in permanent heart and brain damage, and possibly death. Technicians servicing fuel-burning appliances are at particular risk of carbon monoxide poisoning due to the amount of time they spend in enclosed spaces with fuel-burning appliances. Requiring carbon monoxide alarms in rooms containing fuel-burning appliances is a cost-effective means of alerting technicians and building occupants to unsafe levels of carbon monoxide in a room with fuel-burning appliances. It is necessary and reasonable to require carbon monoxide alarms in rooms that have a high risk of carbon monoxide exposure.

The proposed rule has two exceptions to section 311.1. The two exceptions are for boilers that are regulated by Minnesota Rules, chapter 5225, and for fuel-burning appliances that are located in residential buildings regulated by Minnesota Rules, chapter 1309, the International Residential Code.³⁸ Boilers regulated by chapter 5225 are of a greater capacity than those regulated by this chapter. As result, boilers regulated by chapter 5225 are subject to different requirements for carbon monoxide alarms. Residential dwellings are exempt from this section because Minnesota Rules, chapter 1309, contains requirements for carbon monoxide alarms for residential dwellings.³⁹

³⁸ See Minn. R. 1309.0315.

³⁹ See Minn. R. 1309.0315.

Section 311.2, Carbon monoxide alarms. The proposed rule adds this section to specify that carbon monoxide alarms are to comply with the requirements described in sections 311.2.1 through 311.2.1.4 as described below.

Section 311.2.1 Power Source. The proposed rule adds subsection 311.2.1, which requires carbon monoxide alarms installed in new buildings to receive their power from permanent building wiring and to be equipped with a battery as a back-up power source. This requirement is consistent with the power source requirements for carbon monoxide alarms located in section 915 of the International Building Code (“IBC”).⁴⁰ It is necessary and reasonable to require carbon monoxide alarms to receive their primary power from the building’s wiring when they are installed in new rooms with fuel-burning appliances. Using the building wiring as primary and battery back-up ensures the alarms are powered. One of the most common carbon monoxide alarm failures is lack of power (e.g., dead batteries). The IBC requires carbon monoxide alarms installed in new buildings to receive power from the building wiring. Because the building is being newly constructed, the wiring is exposed, allowing for easy installation of hard-wired carbon monoxide alarms. It is necessary and reasonable to require all carbon monoxide alarms installed in new buildings to receive their power from the building wiring to ensure working alarms and for uniform application and enforcement of carbon monoxide alarm requirements for new buildings throughout the Minnesota State Building Code.

The proposed rule has two exceptions to section 311.2.1 that permit the use of battery-powered carbon monoxide alarms in buildings without commercial power and existing rooms that contain a fuel-burning appliance. It is reasonable to exempt buildings without commercial power from the requirement because the building does not have existing wiring to provide power to the carbon monoxide alarm. The exemption for existing buildings is reasonable because hard-wiring carbon monoxide alarms in an existing building can cost several hundred dollars due to the electrical work required to newly access the wiring in the existing building walls. Battery-powered carbon monoxide alarms are a cost-effective means of alerting building occupants to the presence of dangerous levels of carbon monoxide. Although hard-wired alarms are the preferred power source, the exception recognizes the reality of costs. To encourage compliance with the carbon monoxide alarm requirement, it is necessary and reasonable to allow batter-operated alarms in existing buildings and buildings without commercial power.

Section 311.2.1.2, Listings. This section requires carbon monoxide alarms to be listed in accordance with UL 2034. A UL listed device is one that UL has tested and determined meets specific safety requirements. The I-codes require carbon monoxide alarms to be listed in accordance with UL. It is necessary and reasonable to require the carbon monoxide alarm to meet a commonly-used life-safety standard to ensure they are of sufficient quality and function properly.

Section 311.2.1.3, Carbon monoxide alarms. This section permits the use of combination carbon monoxide and smoke alarms in place of carbon monoxide alarms. The combination carbon monoxide and smoke alarm must be listed in accordance with UL 2034 and UL 217. The I-codes require combination carbon monoxide and smoke alarms to be listed in accordance with UL. Combination carbon monoxide and smoke alarms perform the same

⁴⁰ The International Building Code is part of the Minnesota State Building Code in Minn. R. chapter 1305.

function as carbon monoxide alarms, and therefore are an acceptable alternative to alarms that only alert building occupants to the presence of abnormal levels of carbon monoxide.

Section 311.2.1.4, Carbon monoxide detection systems. This section permits the use of a carbon monoxide detection system in place of a carbon monoxide alarm. A carbon monoxide detection system consists of separate carbon monoxide detecting devices that are interconnected and alerts a central monitoring station of the presence of abnormal levels of carbon monoxide in any part of the building. It is reasonable to allow the use of an alternative device that performs the same function. The carbon monoxide detection system must comply with NFPA 720 – Standard for the Installation of Carbon Monoxide (CO) Detection and Warning Equipment, and be listed in accordance with UL 2075. NFPA 720 and UL 2075 are commonly-used life-safety standards for carbon monoxide detection systems.

1346.5403 SECTION 403, PIPING MATERIALS.

Subpart 1. Section 403.4.2, Steel. The proposed rule deletes the existing language of this subpart (regarding section 403.8) and relocates it to subpart 1a and modifies section 403.4.2. The proposed rule modifies 2018 IFGC section 403.4.2 to keep the language and requirements of the 2012 IFGC. The 2018 IFGC permits the use of Schedule 10 steel, stainless steel and wrought-iron pipe, which is thinner than the Schedule 40 pipes permitted in the 2012 IFGC. The thicker Schedule 40 pipes are durable and able to withstand Minnesota’s climatic conditions. Additionally, the 2018 IFGC does not address support for Schedule 10 pipes located on roofs. Unsupported gas pipes may become damaged and develop hazardous leaks. It is necessary and reasonable to amend this subpart to require the continued use of Schedule 40 pipes with the proper support for Schedule 40 pipes used on roofs for use in Minnesota because of their durability.

Subp. 1a. Section 403.8, Protective coating. The proposed rule deletes the existing rule language modifying section 403.10.1 and relocates the existing modification of section 403.8 from subpart 1 to subpart 1a. The relocated language is unchanged. In order to keep the modified sections in Minn. R. 1346.5403 in numerical order, these relocations were necessary to accommodate the modification to section 403.4.2. It is necessary and reasonable to keep the sections in numerical order for clarity.

Subp. 1b. Section 403.10.1, Pipe joints. The proposed rule deletes the existing language modifying section 403.10.2 because the 2018 IMC contains similar language regarding tubing joints. Therefore, this modification is redundant and the duplicative language could cause confusion. The language modifying section 403.10.1 is relocated from subpart 1a without changes. Again, the relocation is necessary to keep the modified section in numerical order. It is necessary and reasonable to keep the sections in numerical order for clarity.

Subpart 2. Section 403.10.4, Metallic fittings. The proposed rule repeals this subpart because the 2018 IFGC contains similar language in subsection 403.10.5 (different numbering in the 2018 IFGC). Therefore, this modification is no longer necessary.

1346.5404 SECTION 404, PIPING SYSTEM INSTALLATION

Subpart 2. Section 404.8, Piping in solid floors. The proposed rule repeals this subpart because the 2018 IFGC contains similar language. Therefore, this modification is no longer necessary.

1346.5407 SECTION 407, PIPING SUPPORT.

The proposed rule repeals this rule part because the requirements are contained in the 2018 IFGC.⁴¹ It is clearer and more user-friendly for the code user to have as few amendments to the 2018 IFGC as possible. Therefore, the modification is no longer necessary.

1346.5408 SECTION 408, DRIPS AND SLOPED PIPING.

The proposed rule repeals this rule part because the requirements are contained in the 2018 IFGC.⁴² It is clearer and more user-friendly for the code user to have as few amendments to the 2018 IFGC as possible. Therefore, the modification is no longer necessary.

1346.5409 SECTION 409, SHUTOFF VALVES.

Subpart 1. Section 409.1.4, Main shutoff valve. The proposed rule amends subpart 1 to require the main shutoff valve be located no more than five feet above the floor. This change is necessary to ensure the main shutoff valve is easily accessible in the event of emergency and a ladder is not required to reach the main shutoff valve. The exception to this subpart is modified grammatically for clarity. It is necessary and reasonable to require main shutoff valves be easily accessible and to clarify the language.

1346.5501 SECTION 501, GENERAL.

Subpart 3. Section 501.12.1, Terminations. The proposed rule deletes the modification to section 501.12.1 because the 2018 IFGC contains similar language. The 2018 IFGC language also provides the correct reference to subsection 503.6.7, renumbered from 503.6.6 in the 2012 IFGC, where roof terminations are addressed in the 2018 IFGC.⁴³ Therefore, this modification is no longer needed.

1346.5503 SECTION 503, VENTING OF APPLIANCES.

Subpart 6. Section 503.6.10.1 Category I appliances. The proposed rule amends this subpart by renumbering section numbers to coordinate with numbering changes in the 2018 IFGC.

1346.5504 SECTION 504, SIZING OF CATEGORY I APPLIANCE VENTING SYSTEMS.

⁴¹ The 2012 IFGC contained similar language as well. Conversion to the IFGC language instead of the Minnesota amendment is intended to minimize the number of amendments to the 2018 IFGC.

⁴² The 2012 IFGC contained similar language as well. Conversion to the IFGC language instead of the Minnesota amendment is intended to minimize the number of amendments to the 2018 IFGC.

⁴³ The 2012 IFGC contained similar language as well. Conversion to the IFGC language instead of the Minnesota amendment is intended to minimize the number of amendments to the 2018 IFGC.

Subpart 1. Section 504.2.7, Liner system sizing. This subpart is repealed because the 2018 IFGC contains similar language.⁴⁴ It is clearer and more user-friendly for the code user to have as few amendments to the 2018 IFGC as possible. Therefore, this modification is no longer needed.

1346.5800 CHAPTER 8 REFERENCED STANDARDS.

Subpart 2. Supplemental standards. The proposed rule amends this subpart to update the referenced edition of NFPA 54 – National Fuel Gas Code from 2012 to 2018. There is no newer edition of the ANSI LC-4 – Press-Connect Metallic Fittings for Use in Fuel Gas. It is necessary and reasonable to use the latest edition of standards because they contain the newest safety standards and recognize newer materials where applicable.

EFFECTIVE DATE

In accordance with Minnesota Statutes, section 326B.13, subdivision 8, the Commissioner has determined that it is necessary to establish March 31, 2020, or five business days after publication of the Notice of Adoption in the *State Register*, whichever is later, as the effective date of this proposed rule chapter. The Commissioner has found and determined that it is in the public's interest and necessary to protect public health and safety to have this proposed Code Chapter effective at the same time as other related proposed Minnesota State Building Code sections, which may result in an earlier effective date than provided for in Minnesota Statutes, section 326B.13, subdivision 8.

Because other related and newly proposed Chapters of the Minnesota State Building Code are scheduled to have an effective date of March 31, 2020, it is necessary for Minnesota's proposed administrative provisions found in Chapter 1346 to become effective at the same time to alleviate any potential confusion, conflicts or misapplication of specific and interrelated Code requirements by industry members, code enforcement officials, and members of the public. A common effective date for all newly adopted State Building Code chapters is essential for life and building safety because many of these chapters reference one another and are designed to work together to provide the user with a complete, current, and conflict-free reference for building specifications and requirements. Therefore, coordination of the effective dates for all newly adopted amendments to the State Building Code, including the administrative provisions found in the underlying proposed rule, is necessary and reasonable.

Regulated parties and building officials have been involved in the rulemaking process beginning with the TAG team meetings beginning in January 2018. There is general awareness that the Minnesota State Building Code is in the process of being updated. The public has been aware of and involved in forming the proposed changes in this proposed rule throughout this process. The Department, and others, will offer training on the various Building Code updates as soon as each chapter is adopted to ensure sufficient time for industry members to obtain training on the chapters relevant to their particular work. In this case, the mechanical and fuel gas

⁴⁴ The 2012 IFGC contained similar language as well. Conversion to the IFGC language instead of the Minnesota amendment is intended to minimize the number of amendments to the 2018 IFGC.

industry professionals are largely aware of this rulemaking through the TAG meetings, CCLD newsletter, and CCAC meetings.

CONCLUSION

Based on the foregoing, the proposed rules are both needed and reasonable.

10/9/2019
Date



Nancy J. Leppink
Commissioner

This Statement of Need and Reasonableness was made available for public for on October 9, 2019.

EXHIBIT A

Construction Codes Advisory Council Members
June 2018

Scott McLellan, Department of Labor and Industry Commissioner's Designee/Chair

Jim Smith, Department of Public Safety Commissioner's Designee

Scott Novotny, Board of Electricity

Larry Stevens, Jr., Board of High Pressure Piping Systems

Mike Herman, Plumbing Board [was Grant Edwards]

Patrick Higgins, Certified Building Official [now Steve Ubl]

Laura McCarthy, Fire Marshal

Jennifer DeJournett, Local Units of Government

William Freitag, Commercial Building Industry

Thomas Erdman, Commercial Building Owners/Managers

Gerhard Guth, Licensed Architect

Thomas Downs, Licensed Professional Engineer

Mike Paradise, Licensed Residential Building Industry

Reed Sprung, Boiler Industry

Todd Gray, Heating and Ventilation Industry [now vacant]

Mark Brunner, Manufactured Housing Industry

Dan McConnell, Minnesota Building and Construction Trades Council

Robert Bastianelli, Public Utility Supplier [now vacant]

EXHIBIT B

1346 Technical Advisory Group Members

Chris Meier, TAG Lead, Department of Labor and Industry

Don Sivigny, TAG Co-Lead, Department of Labor and Industry

John Rued, Municipal Building Official, City of Monticello

Joseph Strohmeyer, Minnesota Association of Plumbing & Mechanical Officials

Jared Ellingson, Minnesota Association of Plumbing & Mechanical Officials

Todd Landon, Minnesota Mechanical Contractors Association

John Smith, American Society of Heating, Refrigerating, and Air-Conditioning Engineers