DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

Author/requestor: Amanda Spuckler

Email address: amanda.spuckler@state.mn.us

Telephone number: 651-284-5361

Firm/Association affiliation, if any: DLI

Date: 6-27-2023

Model Code: IECC-R

Code or Rule Section: 1322.0100

Code or rule section to be changed: 1322.0100 subp. 2

Intended for Technical Advisory Group ("TAG"):

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

Proposed Language

1. The proposed code change is meant to:

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

   ☒ change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s). Part 1322.0100, subp. 2

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

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

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

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

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

Subp. 2. Scope. This code applies to the following residential buildings and associated systems and equipment:

a. IRC-1 single-family dwellings, IRC-2 Two-family dwellings, IRC-3 townhouses, and IRC-4 accessory structures; and

b. Buildings or portions of buildings containing Group I-1, R-2, R-3, or R-4 occupancies where the entire composite building is three stories or less in height above grade plane ~~as defined in the Residential Provisions of the 2012 IECC~~.

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

Need and Reason

1. Why is the proposed code change needed? Please provide a general explanation as well as a specific explanation for any changes to numerical values (heights, area, etc.)
The change provides users with the scope of the code in the scoping section. Currently, code users must refer to the definition of "residential" in the IECC to determine which structures are considered residential for the purposes of the code. The proposal changes how scoping information is presented but not the scope of the code.

2. Why is the proposed code change a reasonable solution?
The code change is reasonable because it provides a code user with scoping information without requiring them to refer to the definitions in chapter 2. It is simply more convenient.

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

Cost/Benefit Analysis

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

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

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

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

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

Regulatory Analysis

1. What parties or segments of industry are affected by this proposed code change?
   Building contractors, mechanical contractors, architects, engineers, municipal building officials, building inspectors, building managers and homeowner

2. Can you think of other means or methods to achieve the purpose of the proposed code change? What might someone opposed to this code change suggest instead? Please explain what the alternatives are and why your proposed change is the preferred method or means to achieve the desired result.
   An alternative would be to leave the existing scoping language and require code users to refer to definitions chapter to determine scoping. The proposed change eliminates the need to refer to the definitions and ensures code users are aware of the scoping based on information given in the scoping section.

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

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

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

DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

Author/requestor: Eric Fowler

Date: 2/15/24

Email address:

Model Code: 2021 IECC

Telephone number:

Code or Rule Section: Residential Energy Code

Firm/Association affiliation, if any: Fresh Energy

Code or rule section to be changed: R404

Intended for Technical Advisory Group ("TAG"):

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

Proposed Language

1. The proposed code change is meant to:

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

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

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

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

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

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

No, it is not, however, minimum requirements for in commercial and multifamily buildings passed during the 2023 legislative session.

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

Add new definitions as follows:

AUTOMOBILE PARKING SPACE. A space within a building or private or public parking lot, exclusive of driveways, ramps, columns, office and work areas, for the parking of an automobile.

ELECTRIC VEHICLE (EV). An automotive-type vehicle for on-road use, such as passenger automobiles, buses, trucks, vans, neighborhood electric vehicles, and electric motorcycles, primarily powered by an electric motor that draws current from a building electrical service, EVSE, a rechargeable storage battery, a fuel cell, a photovoltaic array, or another source of electric current.

Electric Vehicle Supply Equipment (EVSE). The conductors, including the ungrounded, grounded, and equipment grounding conductors, and the Electric Vehicle connectors, attachment plugs, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the Electric Vehicle.

EV Ready Space. A designated parking space which is provided with one 40-ampere, 208/240-volt dedicated branch circuit for EVSE servicing Electric Vehicles. The circuit shall terminate in a suitable termination point such as a receptacle, junction box, or an EVSE, and be located in close proximity to the proposed location of the EV parking spaces.

EV Capable Space. Electrical panel capacity and space to support a minimum 40-ampere, 208/240-volt branch circuit for a designated parking space, and the installation of raceways, both underground and surface mounted, to support an EVSE.

Add new text as follows:

R404.4 Electric Vehicle Power Transfer Infrastructure. New one- and two-family dwellings and townhouses with automobile parking spaces shall be provided in accordance with this section. All other new residential parking facilities shall be provided with electric vehicle power transfer infrastructure in accordance with Minnesota Rules Chapters 1323.

R404.4.1 Quantity. Each dwelling unit with a designated attached or detached garage or other onsite private parking provided adjacent to the dwelling unit shall be provided with one EV ready space or EV capable space.

R404.4.2 EV Ready Spaces. Each EV ready space used to comply with Section R404.4 shall comply with all of the following:

1. A circuit shall terminate in the same room, or if outdoors within 10 feet of the EV ready space it serves.
2. Reserved circuit breaker space in panelboard and, if provided, the circuit shall have a minimum capacity of 9.6 kVA (or 40A at 240V).
3. The panelboard or other electrical distribution equipment directory shall designate the circuit as “For electric vehicle supply equipment (EVSE)” and the junction box or enclosure shall be marked “For electric vehicle supply equipment (EVSE).”

R404.4.3 EV Capable Spaces. Each EV capable space used to comply with Section R404.4 shall comply with all of the following:

1. A conduit with a minimum of ¾ inch internal diameter shall terminate at a junction box in the same room, or if outdoors within 10 feet of the EV capable space it serves.
2. Reserved circuit breaker space in panelboard and, if provided, the circuit shall have a minimum capacity of 9.6 kVA (or 40A at 240V).
3. The panelboard or other electrical distribution equipment directory shall designate the circuit as "For electric vehicle supply equipment (EVSE)" and the junction box or enclosure shall be marked "For electric vehicle supply equipment (EVSE)."

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

   No.

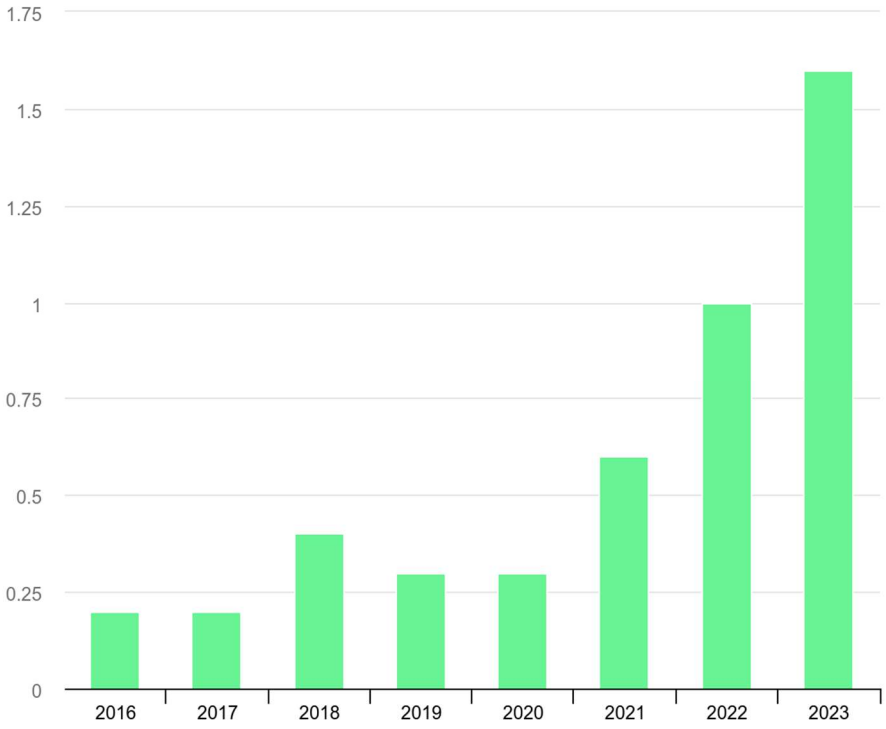
Need and Reason

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

   Electric vehicle adoption is on the rise in Minnesota, and across the country, as options expand, battery technology improves, and upfront prices come closer to gasoline-powered vehicles. This growth is exponential, not linear. By preparing new homes with consumer options in mind, the Department will reduce the burden of costly retrofits post-construction, and maintain a code that provides for the "use of modern methods, devices, materials and techniques," as required by statute. Minnesota would also be following the lead of numerous other jurisdictions who have included EV ready spaces as part of new residential construction, including California and cities in Colorado, Missouri, Arizona, as well as Vancouver.[1]

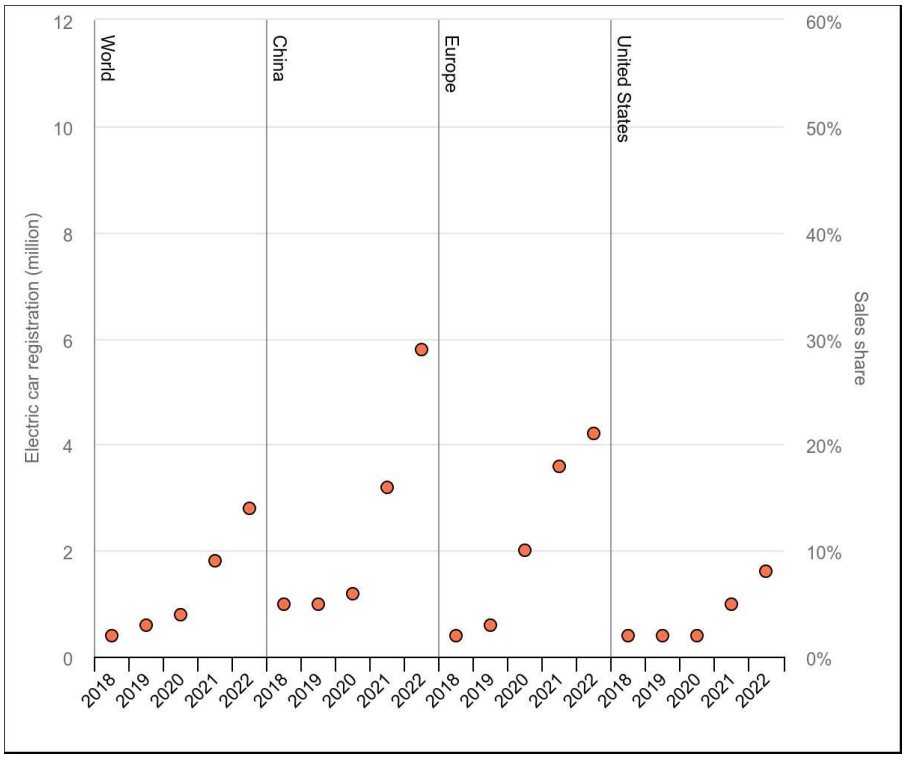
[1] ICC, "2021 Electric Vehicles and Building Codes: A Strategy for Greenhouse Gas Reduction," published October 2021; see Table 1: Sample EV-Integrated Code Provisions, which lists the jurisdictions that require EV Ready Space(s) for new single-family construction. (https://codes.iccsafe.org/content/ICCEVBCSGGR2021P1/current-approaches-to-ev-integrated-codes)

New EV sales in the United States hovered around a quarter million each year from 2016 to 2020, and has since grown to over 1.5 million new vehicles in 2023.[2]



EVs are on track to pass 10% of new vehicle sales soon in the United States, while globally they were almost 15% of sales in 2022.[3]

This trend holds true in Minnesota as well, where 34,474 light-duty EVs were registered as of January 2023, up from 13,015 in



[2] IEA, Electric car sales, 2016-2023, IEA, Paris https://www.iea.org/data-and-statistics/charts/electric-car-sales-2016-2023, IEA. Licence: CC BY 4.0

[3] IEA, Electric car registrations and sales share in China, United States and Europe, 2018-2022, IEA, Paris https://www.iea.org/data-and-statistics/charts/electric-car-registrations-and-sales-share-in-china-united-states-and-europe-2018-2022, IEA. Licence: CC BY 4.0

February 2020.[4] Additionally, 6.6 percent of all new light-duty vehicle sales in Minnesota were electric in 2023 (through September), compared to 1.7% of light-duty vehicle sales in 2020.[5] This trend is expected to continue as EV familiarity increases and purchase incentives from both the federal and state level continue over the next several years.[6]

Globally, sales projections range from 40% market share by 2030 to over 60% market share by 2030, according to analysis by IEA and RMI.[7]

This market share has been driven in part by lower prices and expanded options for EVs. Last year, the average price for an EV cost only $2,800 more than the average price for a new gasoline-powered passenger vehicle.[8] Additionally, as more EVs have entered the new vehicle marketplace, a robust used EV market will continue to grow that offers access to EVs at a more affordable price for more consumers. Affordability will be further spurred by the availability of a used EV tax credit for up to $4,000 for vehicles costing $25,000 or less.[9]

Minnesota residents seeking to charge their electric vehicle at home may face a number of costs, including an electric service upgrade, wiring a 240 volt circuit to the charging location, and installing Electric Vehicle Suply Equipment (EVSE), commonly known as an EV charger. This proposal does not require installation of EVSE, or even wiring the circuit, but preserves consumer choice by requiring space in the electric panel for the circuit, and at minimum, conduit for easy installation of the circuit without digging or other costly, invasive work.

This cost is often unexpected for new EV owners, and spurred Xcel Energy to offer a "home wiring rebate" to help defray the cost and support EV adoption in its service territory, while also supporting EVs in its service territories getting onto a time-varying electricity rate that optimizes use of the electric grid, to the benefit of both the EV owner and general grid customers. Level 2 charging enables EV owners to participate in utility pricing programs that offer lower electricity prices at times of the day when load is lowest on the electric grid (typically overnight, when wind power is also most prevalent), thereby optimizing use of the electric grid and renewable energy, while also saving the EV owner money. A Level 2 Charger is typically required to participate in these beneficial utility programs.

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

   This proposal will prepare residents for charging at home as a growing number of Minnesotans opt for electric vehicles. The proposal allows flexibility for builders to provide conduit or to pre-wire for a charger, without requiring the installation of Electric Vehicle Supply Equipment.

3. What other factors should the TAG consider?

[4] Minnesota Public Utilities Commission, https://mn.gov/puc/activities/economic-analysis/electric-vehicles/
[5] Jukka Kukkonen, "10 EV market trends to watch in 2024," posted January 23, 2024. Sales numbers retrieved from the Electric Vehicle Dashboard hosted by the Alliance for Automotive Innovation.: https://www.autosinnovate.org/EVDashboard
[6] Ibid. EV purchases incentives for new vehicles at the federal level range up to $7,500 in tax credits, while used EVs can quality for up to $4,000 of tax credits for their purchaser. Income limits apply to these purchase incentives, and not all models are eligible, but notably these incentives have added pressure to the broader EV market to bring down prices. *See:* https://money.com/ev-vs-gas-cars-price-difference-decreasing/
[7] "EVs to surpass two-thirds of global car sales by 2030, putting at risk nearly half of oil demand, new research finds," RMI, https://rmi.org/press-release/evs-to-surpass-two-thirds-of-global-car-sales-by-2030-putting-at-risk-nearly-half-of-oil-demand-new-research-finds/
[8] Natural Resources Defense Council, "Electric vs. Gas Cars: Is it Cheaper to Drive an EV?", posted November 17, 2023. Data originally from Cox Automotive (https://www.coxautoinc.com/market-insights/kbb-atp-september-2023/)
[9] U.S. Department of Energy, "Federal Tax Credits for Pre-owned Plug-in Electric and Fuel Cell Vehicles" (webpage),last updated 1/16/2024. (https://www.fueleconomy.gov/feg/taxused.shtml)

Economy wide, EVs advance efficiency significantly, wasting only about 11% of energy compared to the roughly 80% wasted by gasoline powered cars.[10] EVs eliminate a major source of air pollution, with health impacts both local and global. Finally, they give consumers the option to use local sources of energy, including utility scale renewable electricity or even power from a resident's own rooftop or community solar.

Cost/Benefit Analysis

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

   This code will only nominally increase costs.

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

   Providing an EV Ready Space at a Level 2 capacity of 40A, 240V in new construction adds minimal cost. The Southwest Energy Efficiency Project (SWEEP) estimates the incremental cost at about $50 per space, depending on the distance between the electric panel and the parking space.[11] Research by NBI and NRDC estimates the cost at $115.[12]

   New construction with 200 amp service is typically more than enough to allow for Level 2 charging.[13] Many homeowners are even able to charge an EV with a 100 amp panel, making the need for more than the standard 200 amp service extremely unlikely, especially in small and modest sized homes.[14]

   Alternatively, retrofitting homes for Level 2 Charging is much costlier. Estimates vary widely from $300-$5,000.[15] In Xcel Energy's 2023 Transportation Electrification Plan, they estimated that installing a dedicated 240 V circuit in their Minnesota service territory cost $880 on average, with costs varying by site but reaching a maximum of $5,000 for a single project.[16]

   Assuming incremental EV ready costs of $115 compared to retrofit costs of $880, only 14% of residents would need to install EVSE in their EV ready parking space to realize overall cost savings of $820 per 100 homes.[17] If the (conservative) IEA estimates of 40% EV market share by 2030 are

[10] "Electrifying transportation reduces emissions AND saves massive amounts of energy," Yale Climate Connections, 2022, https://yaleclimateconnections.org/2022/08/electrifying-transportation-reduces-emissions-and-saves-massive-amounts-of-energy/
[11] SWEEP, "SWEEP guide to EV infrastructure building codes,"(webpage), under section "Cost implications: EV building codes save people money." (https://www.swenergy.org/ev-infrastructure-building-codes/)
[12] Page 22, "Cost Study of the Building Decarbonization Code," NBI, 2022, https://newbuildings.org/resource/cost-study-of-the-building-decarbonization-code/
[13] Energy Star, https://www.energystar.gov/products/energy_star_home_upgrade/make_your_home_electric_ready
[14] "Yes, it's possible to electrify a home on just 100 amps," Canary Media, December 2023, https://www.canarymedia.com/articles/electrification/yes-its-possible-to-electrify-a-home-on-just-100-amps
[15] "An electric car charging station installation costs $750 to $2,600 for a Level 2 charger, 240-volt outlet, wiring, and wall mounting. Some EV charger installations cost $2,000 to $5,000 for extensive wiring or if the electrical panel needs upgrading." 2023 EV Charging Station Cost | Install Level 2 or Tesla (homeguide.com) updated September 2023
New 240v outlet: "totaling $300 or so" Cost To Install An Electrical Outlet: GFCI, 220v, 240v – Forbes Home
"if you need to mount the system from zero: do the wiring, and install a new service panel and 240 V outlet - add about $1000 - $1500 to your estimate" How Much Does It Cost To Install An EV Charger? (jdpower.com) December 2022
[16] Pg. 52, Xcel Energy, 2023 Integrated Distribution Plan - Appendix H: Transportation Electrification Plan (filed Nov 1, 2023) (link)
[17] In a 100 home universe: 100 x $115 = $11,500 for all EV ready compared to 14 x $880 = $12,320 for retrofit costs. Total saved: 12,320 - 11,500 = $820.

correct, then 20% of residents or more might install EVSE in their EV ready parking space, realizing cost savings of $6,100 per 100 homes.[18]

None of these estimates include savings from the lower operation costs of EVs compared to an internal combustion engine. According to AAA, an electric vehicle (EV) will save roughly $1,039 per year in total fuel and maintenance costs compared to a comparable gasoline vehicle.[19]

The estimates above also leave out the impact on human health and healthcare costs that EVs reduce by lowering fossil fuel combustion. Research lead by the Harvard Chan School of Public Health found that "more than 8 million people died in 2018 from fossil fuel pollution," equating to about 1 in 5 deaths worldwide.[20] Across the United States, research published in the journal *Environmental Research: Health* estimated that US oil and gas causes roughly $77 billion in health impacts every year. The health harms are also local and measurable. Researchers in Rochester, Minnesota studied almost 20,000 people over 11 years and found "significant relationships between asthma exacerbations and residential proximity to traffic."[21] By simply making it easier for residents to eliminate nearby sources of fossil fuel pollution, we can continue protecting the health and welfare of Minnesotans inside of buildings and out.

A small investment during new construction will save homeowners substantial future costs and give them more options. Given the market trends identified in the reason statement, it is not a question of whether homes will need EV charging infrastructure, but when. Failing to adopt this proposal will be saddling future homeowners with substantially higher costs.

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

   Cost will be passed to homeowner and will save cost over retrofit.

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

   This system can be inspected during normal electrical inspection and will increase the cost of compliance.

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

   No, see cost estimates above.

Regulatory Analysis

[18] In a 100 home universe: 100 x $115 = $11,500 for all EV ready compared to 20 x $880 = $17,600 for retrofit costs. Total saved: 17,600 – 11,500 = $ 6,100.

[19] "$709 in fuel savings assuming 15,000 miles, and $330 saved in maintenance, repair, and tires" according to "True Cost of Electric Vehicles," AAA, https://www.aaa.com/autorepair/articles/true-cost-of-ev

[20] "Fossil fuel air pollution responsible for 1 in 5 deaths worldwide," Harvard Chan School of Public Health, 2021, https://www.hsph.harvard.edu/c-change/news/fossil-fuel-air-pollution-responsible-for-1-in-5-deaths-worldwide/

[21] Lindgren P, Johnson J, Williams A, Yawn B, Pratt GC. Asthma exacerbations and traffic: examining relationships using link-based traffic metrics and a comprehensive patient database. Environ Health. 2016 Nov 3;15(1):102. doi: 10.1186/s12940-016-0184-2. PMID: 27809853; PMCID: PMC5094142.

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

   This proposed code change would require additional electrical and/or laborer work.

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

   There is no other clear policy tool to prepare Minnesota homes for EV charging and avoid steep retrofit costs.

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

   This proposal will save homeowners the burden of upgrading their homes to provide electrical vehicle charging.

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

   No, although a legislation passed in the 2023 Minnesota legislative session requiring adding electric vehicle charging to the commercial budling code.

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

DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

Author/requestor: Jonny Kocher

Email address: jkocher@rmi.org

Telephone number: 510-761-5060

Firm/Association affiliation, if any: RMI

Date: 1/29/24

Model Code: IECC 2021

Code or Rule Section: Res Energy Code

Code or rule section to be changed: R404.4

Intended for Technical Advisory Group ("TAG"): *Residential Energy*

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

Proposed Language

1. The proposed code change is meant to:
   ☐ change language contained the model code book? If so, list section(s).
   ☐ change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).
   ☐ delete language contained in the model code book? If so, list section(s).
   ☐ delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).
   ☒ add new language that is not found in the model code book or in Minnesota Rule.

2. Is this proposed code change required by Minnesota Statute? If so, please provide the citation.
   In order to reach Minnesota's climate goals, the State developed the Minnesota Climate Action Framework. Under the Smarter Buildings and Construction initiative, one of the suggested state action steps included: "Develop clear options for building owners and families to make informed environmentally preferable selections for their building materials and products, including appliances such as furnaces, water heaters, and cooktops/ovens."[1] Creating readiness requirements will enable building owners to make these informed selections in the future without it being prohibitively expensive.

[1] https://climate.state.mn.us/sites/climate-action/files/Climate%20Action%20Framework.pdf, page 19

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

R404.4 Electrification-ready circuits. Water heaters, space heating equipment, household clothes dryers, and cooking appliances that use fuel gas or liquid fuel shall comply with Sections R404.5.1 through R404.5.4. Electrical panel shall have spare circuits and be sized to meet the future load required by this section. Each spare circuit shall be labeled with the word "spare." Space shall be reserved in the electrical panel for each reserved circuit for the installation of an overcurrent device. Capacity for the future circuits required in this section shall be included in the load calculations of the original installation. ~~**Electric readiness.** Water heaters, space heaters, household clothes dryers, and cooking appliances that use fuel gas or liquid fuel shall comply with Sections R404.4.1 through R404.4.5.~~

R404.4.1 Cooking appliances. A circuit capable of feeding a future 240-volts, 40-amperes load ~~A dedicated branch circuit outlet with a rating not less than 240-volts, 40-amperes shall be installed and terminate within three feet of conventional cooking tops, conventional ovens or cooking appliances combining both.~~

Exception: Cooking appliances not installed in an individual dwelling unit .

R404.4.2 Household Clothes Dryers. A circuit capable of feeding a future 240-volts, 30-amperes load ~~A dedicated branch circuit with a rating not less than 240-volts, 30-amperes shall be installed and terminate within three feet (304 mm) of each household clothes dryer.~~

Exception: Clothes dryers not installed in an individual dwelling unit.

R404.4.3 Space ~~heaters~~ Heating Equipment. A circuit capable of feeding a future 240-volts, 40-amperes load ~~A dedicated branch circuit with a rating not less than either 240-volts, 30-amperes or 120V, 20-amperes shall be installed and terminate within three feet (304 mm) of each space heater.~~

Exception: Space heaters serving multiple dwelling units in a R-2 occupancy

R404.4.4 Water heaters. A circuit feeding a future 240-volts, 30-amperes load. ~~A dedicated branch circuit with a rating not less than either 240-volts, 30-amperes or 120V, 20-amperes shall be installed and terminate within three feet (304 mm) of each water heater.~~

Exception: Water heaters serving multiple dwelling units in a R-2 occupancy

~~**R404.4.4.1 Water heater space.** An indoor space that is at least three feet by three feet by seven feet high shall be available surrounding or within 3 feet of the installed water heater.~~

~~**Exception:** The water heater space requirement does not need to be met where a heat pump water heater or tankless water heater is installed.~~

~~**R404.4.5 Electrification-ready circuits.** The unused conductors required by Sections R404.4.1 through R404.4.4 shall be labeled with the word "spare." Space shall be reserved in the electrical panel in which the branch circuit originates for the installation of an overcurrent device. Capacity for the circuits required by Sections R404.4.1 through R404.4.4 shall be included in the load calculations of the original installation.~~

TABLE R405.2
REQUIREMENTS FOR SIMULATED BUILDING PERFORMANCE

SECTION	TITLE
R404.4	~~Electric readiness~~Electrification-ready circuits

TABLE R406.2
REQUIREMENTS FOR ENERGY RATING INDEX

SECTION[a]	TITLE
R404.4	~~Electric readiness~~Electrification-ready circuits

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

Need and Reason

1. Why is the proposed code change needed? Please provide a general explanation as well as a specific explanation for any changes to numerical values (heights, area, etc.)
   Currently it is very expensive for consumers to switch from furnaces, gas water heaters, gas stoves and gas dryers to their electric alternatives. The expensive cost is one of the primary barriers in the fuel switching needed to reach the state and countries climate goals.

2. Why is the proposed code change a reasonable solution?
   This proposal enhances customer choice by making it easy for homeowners to choose either electric or gas appliances and water heating equipment. By ensuring that a home built with gas or propane can easily accommodate future electric appliances and equipment, this proposal protects homeowners from future costs, should natural gas become less affordable or even unavailable over the life of the building. As the electric grid becomes cleaner, and high-efficiency electric heat pump technology increasingly offers utility bill and pollution reduction benefits over gas, more customers may want to transition from natural gas to electric space and water heating. Federal, state, and local environmental and public health policies may also encourage, or even require the transition in some areas over the life of the building. Electric-ready requirements will protect customers from potential high retrofit costs.

3. What other factors should the TAG consider?
   According to RMI's State Climate Policy scorecard, Minnesota's building sector is not on track to reach a 27% reduction in GHG emissions by 2030 from a 2005 baseline, the emissions target benchmark set during the Paris Climate Agreement.[2] To reach this goal, Minnesota will need to reduce its natural gas usage by 32% from today's levels and move towards selling only all electric appliances by 2030. This policy is fully aligned with reaching that goal.

Cost/Benefit Analysis

1. Will the proposed code change increase or decrease costs? Please explain and provide estimates if possible.
   The cost will increase upfront costs. Sources from the New Buildings Institute, Group14 Engineering and the California Energy Commission estimate that the upfront costs of electric readiness ranges between $500 to $1,010.[3,4,5] Because this proposal only requires electrification of the panel, the esimtated cost is around $0 to $440.

[2] RMI State Score Card, 2022, https://statescorecard.rmi.org/mn
[3] NBI, Cost of Decarbonization Code, 2022, page 26
https://newbuildings.org/wp-content/uploads/2022/04/BuildingDecarbCostStudy.pdf
[4] California Energy Commission, 2022, page 2-3
https://efiling.energy.ca.gov/GetDocument.aspx?tn=238049&DocumentContentId=71300
[5] Group 14, 2020, page 12
https://www.communityenergyinc.com/wp-content/uploads/Building-Electrification-Study-Group14-2020-11.09.pdf

2. If there is an increased cost, will this cost be offset by a safety or other benefit? Please explain. If the benefit is quantifiable (for example energy savings), provide an estimate if possible.
   The cost of meeting these electric-ready requirements when the house is being built, walls are open, and the trades are already on-site, is marginal. In comparison, the cost of retrofitting a building for these requirements can be an order of magnitude higher and act as a barrier for the homeowner to choose electric appliances.

   An electrification engineering study by Group 14 reports that the electrical modifications needed to install a HP heating system and a HPWH is $2,100 as a retrofit compared to $500 as an original install for a 3,000 sq ft single family home. The California Energy Commission cost study found that the retrofit cost to add electrical infrastructure for water heating, space heating, dryers and cooking appliances after construction is at least $2,560 (likely higher), compared to the upfront cost of around $1,010 to do it during construction. These studies indicate that it is about 3-4 times less expensive to do this work during construction. Not making new buildings electric-ready would leave homeowners exposed to potentially high retrofit costs in the future and will greatly inhibit customer choice.

3. If there is a cost increase, who will bear the costs? This can include government units, businesses, and individuals.
   Construction contractors and developers will bear most of the costs. The substantial cost savings for reduced costs of future retrofits will benefit homeowners.

4. Are there any enforcement or compliance cost increases or decreases with the proposed code change? Please explain.
   There will be a negligible impact in inspection and enforcement cost when code inspectors ensure this portion of the code is complied with.

5. Will the cost of complying with the proposed code change in the first year after the rule takes effect exceed $25,000 for any one small business or small city (Minn. Stat. § 14.127)? A small business is any business that has less than 50 full-time employees. A small city is any statutory or home rule charter city that has less than ten full-time employees. Please explain.
   No. This will not impact businesses or cities. This is a residential code proposal.

Regulatory Analysis

1. What parties or segments of industry are affected by this proposed code change?
   Electrical contractors will have slightly more work because of this proposal

2. Can you think of other means or methods to achieve the purpose of the proposed code change? What might someone opposed to this code change suggest instead? Please explain what the alternatives are and why your proposed change is the preferred method or means to achieve the desired result.
   This is the only feasible option to cost effectively prepare homes for future electrification required to reach the state's climate action goals. The main argument will be around the upfront cost, which I have already addressed by showing that this will save thousands of dollars of future retrofit costs.

3. What are the probable costs or consequences of not adopting the code change, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals?
   If we continue to build with fossil fuels in new buildings without preparing for the future energy transition, we will simply not meet our climate goals, which is unthinkable.

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

The Inflation Reduction Act currently has many incentives and tax credits for installing new clean energy technologies. By preparing for electric ready homes, consumers whose appliances break between now and 2031 will be able to easily take advantage of these tax credits. Ideally, future administrations will continue to extend these incentives and tax credits.

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

DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

Author/requestor: Steve Shold

Email address: steve.shold@state.mn.us

Telephone number: 651-284-5312

Firm/Association affiliation, if any: Dept of Labor

Date: 2/15/24

Model Code: 2021 IECC-R

Code or Rule Section:

Code or rule section to be changed: Section R402.2.12 & .13 – Sunroom & Garage/Accessory structure insulation

Intended for Technical Advisory Group ("TAG"):

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

Proposed Language

1. The proposed code change is meant to:

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

   ☐ change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).
   No

   ☐ delete language contained in the model code book? If so, list section(s).
   No.

   ☐ delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).
   No.

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

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

No.

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

4. Will this proposed code change impact other sections of a model code book or an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.
   Yes, new section R402.2.13 will now be referenced in R502.2 (this change is located in a subsequent proposal).

Need and Reason

1. Why is the proposed code change needed? Please provide a general explanation as well as a specific explanation for any changes to numerical values (heights, area, etc.)
   Sunrooms and garages have different needs, so it makes sense to separate them out. The insulation requirements for garages and accessory structures have been severely lacking in past codes, so additional details and guidance will promote uniformity.

2. Why is the proposed code change a reasonable solution?
   Exceptions and breaks provided in the '21 IECC-R were maintained, but sections were made more specific.

3. What other factors should the TAG consider?
   NA

Cost/Benefit Analysis

1. Will the proposed code change increase or decrease costs? Please explain and provide estimates if possible.
   This proposal will have a minimal impact on cost. Most structures referenced are being insulated, it mainly promotes clarity and uniformity.

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

3. If there is a cost increase, who will bear the costs? This can include government units, businesses, and individuals.
   If projects are affected, initially subcontractors would bear the cost for insulation, which will ultimately be passed on to the owner. Owners will benefit from a more efficient thermal envelope.

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

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

Regulatory Analysis

1. What parties or segments of industry are affected by this proposed code change?
   Designers, builders, and remodelers, insulation contractors, and building inspectors.

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

3. What are the probable costs or consequences of not adopting the code change, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals?
   Not adopting the change yields to continued confusion in design and enforcement in these structures.

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

Summary

This proposal separates out insulation requirements for sunrooms and garages/accessory structures, and provides exceptions for existing construction.

R402.2.12 Sunroom ~~and heated garage~~ insulation. *Sunrooms* enclosing *conditioned space* ~~and heated garages~~ shall meet the insulation requirements of this code.

Exception: For *sunrooms* ~~and heated garages~~ provided *thermal isolation*, and enclosed *conditioned space*, the following exceptions to the insulation requirements of this code shall apply:

1. The minimum ceiling insulation *R*-values shall be ~~R-19 in *Climate Zones* 0 through 4 and~~ R-24 ~~in *Climate Zones* 5 through 8~~.
2. The minimum wall insulation *R*-value shall be R-13 ~~in all *climate zones*~~. Walls separating a *sunroom* ~~or heated garage~~ with *thermal isolation* from *conditioned space* shall comply with the *building thermal envelope* requirements of this code.

R402.2.13 Private garages and accessory structures. Garages and IRC-4 buildings enclosing *conditioned space* shall meet the insulation requirements of this code.

Exception: For existing private garages and accessory structures that are altered to become *conditioned space*, the following exceptions to the insulation requirements of this code shall apply:

1. Slab-on-grade floor edges, foundations, and curbs shall be insulated to a minimum R-10 and comply with items a or b:
   a. Insulation installed on the interior side shall be installed from top of foundation or curb to the top of the floor,
   b. Insulation installed on the exterior shall be installed from the top of the concrete wall or curb to at least 6” below grade on the exterior, or to paved surfaces when present.
2. The minimum ceiling *R*-value shall be R-24.
3. The minimum wall insulation *R*-value shall be R-13.

DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

Author/requestor: Steve Shold

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Telephone number: 651-284-5312

Firm/Association affiliation, if any: Dept of Labor

Date: 2/15/24

Model Code: 2021 IECC-R

Code or Rule Section:

Code or rule section to be changed: Section R402.3.5 & .6 – Sunroom & Garage/Accessory Structure Fenestration

Intended for Technical Advisory Group ("TAG"):

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

Proposed Language

1. The proposed code change is meant to:

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

   ☐ change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).
   No

   ☐ delete language contained in the model code book? If so, list section(s).
   No.

   ☐ delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).
   No.

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

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

No.

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

4. Will this proposed code change impact other sections of a model code book or an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.
   Yes, new section R402.3.6 will now be referenced in R502.2 (this change is located in a subsequent proposal).

Need and Reason

1. Why is the proposed code change needed? Please provide a general explanation as well as a specific explanation for any changes to numerical values (heights, area, etc.)
   Sunrooms and garages have different needs, so it makes sense to separate them out. The fenestration requirements for garages and accessory structures have lacked clarity in past codes, so additional details and guidance will promote uniformity.

2. Why is the proposed code change a reasonable solution?
   Exceptions and breaks provided in the '21 IECC-R were maintained, but sections were made more specific. A new exception was added for clarity and uniformity.

3. What other factors should the TAG consider?
   NA

Cost/Benefit Analysis

1. Will the proposed code change increase or decrease costs? Please explain and provide estimates if possible.
   This proposal will have a minimal impact on cost. Most structures referenced are complying, it mainly promotes clarity and uniformity for these structures.

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

3. If there is a cost increase, who will bear the costs? This can include government units, businesses, and individuals.
   If projects are affected, initially subcontractors would bear the cost for fenestration, which will ultimately be passed on to the owner. Owners will benefit from a more efficient thermal envelope.

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

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

Regulatory Analysis

1. What parties or segments of industry are affected by this proposed code change?
   Designers, builders, and remodelers, insulation contractors, and building inspectors.

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

3. What are the probable costs or consequences of not adopting the code change, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals?
   Not adopting the change yields to continued confusion in design and enforcement in these structures.

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

Summary

This proposal separates out fenestration requirements for sunrooms and garages/accessory structures, and provides exceptions for existing construction.

R402.3.5 Sunroom ~~and heated garage~~ fenestration.
Sunrooms ~~and heated garages~~ enclosing *conditioned space* shall comply with the fenestration requirements of this code.

> **Exception:** ~~In Climate Zones 2 through 8, f~~For *sunrooms* ~~and heated garages~~ with *thermal isolation* and enclosing *conditioned space*, the fenestration *U*-factor shall not exceed 0.45 and the skylight *U*-factor shall not exceed 0.70.

New fenestration separating a *sunroom* ~~or heated garage~~ with *thermal isolation* from *conditioned space* shall comply with the *building thermal envelope* requirements of this code.

R402.3.6 Private garage and accessory structure fenestration. Garages and IRC-4 buildings enclosing *conditioned space* shall meet the fenestration requirements of this code.

> **Exceptions:**
> 1. The fenestration *U*-factor shall not exceed 0.45 and the skylight *U*-factor shall not exceed 0.70.
> 2. Doors for vehicles shall be insulated to a minimum manufacturer stated *R*-value of R-15, and shall not be required to comply with Table R402.1.2, Table R402.1.3, or Section R402.4.

DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

Author/requestor: Steve Shold

Email address: steve.shold@state.mn.us

Telephone number: 651-284-5312

Firm/Association affiliation, if any: Dept of Labor

Date: 2/15/24

Model Code: 2021 IECC-R

Code or Rule Section:

Code or rule section to be changed: Section R402.1 – Thermal envelope exceptions

Intended for Technical Advisory Group ("TAG"):

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

Proposed Language

1. The proposed code change is meant to:

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

   ☐ change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).
   No

   ☐ delete language contained in the model code book? If so, list section(s).
   No.

   ☐ delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).
   No.

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

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

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

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

Need and Reason

1. Why is the proposed code change needed? Please provide a general explanation as well as a specific explanation for any changes to numerical values (heights, area, etc.)
   Applying this content has been extremely confusing in the past for structures like sunrooms, garages, and accessory structures. Referencing the new definition for *"conditioned space"* located in the IECC-R will help provide clarity and uniformity.

2. Why is the proposed code change a reasonable solution?
   It removes the previously agonizing interpretation of "contain" and references the model code definition - *"conditioned space"*. It strikes the "3.4 Btu/h × ft2 (10.7 W/m2) or 1.0 watt/ft2 of floor area" threshold as it is a miniscule amount of conditioning that cannot provide any appreciable amount of conditioning in our cold climate.

3. What other factors should the TAG consider?
   NA

Cost/Benefit Analysis

1. Will the proposed code change increase or decrease costs? Please explain and provide estimates if possible.
   This proposal will have a minimal impact on cost. It mainly promotes clarity and uniformity for these structures.

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

3. If there is a cost increase, who will bear the costs? This can include government units, businesses, and individuals.
   This will not provide **new** requirements.

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

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

Regulatory Analysis

1. What parties or segments of industry are affected by this proposed code change?
   Designers, plan reviewers, and building inspectors.

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

3. What are the probable costs or consequences of not adopting the code change, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals?
   Not adopting the change yields to continued confusion in design and enforcement of buildings and portions thereof without conditioned space.

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

R402.1 General. The *building thermal envelope* shall comply with the requirements of Sections R402.1.1 through R402.1.5.

Exceptions:

1. The following ~~low-energy~~ *buildings*, or portions thereof, separated from the remainder of the building by *building thermal envelope* assemblies complying with this section shall be exempt from the *building thermal envelope* provisions of Section R402.
   ~~a. 1.1. Those with a peak design rate of energy usage less than 3.4 Btu/h × ft2 (10.7 W/m2) or 1.0 watt/ft2 of floor area for space conditioning purposes.~~
   b. 1.2. Those ~~that do not contain~~not meeting the definition of *conditioned space*.
2. Log homes designed in accordance with ICC 400.

For reference, "Conditioned Space" in 2021 IECC-R:

CONDITIONED SPACE. An area, room or space that is enclosed within the *building thermal envelope* and that is directly or indirectly heated or cooled. Spaces are indirectly heated or cooled where they communicate through openings with conditioned spaces, where they are separated from conditioned spaces by uninsulated walls, floors or ceilings, or where they contain uninsulated ducts, piping or other sources of heating or cooling.

DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

Author/requestor: Steve Shold

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Telephone number: 651-284-5312

Firm/Association affiliation, if any: Dept of Labor

Date: 2/15/24

Model Code: 2021 IECC-R

Code or Rule Section:

Code or rule section to be changed: Section R502.2 – Change in space conditioning

Intended for Technical Advisory Group ("TAG"):

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

Proposed Language

1. The proposed code change is meant to:

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

   ☐ change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).
   No

   ☐ delete language contained in the model code book? If so, list section(s).
   No.

   ☐ delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).
   No.

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

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

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

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

Need and Reason

1. Why is the proposed code change needed? Please provide a general explanation as well as a specific explanation for any changes to numerical values (heights, area, etc.)
   Applying this content has been extremely confusing in the past for structures like sunrooms, garages, and accessory structures. With the addition of chapter 5 for existing buildings, the proposed exception helps point the user back to proposed content for insulation and fenestration requirements written into RE-32 & RE-33.

2. Why is the proposed code change a reasonable solution?
   As stated above, the proposed exception helps point the user back to proposed content for insulation and fenestration requirements written into RE-32 & RE-33. This will promote understanding, uniformity, and compliance.

3. What other factors should the TAG consider?
   NA

Cost/Benefit Analysis

1. Will the proposed code change increase or decrease costs? Please explain and provide estimates if possible.
   This proposal will have a minimal impact on cost. It mainly promotes clarity and uniformity for these structures.

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

3. If there is a cost increase, who will bear the costs? This can include government units, businesses, and individuals.
   This will not provide **new** requirements.

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

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

Regulatory Analysis

1. What parties or segments of industry are affected by this proposed code change?
   Designers, plan reviewers, and building inspectors.

2. Can you think of other means or methods to achieve the purpose of the proposed code change? What might someone opposed to this code change suggest instead? Please explain what the alternatives are and why your proposed change is the preferred method or means to achieve the desired result.
   Could leave it alone, but it serves as a helpful pointer back to the prescriptive thermal envelope provisions.

3. What are the probable costs or consequences of not adopting the code change, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals?
   Not adopting the change yields to continued confusion in design and enforcement of buildings and portions thereof without conditioned space.

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

R502.2 Change in space conditioning. Any unconditioned ~~or low-energy~~ space that is altered to become *conditioned space* shall be required to be brought into full compliance with this code.

Exceptions:

1. Garages and IRC-4 buildings shall comply with the insulation requirements of Section R402.2.13 and the fenestration requirements of Section R402.3.6.
2. ~~1.~~ Where the simulated performance option in Section R405 is used to comply with this section, the annual energy cost of the *proposed design* is permitted to be 110 percent of the annual energy cost otherwise allowed by Section R405.2.
3. ~~2.~~ Where the Total UA, as determined in Section R402.1.5, of the existing *building* and the *addition*, and any *alterations* that are part of the project, is less than or equal to the Total UA generated for the existing *building*.
4. ~~3.~~ Where complying in accordance with Section R405 and the annual energy cost or energy use of the *addition* and the existing *building*, and any *alterations* that are part of the project, is less than or equal to the annual energy cost of the existing *building*. The *addition* and any *alterations* that are part of the project shall comply with Section R405 in its entirety.

R502.3.1 Building envelope. New *building* envelope assemblies that are part of the *addition* shall comply with Sections R402.1, R402.2, R402.3.1 through R402.3.~~5~~6, and R402.4.

Exception: New envelope assemblies are exempt from the requirements of Section R402.4.1.2.

DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

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Date: 2/15/24

Model Code: 2021 IECC-R

Code or Rule Section:

Code or rule section to be changed: Section R503.1.1 – Building Envelope

Intended for Technical Advisory Group ("TAG"):

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

Proposed Language

1. The proposed code change is meant to:

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

   ☐ change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).
   No

   ☐ delete language contained in the model code book? If so, list section(s).
   No.

   ☐ delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).
   No.

   ☐ add new language that is not found in the model code book.
   Yes, see language below.

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

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

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

Need and Reason

1. Why is the proposed code change needed? Please provide a general explanation as well as a specific explanation for any changes to numerical values (heights, area, etc.)
   Most of the exceptions listed here currently reside in the administrative portion of the '15 MRE. However, two MN amended items were not included. This proposal carries them forward.

2. Why is the proposed code change a reasonable solution?
   These two items are important for durability and clarity in enforcement.

3. What other factors should the TAG consider?
   NA

Cost/Benefit Analysis

1. Will the proposed code change increase or decrease costs? Please explain and provide estimates if possible.
   This proposal will have no impact on cost.

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

3. If there is a cost increase, who will bear the costs? This can include government units, businesses, and individuals.
   This will not provide **new** requirements.

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

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

Regulatory Analysis

1. What parties or segments of industry are affected by this proposed code change?
   Builders, remodelers, designers, insulation contractors, and building inspectors.

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

3. What are the probable costs or consequences of not adopting the code change, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals?
   Not adopting the change could negatively affect homes in terms of moisture management and building science. This promotes durable resilient home remodeling.

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

R503.1.1 Building envelope. Building envelope assemblies that are part of the *alteration* shall comply with Section R402.1.2 or R402.1.4, Sections R402.2.1 through R402.2.1~~2~~3, R402.3.1, R402.3.2, R402.4.3 and R402.4.5. Prior to installing attic insulation, accessible attic bypasses shall be sealed. An attic bypass is any air passageway between a conditioned space and an unconditioned attic.

Exception: The following alterations shall not be required to comply with the requirements for new construction provided that the energy use of the building is not increased:

1. Storm windows installed over existing fenestration.
2. Existing ceiling, wall or floor cavities exposed during construction provided that these cavities are filled with insulation.
3. Construction where the existing roof, wall or floor cavity is not exposed.
4. Roof recover.
5. Roofs without insulation in the cavity and where the sheathing or insulation is exposed during reroofing shall be insulated either above or below the sheathing.
6. Surface-applied window film installed on existing single pane fenestration assemblies to reduce solar heat gain provided that the code does not require the glazing or fenestration assembly to be replaced.
7. Insulation R-value, air barrier, and vapor retarder requirements are not applicable to existing foundations, crawl space walls, and basements in existing dwellings or dwelling units when the alteration or repair requires a permit if the original dwelling or dwelling unit permit was issued before June 1, 2009.

DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

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Firm/Association affiliation, if any:

Date: October 23, 2023
Rev. January 30, 2024

Model Code: Residential Energy Code

Code or Rule Section: 1322

Code or rule section to be changed: R402.1.5 Total UA alternative

Intended for Technical Advisory Group ("TAG"):

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

Proposed Language

1. The proposed code change is meant to:

   X change language contained the model code book? If so, list section(s).
   R402.1.5 Total UA alternative

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

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

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

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

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

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

R402.1.5 Total UA alternative: Where the total building thermal envelope UA, the sum of U-factor times assembly area, is less than or equal to the total UA resulting from multiplying the U-factors in Table R402.1.2 by the same assembly area as in the proposed building, the building shall be considered to be in compliance with Table R402.1.2. The UA calculation shall be performed using a method consistent with the ASHRAE Handbook of Fundamentals and shall include the thermal bridging effects of framing materials. In addition to UA compliance, ~~the SHGC requirements of Table R402.1.2 and~~ the maximum fenestration U-factors of Section R402.5 shall be met.

For walls complying with the maximum assembly U-factors in Table R402.1.2 or the insulation minimum R-values identified in Table R402.1.3, the building must not exceed the maximum window and door area as a percentage of the overall exposed wall area listed below. Other components must meet the requirements of Table R402.1.2 or R402.1.3.

Maximum Window and Door Area As a Percent of Overall Exposed Wall								
Window U:	**0.26**	**0.28**	**0.30**	**0.32**	**0.34**	**0.36**	**0.38**	**0.40**
% Window/Door:	30.2%	27.7%	25.5%	23.6%	22.0%	20.6%	19.4%	18.3%

R402.1.5.1 Performance criteria. The combined thermal transmittance (U_o) factors for walls, roof/ceilings, and floors over unheated spaces used for alternative calculation equivalency purposes must be less than or equal to:

1.1 0.110 Btu/h ft^2 °F for walls;

1.2 0.024 Btu/h ft^2 °F for roof/ceilings; and

1.3 0.033 Btu/h ft^2 °F (Zone 6) or 0.028 Btu/h ft^2 °F (Zone 7) for floors.

Where alternative construction assemblies are proposed, the combined total overall thermal transmittance (U_o) factors for walls, roof/ceilings, and floors over unheated spaces must be less than or equal to the calculated combined total thermal transmittance using the above maximum values.
That is:

Zone 6: $Uo_{walls}A_{walls} + Uo_{roof/ceiling}A_{roof/ceiling} + Uo_{floor}A_{floor} \leq 0.110A_{walls} + 0.024A_{roof/ceiling} + 0.033A_{floor}$

Zone 7: $Uo_{walls}A_{walls} + Uo_{roof/ceiling}A_{roof/ceiling} + Uo_{floor}A_{floor} \leq 0.110A_{walls} + 0.024A_{roof/ceiling} + 0.028A_{floor}$

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

Need and Reason

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

Using only UA equivalency with no limits on the baseline U values for the walls, roof/ceiling and floors over unheated spaces can have unintended consequences. For example, considering the walls only and performing U_o equivalent calculations, the effect of increasing glass area is shown below:

Prescriptive wall values:					
U_g:	**0.30**				
U_w:	**0.045**				
Framing to Cavity Ratio: 25%/75%					
For changing glass areas, what is resulting overall					
Uo which would satisfy UA alternative calculations?					
% Glass	**% Framing**	**% Cavity**	**U_o**	**U_o/0.110 wall limit**	
15.00%	22.92%	68.76%	0.083	0.76	
20.00%	22.60%	67.80%	0.096	0.87	
25.00%	22.28%	66.84%	0.109	0.99	
30.00%	21.96%	65.89%	0.122	1.10	
35.00%	21.64%	64.93%	0.134	1.22	
40.00%	21.33%	63.98%	0.147	1.34	
45.00%	21.01%	63.02%	0.160	1.45	
50.00%	20.69%	62.06%	0.173	1.57	
Setting wall U at 0.110 would allow 25% glass area if Ug = 0.30					
Typical house is below 20% glass area					
Using higher performance glass would allow more than 25% glass					

The heat losses of a wall are calcuated using the formula U_oA (T_{inside}-$T_{outside}$). As can be noted, even 50% glass area will satisfy the equivalency calculation even though the overall wall has 57% greater heat losses than the limited 0.110 calculation, which limits the maximum glass area to about 25%. Summer heat gains would be similarly impacted, although more difficult to compare due to solar gains.

2. Why is the proposed code change a reasonable solution?
   This proposed change provides clarity to the calculation methods and eliminates the possibility of allowing buildings with much greater heat losses and gains than are intended by the code. This added wording is very similar to what was in the 1994 Minnesota Residential Energy Code. The deletion of the SHGC requirements was because they do not apply to Zones 6 and 7.

3. What other factors should the TAG consider?

Cost/Benefit Analysis

1. Will the proposed code change increase or decrease costs? Please explain and provide estimates if possible.
   No change. It provides clarification to how calculations are to be performed.

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

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

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

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

Regulatory Analysis

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

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

   Proposed change is the correct method to assure consistency in how the UA alternative calculations are performed.

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

4. Are you aware of any federal or state regulation or requirement related to this proposed code change? If so, please list the federal or state regulation or requirement and your assessment of any differences between the proposed code change and the federal regulation or requirement.
   The goal of the energy code is to save energy, which is being promoted by the DOE.

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

A. Insulation in ceilings with attics must be *R*-38 minimum.

B. Insulation in floor rim joist areas must be R-10 minimum.

C. Entrance doors must be a minimum of either 1-3/4 inch solid core wood door, steel door with foam core, or NFRC-rated door with U-value not exceeding 0.40.

EXCEPTION: Swinging and sliding glass patio doors must have a U-value not greater than the window U-value for the building.

D. Floors over *unconditioned spaces* must be *R*-30 minimum.

E. Foundation windows 5.6 square feet and less must be insulated glass, one-half inch between panes and wood or vinyl frame, or not greater than U-0.51.

F. The space heating system must be not less than 90 percent *AFUE*.

G. The average U-value of all windows, except foundation windows 5.6 square feet and less, must not exceed the value listed in the maximum window U-value table corresponding with the maximum total window and door area as a percentage of overall exposed wall area, *R*-value of insulation within the insulated cavity, sheathing *R*-value, and foundation wall insulation. Total window and door area includes all foundation windows. Interpolations between chart values to intermediate values are permitted. Extrapolations beyond the values found in the chart shall require compliance with subpart 6, 7, or 8. Other components must meet the requirements of this subpart.

MAXIMUM WINDOW U-VALUE WITH 90% *AFUE* SPACE HEATING AND WITH R-10 EXTERIOR FOUNDATION WALL INSULATION

Maximum Total Window and Door Area as Percentage of Exposed Wall:	10%	12%	14%	16%	18%	20%	22%	24%	26%	28%
Wall Type:	**Maximum Window U-values:**									
2x4, *R*-13 insulation, < *R*-5 sheathing	0.37	0.37	0.33	0.28	0.25	0.22	0.20	0.18	0.17	0.15
2x4, *R*-13 insulation, >*R*-5 sheathing	0.37	0.37	0.37	0.37	0.37	0.33	0.30	0.27	0.25	0.23
2x4, *R*-13 insulation, > *R*-7 sheathing	0.37	0.37	0.37	0.37	0.37	0.36	0.33	0.30	0.27	0.25
2x6, *R*-19 insulation, < *R*-5 sheathing	0.37	0.37	0.37	0.37	0.37	0.32	0.29	0.27	0.24	0.23
2x6, *R*-19 insulation, > *R*-5 sheathing	0.37	0.37	0.37	0.37	0.37	0.37	0.35	0.32	0.29	0.27
2x6, *R*-21 insulation, < *R*-5 sheathing	0.37	0.37	0.37	0.37	0.37	0.35	0.31	0.29	0.26	0.24
2x6, *R*-21 insulation, > *R*-5 sheathing	0.37	0.37	0.37	0.37	0.37	0.37	0.36	0.33	0.30	0.28

ADJUSTMENTS TO MAXIMUM WINDOW U-VALUE FOR R-10 FOUNDATION WALL INSULATION*

Wall Type	U-value Percentage Change for R-5 Foundation Wall Insulation	U-value Percentage Change for R-19 (or greater) Foundation Wall Insulation
2x4, *R*-13 insulation, < *R*-5 sheathing	-8%	+5%
2x4, *R*-13 insulation, ≥*R*-5 sheathing	-6%	+3%
2x4, *R*-13 insulation, ≥*R*-7 sheathing	-5%	+3%
2x6, *R*-19 insulation, < *R*-5 sheathing	-6%	+3%
2x6, *R*-19 insulation, ≥ *R*-5 sheathing	-5%	+3%
2x6, *R*-21 insulation, < *R*-5 sheathing	-5%	+3%
2x6, *R*-21 insulation, ≥ *R*-5 sheathing	-5%	+3%

This table must be used in conjunction with the maximum window U-value with 90 percent *AFUE* space heating and the *R*-10 foundation wall insulation table. To find the appropriate maximum U-value for using *R*-5 or *R*-19 (or greater) foundation wall insulation, multiply the applicable number in the adjustments table by the corresponding U-value in the *R*-10 table.

Subp. 5. **Total heat gain or loss for entire building.** The value of U_o for any assembly such as roof/ceiling, wall, or floor may be increased and traded off by decreasing the value of U_o for other components, provided that the total heat gain or loss for the entire *building envelope* does not exceed the total resulting from conformance to the values of U_o specified in this chapter. Window U-value must not be greater than required in subpart 3.

Subp. 6. **Building component performance method.**

A. For the *gross wall area* above grade,

(1) when foundation wall insulation is *R*-5, maximum U_o-value is 0.100;

(2) when foundation wall insulation is *R*-10 or greater, maximum U_o-value is 0.110.

B. For roof/ceilings, U_o-value must not exceed 0.026.

C. For floors over *unconditioned spaces,* U_o-value must not exceed 0.033.

DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

Author/requestor: Patrick Murray

Email address: Pmurray@j-berd.com

Telephone number: (320) 656-0847

Firm/Association affiliation, if any: J-Berd Mechanical Contractors Inc.

Date: 2/21/24

Model Code: 2021 IECC

Code or Rule Section: R401.2

Code or rule section to be changed: R401.2

Intended for Technical Advisory Group ("TAG"): MN Residential Energy Code

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

Proposed Language

1. The proposed code change is meant to:

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

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

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

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

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

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

   No.

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

   R401.2 Application. Residential buildings shall comply with Section R401.2.5 and either Sections R401.2.1, R401.2.2, R401.2.3 or R401.2.4.

   Exception:
   1. Additions, alterations, repairs and changes of occupancy to existing buildings complying with Chapter 5.
   2. Buildings may comply with the commercial energy code as an alternate compliance path to this code.

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

   No.

Need and Reason

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

   This code change would allow buildings to have more flexibility to comply energy standards.

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

   The focus of the residential energy code is single family homes and not Apartments or other similar facilities such as assisted living. Apartment buildings and others like them function more like commercial buildings than single family houses.
   The commercial energy code has higher standards than the residential energy code. A building will perform better following the commercial energy code compared to the residential energy code.

3. What other factors should the TAG consider?

   A 3 story independent living facility with a garage underneath is 3 stories above grade. This building would fall under the residential energy code. If you slide the building up so the garage is above grade it is now 4 stories above grade. Nothing is different about the size of the building or how it functions, but it would now fall under the commercial energy code. Allowing multifamily, assisted living, and independent living facilities to comply with the commercial energy code would permit shorter buildings to be built to the same standards as their taller counter parts.

Cost/Benefit Analysis

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

   It will not cause a cost change as it is an alternate compliance path that does not have to be selected.

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

   If a builder chose to follow the commercial energy code, it would likely cost more due to the higher standards. A more energy efficient building will result in lower energy costs.

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

   Initially the builder will bear the cost but it will be passed on to the tenant. However, savings on their energy bill will offset the improvements.

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

   There is likely no change to enforcement or compliance cost because the commercial energy code is already enforced and covers the same types of buildings that are similar in size, just one story taller.

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

   No.

Regulatory Analysis

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

   All parties or segments of the industry are affected in a positive manner.

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

   The goal of this code change to is allow larger multiple story buildings to comply with standards that are applied to similar buildings. Being that the commercial energy code allows multiple compliance paths, presumably those paths could be added to the residential energy code, but that would be rather redundant.
   One may object to single family dwellings or townhomes being built to commercial standards. An alternative would be adding a square footage threshold to buildings falling under residential energy code. Hypothetically, if a building were over 10,000sqft it would fall under the commercial energy code regardless of height or occupancy.

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

   Consequence of not adopting the code change is restricting compliance paths.

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

   No.

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