DEPARTMENT OF LABOR AND INDUSTRY

2024 International Model Codes Review and Update

November 2025

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Technical Advisory Group Review of the 2024 International Model Building Codes

Introduction

The Minnesota Legislature requires the Commissioner of the Department of Labor and Industry to review the International Model Building Codes every six years for their potential adoption as amended for use in Minnesota, beginning with the 2018 edition of the model codes.[1] The Commissioner must consult with the Construction Codes Advisory Council ("CCAC").[2] The CCAC is to review the new model codes in order to provide recommendations to the Commissioner for their adoption and recommendations for revisions to current Minnesota Rules.[3] To facilitate their review of the model codes, the CCAC appointed twelve Technical Advisory Groups ("TAGs") and their members to review the 2021 and 2024 International Model Building Codes ("I-codes"), compare them to the current Minnesota rules which largely adopt the 2018 I-codes as amended for use in Minnesota, and report their findings.

Each TAG held open meetings that allowed the public to attend and participate in the review and discussion of changes in the 2021 and the 2024 I-codes. As a result, TAG members and the public identified concerns and drafted code change proposals to address those concerns. The TAG members and the public also discussed and identified any significant issues raised by those proposals.

Many of these code change proposals were editorial such as renumbering Minnesota rule parts to align with the 2024 I-codes or deleting code sections from Minnesota rules that are no longer necessary because the 2024 I-codes have adopted similar language. These types of changes recommended by TAG members do not require CCAC review because they do not present meaningful or substantive changes to the provisions of the 2024 I-codes or current Minnesota rules.

This report highlights some of the more significant changes in the 2024 I-codes and those code change proposals that TAG members recommend to the CCAC. The TAG members reviewing ANSI/ASHRAE/IES Standard 90.1 Energy Standard for Buildings Except Low-Rise Residential Buildings ("ASHRAE 90.1") have not completed their reviews, but an appendix below includes an update on their progress and code change proposals that have been reviewed.

The appendixes also discuss code change proposals that TAG members could not agree to recommend to the CCAC or were reviewed by TAG members since the previous report reviewing the 2024 I-codes, as well as the membership roster for each of the TAGs.

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[1] *See* Minnesota Statutes, section 326B.106.
[2] *See* Minnesota Statutes section 326B.106, subdivision 1.
[3] *See* Minnesota Statutes section 326B.07.

- Appendix A summarizes code change proposals TAG members did not agree to recommend to the CCAC but identify as areas of concern with the provisions of the 2024 I-codes or current Minnesota code provisions and suggest modifications.
- Appendix B summarizes code change proposals that were reviewed since the previous report of TAG member findings.
- Appendix C summarizes code change proposals reviewed by the members of the Commercial Energy Code TAG. This includes code change proposals that TAG members agreed to recommend to the CCAC and proposals that they did not agree to recommend.
- Appendix D lists the TAGs, their members, and the organizations they represent.

TAG Recommendations

Residential Building Code TAG (Chapter 1309)

Residential Building Code TAG members met twenty times to review chapters 2 through 10 of 2024 IRC and Minnesota Rules, chapter 1309, which adopts the 2018 IRC with amendments. TAG members received forty-two code change proposals. The Residential Building Code TAG members recommend adopting the 2024 IRC with the following significant proposed code changes.

Recommended Code Changes

- Modify section R319.5 of the 2024 IRC requirements for replacement windows serving as emergency escape and rescue openings. The TAG members recommended two code change proposals. Both proposals clarify that a replacement window that is a part of a change of use of a space to one where an emergency escape and rescue opening is required cannot comply with section R319.5 but differ as to the requirements for existing windows serving as emergency escape and rescue openings that are replaced with windows of a different operating style:
    - The first proposal requires replacement windows that are of a different operating style to provide a minimum net clear opening of 4 square feet with a minimum net clear opening height of 22 inches and a minimum net clear opening width of 20 inches.
    - The second proposal reformats section R319.5 but maintains the requirements of the current code and the 2024 IRC that permit replacement windows for emergency escape and rescue openings to be of the same operating style as the existing window or a style that provides an equal or greater opening area than the existing window.

  The first proposal was withdrawn and DLI staff recommend adopting section R319.5 of the 2024 IRC without any modifications.

- Modify section R319.7.1 of the 2024 IRC requirements for the opening dimensions for windows in spaces undergoing a change of occupancy to one where an emergency escape and rescue opening is required. The proposed change requires existing operable windows and replacement windows to meet a

minimum net clear opening of 4.5 square feet, minimum net clear opening height of 22 inches, and a minimum net clear opening width of 20 inches.

- Repeal existing Minnesota Rules, part 1309.0323, to require any storm shelters or safe rooms that are provided to comply with the requirements of ICC 500.
- Modify section R401.5 of the 2024 IRC to require a registered design professional to provide an assessment when excavation will reduce the support for any existing foundations that are adjacent to the site. The assessment will include plans for underpinning and protection of the adjacent foundations.
- Modify section BB104.2 of the 2024 IRC to increase the ceiling height from 36 inches feet to 42 inches at the access to and primary egress from lofts in tiny houses.
- Adopt Appendix BJ of the 2024 IRC to permit strawbale construction with the following modifications to the code requirements.
    - Modify sections BJ103.4 and BJ103.5 to require an approved third party to periodically test the moisture content and dry density of bales during construction.
    - Modify Appendix BJ to add a new section that requires the application of silicate mineral paint to exterior plasters that are directly applied over strawbale walls.
    - Modify section BJ105.6.6 to increase the separation of bales and exterior plaster from 8 inches to 12 inches.
    - Modify section BJ105.6.7 to increase the separation of the exterior plaster and earth from 6 inches to 8 inches.
    - Modify Appendix BJ to add a new section that requires roof overhangs with a 20-inch horizontal projection for one-story buildings and 30-inch horizontal projections for two-story buildings unless the exterior strawbale walls are provided with ventilated cladding.
- Adopt Appendix BL of the 2024 IRC to permit hemp-lime construction with the following modifications to the code requirements.
    - Modify section BL103.5 to clarify that mechanical, electrical, and plumbing components that are made of metal are to be isolated from the hemp-lime infill by means of sleeves, pipes, conduits or tubing made of plastic or be separated from hemp-lime with approved alkaline-resistant materials.
    - Modify Appendix BL to add a new section that requires roof overhangs with a 16-inch horizontal projection for one-story buildings and a 24-inch horizontal projection for two-story buildings unless the exterior hemp-lime walls are provided with a ventilated cladding system.

Residential Energy Code TAG (Chapter 1322)

The Residential Energy Code TAG members met ten times to review chapter 11 of 2024 IRC and Minnesota Rules, chapter 1322, which adopts the residential provisions of the 2012 IECC with amendments. TAG members received eighteen code change proposals for chapter 11 of the 2024 IRC and had previously reviewed 37 code change proposals for the residential provisions of the 2021 IECC. The Residential Energy Code TAG members recommend adopting chapter 11 of the 2024 IRC with the following significant proposed code changes.

Recommended Code Changes

- Modify section N1101.6 of the 2024 IRC to define "residential buildings" as detached one- and two-family dwellings and townhouses so the Minnesota Residential Energy Code no longer applies to Group R-2, R-3, and R-4 buildings that are 3 stories or less. The scope of Minnesota Rules, chapter 1323, will be modified to include all Group R-2, R-3, and R-4 buildings.
- Modify section 1102.1.3 of the 2024 IRC to provide alternative building envelope insulation options for the prescriptive compliance path.
- Modify sections 1102.1.4 and 1102.1.5 of the 2024 IRC to provide thermal performance backstops by prohibiting the total area of wall fenestration from exceeding 25 percent of the above grade wall area and replacing the component performance alternation with a Total UA (U-factor times area).
- Modify section N1102.5.1.3 of the 2024 IRC to change the air leakage metric from air changes per hour at 50 Pascals ("ACH50") to cubic feet per minute per square foot at 50 Pascals ("CFM50") and require buildings to comply with an air leakage rate not greater than 0.18 CFM per square foot. The change in metrics allows air leakage to be assessed based on the exterior envelope area of the building.
- Delete section N1105 of the 2024 IRC to eliminate the simulated building performance as a compliance option.
    - Some TAG members were concerned that the proposal will increase the cost of construction by eliminating a compliance option that allows for additional design flexibility. Other TAG members were concerned that the simulated building performance is too complex compared to the other performance option, the Energy Rating Index ("ERI"), and will allow for dwellings with less energy efficient building envelopes than those constructed in compliance with prescriptive requirements.
- Modify section N1108.2 of the 2024 IRC to require buildings to earn 20 credits instead of 10 credits from Table N1108.2 and modify Table N1108.2 to provide additional energy efficiency credits for the installation of a federal minimum efficiency heat pump or electric storage water heater.
- Modify section N1111.1.1.3 of the 2024 IRC to delete requirements for the installation of continuous wall insulation where the full extent of an exterior façade or wall covering of an existing dwelling is undergoing replacement.
- Amend current Minnesota Rules, part 1322.0402, subpart 2, to delete exterior nondraining foundation insulation requirements and no longer require a 6-mil polyethylene slip sheet over the entire exterior surface of the insulation.

Fire Code TAG (Chapter 7511)

The Fire Code TAG members met three times to review the 2024 International Fire Code, Minnesota Rules, chapter 7511, which adopts the 2018 IFC with amendments. TAG members reviewed thirty code change proposals that were previously reviewed and recommended by the Minnesota State Fire Chiefs Association Code Committee ("MSFCA"). The Fire Code TAG members recommend adopting 2024 IFC with the following significant proposed code changes.

Recommended Code Changes

- Amend current Minnesota Rules, part 7511.0901, to require the annual inspection of NFPA 13D automatic sprinkler systems in licensed care facilities.
- Amend current Minnesota Rules, part 7511.0906, subpart 1, to permit portable fire extinguishers to be mounted in locations that are obstructed from view in Group R-3 and R-4 licensed care facilities with the approval of the fire code official.
- Modify section 1103.9 of the 2024 IFC to not require interconnected carbon monoxide alarms when the code in effect at the time of construction did not require carbon monoxide detectors to be provided and to not require interconnected carbon monoxide alarms in dwelling units that are not served from a commercial power source. The 2024 IFC allows most existing buildings to be equipped with battery-operated carbon monoxide alarms that are interconnected instead of a carbon monoxide detection system. However, only a limited number of battery-operated alarms can be wirelessly interconnected so commercial occupancies would have to install a more costly carbon monoxide detection system. The proposed change will alleviate the cost burden of providing a full carbon monoxide detection system.
- Amend current Minnesota Rules, part 7511.1103, subpart 8, to add an exception that requires the installation of interconnected smoke alarms that are battery-powered in state licensed Group I-1 and R occupancies.
- Amend current Minnesota Rules, part 7511.1104, subpart 15, to require aisle accessway widths in areas of existing buildings without seating to comply with the aisle accessway widths required by chapter 1305.

Conclusion

1. TAG members reviewed the 2024 I-codes and recommend the adoption of the 2024 IRC, the residential energy provisions of chapter of 11 of the 2024 IRC, and 2024 IFC.
2. TAG members reviewed and recommended adoption of code change proposals that modify the 2024 I-codes or amend an existing Minnesota code provision as described in this report to promote consistency among the building codes, to ensure uniform safety standards, and to accommodate Minnesota's climatic conditions.

Appendix A

TAG members did not agree to recommend all code change proposals they reviewed. Although TAG members did not agree to recommend the following code change proposals, the CCAC should be aware of the concerns they identify.

Residential Building Code TAG (Chapter 1309)

Other Code Change Proposals

TAG members did not agree to recommend the following code change proposals:

- Modify chapter 3 of the 2024 IRC to require a continuous raceway or cable assembly be provided to parking spaces for one- and two-family dwellings and townhouses.

Residential Energy Code TAG (Chapter 1322)

Other Code Change Proposals

TAG members did not agree to recommend the following code change proposals:

- Modify section N1101.9 of the 2024 to require the calculation of heating loads using the mean average extreme temperature based on weather data published in ASHRAE Standard 169-2013.
    - TAG members previously recommended a code change proposal that requires summer cooling loads be calculated using the 1 percent of the annual of cooling design conditions and winter heating loads be calculated using the 99.6 percent heating dry bulb value. The proposal includes a table with weather data from ASHRAE Standard 169-2013 for several cities in Minnesota.
- Modify section N1101.13 of the 2024 IRC to require buildings constructed in accordance with the prescriptive or performance path to comply with the same minimum requirements for thermal envelope efficiency.

Fire Code TAG (Chapter 7511)

Other Code Change Proposals

TAG members did not agree to recommend the following code change proposals:

- Amend current Minnesota Rules, part 7511.1103, subpart 8, to require battery powered smoke alarms in existing buildings to have a nonreplaceable, nonremovable battery that can power the alarm for a minimum of 10 years. TAG members believe the proposal is better addressed through the national model code development process.

Appendix B

The Administration and Minnesota Provisions TAG has previously submitted reviews of their findings. Appendix B includes significant code change proposals that the TAG has reviewed since the previous report in July 2025.

Administration and Minnesota Provisions (Chapters 1300 and 1301)

Administration and Minnesota Provisions TAG members recommend the following amendments to Minnesota Rules, parts 1300.0070 and 1301.0300.

- Amend current Minnesota Rules, part 1300.0070, to update the definition for manufactured home and add definitions for mobile home, industrialized/modular construction, prefabricated building, and tiny house.
- Amend current Minnesota Rules, part 1301.0300, to award applicants for certified building official and building official-limited 60 points for obtaining a Construction Codes and Inspections certificate that is a 30-college credit program and 28 points for obtaining a Building Inspections Certificate that is a 14-college credit program.

Appendix C

The Commercial Energy Code TAG has not completed their review of the 2022 edition of ASHRAE 90.1 and Minnesota Rules, chapter 1323, which adopts the 2019 edition of ASHRAE 90.1 with amendments. However, Appendix C includes significant code change proposals the TAG members have recommended as amendments and those code change proposals that they did not agree to recommended that identify areas of concern with the provisions of the model code or current Minnesota code provisions.

Recommended Code Changes

- Modify section 5.4.3.1.4 of ASHRAE 90.1-2022 to reduce to the air leakage rate from 0.35 cfm/ft^2 to 0.30 cfm/ft^2 and add new section 5.4.3.1.5 that requires the weighted average air leakage rate to be reduced from 0.30 cfm/ft^2 to 0.23 cfm/ft^2 for dwelling or sleeping units and other conditioned spaces in Group R-2 and I-1 occupancies.
- Modify section 6.5 of ASHRAE 90.1-2022 to require gas-fired warm air furnaces installed in non-transient dwelling units to have a minimum efficiency of 93 AFUE unless the unit is provided with a more efficient ERV, fenestration that complies with a lower U-factor, and a lower maximum air leakage rate. The proposal will be updated to address all-electric buildings.
- Modify sections 6.5.6.1.1 and 6.5.6.1.2.1 of ASHRAE 90.1-2022 to increase the sensible energy recovery ratio for energy recovery ventilation ("ERV") for non-transient dwelling units from 60 percent to 70 percent, increase the sensible energy recovery ratio for ERVs serving spaces other than apartments to more than 70 percent, and increase the enthalpy recovery ratio for ERVs serving spaces other than apartments to at least 60 percent at cooling design conditions. The proposal also clarifies other requirements for exhaust air energy recovery.
- Modify Table 6.5.6.1.2-1 of ASHRAE 90.1-2022 to require single-zone system ventilation systems that operate less than 8,000 hours per year in climate zone 6A to comply with the exhaust air energy recovery requirements for climate zone 7.
- Modify section 9.4.4 of ASHRAE 90.1-2022 to require horticultural lighting in greenhouse spaces or indoor grow spaces to have a minimum photosynthetic photo efficacy ("PPE") of at least 2.5 µmol/J and to permit lighting with a PPE of at least 1.7 µmol/J where the lighting load is less than 40 kW.
- Delete section 10.5.1 of ASHRAE 90.1-2022 to not require on-site renewable energy equipment on building sites.
- Modify sections 12.2 and G1.2.1 of ASHRAE 90.1-2022 to provide a thermal envelope trade-off backstop for the performance path by not permitting the proposed envelope performance factor to exceed the base envelope performance factor.

Other Code Change Proposals

TAG members did not agree to recommend the following code change proposals.

- Delete section 12 of ASHRAE 90.1-2022 to eliminate the Energy Cost Budget Method as a compliance option.

- Modify Normative Appendix G of ASHRAE 90.1-2022 to replace references to energy cost with site energy and require electric resistance heat sources to be modeled at the same efficiency as the baseline system.

Appendix D

The CCAC appointed twelve TAGs and their members to review the 2021 and 2024 International Model Building Codes ("I-codes"), compare them to the current Minnesota rules, which largely adopt the 2018 I-codes as amended for use in Minnesota. The members of the TAG were appointed to represent associations with experience with each of the model codes. Below is a list of TAG members and the organizations they represent.

Residential Building Code TAG

TAG representation	Member	Employer	Association
DLI staff	Terence Olson	DLI	Construction Codes and Licensing Division ("CCLD")
	Jesse Szykulski	DLI	CCLD
	Chris Rosival	DLI	CCLD
Code compliance	Lisa Hartwig	City of Minneapolis	Large Municipalities
	Steve Kartak	City of Eden Prairie	AMBO
	Greg Olson	ProEd Resources	AMBO
	Keith Demarest	City of Anoka	AMBO
	Nathan Weber	City of Detroit Lakes	AMBO
Residential building industry	Curtis Johnson	Pulte Homes	Housing First Minnesota
Licensed architect	Kyle Thrapp	McMonigal Architects	American Institute of Architects Minnesota (MN AIA)

Residential Energy Code TAG

TAG representation	Member	Employer	Association
DLI staff	Steve Shold	DLI	CCLD
	Chris Rosival	DLI	CCLD
Code compliance	Randy King	Prokore	Building officials
Residential builders	Greg Olson	Olson Associates Consulting	Builders Association of Minnesota (BAM)

	Eric Boyd	ARCXIS	Housing First Minnesota
	Jim Kummon	Heirloom Properties	Small developers
	Mike Robertson	Habitat for Humanity	NGO home builders
Mechanical engineer	John Smith	Consultant	Practical Engineering
Licensed architect	Alyssa Jagdfeld	SALA Architects	MNAIA
Energy advocacy	Isaac Smith	Center for Energy and Environment	Residential programs
	Eric Fowler	Fresh Energy	Public interest and energy conservation
	Alison Lindburg	Midwest Energy Efficiency Alliance	Energy advocacy

Fire Code TAG

TAG representation	Member	Employer	Association
State Fire Marshal	Forrest Williams	DPS	SFMD
	Thomas Jenson	DPS	SFMD
Fire code compliance	Dean Mau	DLI	CCLD
Fire service official	Lisa Consie	Duluth Fire	MSFCA
Fire service/code official	Alisa Schuster	Golden Valley Fire	MSFCA/FMAM
Fire marshal/Building official	Mark Lucht	City of Becker	FMAM
Building official	Jerry Norman	City of Rochester	
Architect	Roger “Lars” Larson	BWBR	MN AIA
Fire alarm system designer	Dan Morehead	Master Technology Group	MNAFAA
Fire Protection Engineer	Scott Futrell	SFPE MN	OnSite Engineer

Administration and Minnesota Provisions TAG

TAG representation	Member	Employer	Association
DLI staff	Greg Metz	DLI	CCLD
	Paul Swett	DLI	CCLD
Code compliance	Scott Anderson	City of Minneapolis	Large Municipalities
	Arlen Madsen	City of Eagan	AMBO
	Tyler Krahn	City of Rochester	AMBO
	Lonnie Johnson	City of Hastings	AMBO
Building officials	Jerry Backlund	City of Hastings	AMBO
	Jared Ellingson	University of Minnesota	Post secondary education
Residential building industry	Mike Swanson	Brandl-Anderson Homes	Housing First
Licensed architect	David Selinsky	ISG Architects & Engineers	American Institute of Architects Minnesota (MN AIA)

Commercial Energy Code TAG

TAG representation	Member	Employer	Association
DLI staff	Steve Shold	DLI	CCLD
	Chris Rosival	DLI	CCLD
Municipal building official	Dennis Schilling	City of West St. Paul	AMBO
Licensed architects	Rachael Spires	BWBR Architects	MN AIA
Engineering	John Smith	Consultant	Mechanical Engineering
	Russ Landry	Center for Energy and Environment	Energy Conservation Engineer
	Eric Johansen	CenterPoint Energy	Energy Efficiency Engineer
	Richard Hermans	Mechanical Engineering	MN Chapter of ASHRAE

Energy advocacy	Michael Waite	American Council for an Energy-Efficient Economy	Energy conservation advocate
	Sam Friesen	Fresh Energy	Building energy efficiency
	Chris Burgess	Midwest Energy Efficiency Alliance	Energy advocacy