**A Meeting of the**

**Illinois Energy Conservation Advisory Council**

**Residential Subcommittee**

**is being held March 4, 2025, 12:00 p.m. – 2:00 p.m.**

**Via Webex (login info below)**

1. Call to Order
   1. Roll Call of Members
   2. Confirmation of a Quorum
   3. Webex recording
2. Updates
3. Base Code Topics (Proposals are attached at the end of this agenda)
   1. Approval of 2/18/25 meeting minutes.
   2. Robert Coslow will present Proposal #1 to add gas heat pump options to R408 to match Stretch Code. Possible motion to approve.
   3. Robert Coslow will present Proposal #2 to remove amendments in R403.6 that are taken from the IRC. Possible motion to approve.
   4. Scott Farbman will present Proposal #3 to include a modified Appendix RK. Possible motion to approve.
   5. Scott Farbman will present Proposal #4 to modify passive house compliance options.
   6. Future amendment topics? If there are none, a motion to close the amendment process will be considered.
4. Stretch Code Topics
   1. None.
5. Public comment
6. Motion to Adjourn

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###### **Proposal #1: Revise Table R408.2 and Section R408.2.2 to add gas heat pump option to match 2023 Stretch Code.**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TABLE R408.2—CREDITS FOR ADDITIONAL ENERGY EFFICIENCY** | | | | | | | | | | |
| **MEASURE NUMBER** | **MEASURE DESCRIPTION** | **CREDIT VALUE** | | | | | | | | |
| **Climate Zones 0 & 1** | **Climate Zone 2** | **Climate Zone 3** | **Climate Zone 4 Except Marine** | **Climate Zone 4 Marine** | **Climate Zone 5** | **Climate Zone 6** | **Climate Zone 7** | **Climate Zone 8** |
| R408.2.1.1(1) | ≥ 2.5% Reduction in total TC | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| R408.2.1.1(2) | ≥ 5% reduction in total TC | 0 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 2 |
| R408.2.1.1(3) | > 7.5% reduction in total TC | 0 | 1 | 2 | 2 | 2 | 2 | 3 | 3 | 3 |
| R408.2.1.1(4) | > 10% reduction in total TC | 1 | 1 | 2 | 3 | 3 | 4 | 4 | 5 | 5 |
| R408.2.1.1(5) | > 15% reduction in total TC | 1 | 2 | 2 | 4 | 4 | 5 | 6 | 7 | 8 |
| R408.2.1.1(6) | > 20% reduction in total TC | 2 | 4 | 4 | 5 | 6 | 7 | 8 | 9 | 11 |
| R408.2.1.1(7) | > 30% reduction in total TC | 3 | 6 | 6 | 8 | 8 | 11 | 12 | 13 | 16 |
| R408.2.1.2(1) | *U*-factor and SHGC for vertical fenestration per Table R408.2.1.2 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 |
| R408.2.1.3(1) | Roof solar reflectance index (roof is part of the building thermal envelope and directly above cooled, conditioned space) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| R408.2.1.3(2) | Roof solar reflectance index (roof is above an uncondi- tioned space that contains a duct system) | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| R408.2.1.4 | Reduced air leakage | 1 | 1 | 1 | 2 | 1 | 3 | NA | NA | NA |
| R408.2.2(1)b | Ground source heat pump | 14 | 14 | 14 | 15 | 10 | 15 | 17 | 18 | 21 |
| R408.2.2 (15) | High-performance gas heat pump space heating system (Option 1) |  |  |  | 8 |  | 11 |  |  |  |
| R408.2.2 (16) | High-performance gas heat pump space heating system (Option 2) |  |  |  | 11 |  | 16 |  |  |  |
| R408.2.2(2)b | High Performance Cooling (Option 1) | 5 | 4 | 3 | 2 | 1 | 1 | 1 | 1 | 1 |
| R408.2.2(3)b | High Performance Cooling (Option 2) | 6 | 4 | 3 | 2 | 1 | 1 | 1 | 1 | 1 |
| R408.2.2(4)b | High Performance Gas furnace (Option 1) | 0 | 1 | 2 | 5 | 3 | 6 | 7 | 7 | 9 |
| R408.2.2(5)b | High Performance Gas furnace (Option 2) | 0 | 1 | 2 | 4 | 3 | 5 | 6 | 7 | 8 |
| R408.2.2(6)b | High Performance Gas furnace (Option 3) | 0 | 1 | 1 | NA | NA | NA | NA | NA | NA |
| R408.2.2(7)b | High Performance Gas furnace and cooling (Option 1) | 5 | 5 | 4 | NA | NA | NA | NA | NA | NA |
| R408.2.2(8)b | High Performance Gas furnace and cooling (Option 2) | 6 | 5 | 5 | NA | NA | NA | NA | NA | NA |
| R408.2.2(9)b | High Performance Gas furnace and heat pump (Option 1) | 15 | 13 | 11 | NAe | NA | NA | NA | NA | NA |
| R408.2.2(10)b | High Performance Electric Heat pump with electric resistance backup (Option 1) | 13 | 12 | 11 | 12 | NA | NA | NA | NA | NA |
| R408.2.2(11)b | High Performance Gas furnace and cooling (Option 3) | NA | NA | NA | 5 | 4 | 6 | 7 | 7 | 9 |
| R408.2.2(12)b | High Performance Gas furnace and cooling (Option 4) | NA | NA | NA | 6 | 5 | 7 | 8 | 8 | 10 |
| R408.2.2(13)b | High Performance Gas furnace and heat pump (Option 2) | NA | NA | NA | 12 | 8 | 11 | 11 | 12 | 12 |
| R408.2.2(14)b | High Performance Electric Heat pump with electric resistance backup (Option 2) | NA | NA | NA | 12 | 8 | 12 | 13 | 14 | 16 |
| R408.2.3(1)(a)d | Gas-fired storage water heaters (Option 1) | 8 | 7 | 7 | 5 | 6 | 4 | 4 | 3 | 2 |

**R408.2.2 More efficient HVAC equipment performance options.** Heating and cooling *equipment* shall meet one of the following measures as applicable for the *climate zone* where heating and cooling efficiencies are represented by Annual Fuel Utilization Efficiency (AFUE), Coefficient of Performance (COP), Energy Efficiency Ratio (EER and EER2), Heating Season Performance Factor (HSPF2) and Seasonal Energy Efficiency Ratio (SEER2). Where multiple heating or cooling systems are installed serving different *zones*, credits shall be earned based on the weighted average of square footage of the *zone* served by the system.

HVAC options applicable to all *climate zones*:

1. Ground source heat pump: Greater than or equal to 16.1 EER and 3.1 COP ground source heat pump.
2. Cooling (Option 1): Greater than or equal to 15.2 SEER2 and 12.0 EER2 air conditioner.
3. Cooling (Option 2): Greater than or equal to 16.0 SEER2 and 12.0 EER2 air conditioner.
4. Gas furnace (Option 1): Greater than or equal to 97 percent AFUE *fuel gas* furnace.
5. Gas furnace (Option 2): Greater than or equal to 95 percent AFUE *fuel gas* furnace. HVAC options applicable to Climate Zones 0, 1, 2 and 3:
6. Gas furnace (Option 3): Greater than or equal to 90 percent AFUE *fuel gas* furnace.
7. Gas furnace and cooling (Option 1): Greater than or equal to 90 percent AFUE *fuel gas* furnace and 15.2 SEER2 and 10.0 EER2 air conditioner.
8. Gas furnace and cooling (Option 2): Greater than or equal to 95 percent AFUE *fuel gas* furnace and 16.0 SEER2 and 10.0 EER2 air conditioner.
9. Gas furnace and heat pump (Option 1): Greater than or equal to 90 percent AFUE *fuel gas* furnace and 7.8 HSPF2, 15.2 SEER2 and 10.0 EER2 air source heat pump.
10. Heat pump (Option 1): Greater than or equal to 7.8 HSPF2, 15.2 SEER2, and 11.7 EER2 air source heat pump. HVAC options applicable to Climate Zones 4, 5, 6, 7 and 8:
11. Gas furnace and cooling (Option 3): Greater than or equal to 95 percent AFUE *fuel gas* furnace and 15.2 SEER2 and 12.0 EER2 air conditioner.
12. Gas furnace and cooling (Option 4): Greater than or equal to 97 percent AFUE *fuel gas* furnace and 16.0 SEER2 and 12.0 EER2 air conditioner.
13. Gas furnace and heat pump (Option 2): Greater than or equal to 95 percent AFUE *fuel gas* furnace and 8.1 HSPF2 and 15.2 SEER2 air source heat pump capable of meeting a capacity ratio ≥ 70 percent of heating capacity at 5°F (-15°C) versus rated heating capacity at 47°F (8.3°C).
14. Heat pump (Option 2): Greater than or equal to 8.1 HSPF2 and 15.2 SEER2 air source heat pump capable of meeting a capacity ratio ≥ 70 percent of heating capacity at 5°F (-15°C) versus rated heating capacity at 47°F (8.3°C).For multiple cooling systems, all systems shall meet or exceed the minimum efficiency requirements in this section and shall be sized to serve 100 percent of the cooling design load.
15. Greater than or equal to 120 AFUE gas heat pump space heating system. The gas heat pump space heating system shall not be configured to provide cooling.
16. Greater than or equal to 140 AFUE gas heat pump space heating system. The gas heat pump space heating system shall not be configured to provide cooling.

###### **Proposal #2: Remove IL amendments in R403.6. These amendments are text taken directly from the IRC. These amendments were originally included out of convenience so jurisdictions that had not adopted the IRC would not have purchase the IRC. Now that the IRC is free on-line, this amendment is not really needed.**

**R403.6 Mechanical ventilation.** The *buildings or* ~~and~~ *dwelling units* complying with Section R402.5.1.1 shall be provided with mechan- ical *ventilation* that complies with the requirements of this section ~~Section M1505 of the~~ *~~International Residential Code~~* or the *International Mechanical Code*, as applicable, or with other *approved* means of *ventilation*. Outdoor air intakes and exhausts shall have *automatic* or gravity *dampers* that close when the *ventilation* system is not operating.

**R403.6.1 Heat or energy recovery ventilation.** *Dwelling units* shall be provided with a heat recovery or energy recovery *ventila- tion* system in Climate Zones 6, 7 and 8. The system shall be a balanced *ventilation* system with a sensible recovery efficiency (SRE) of not less than 65 percent at 32°F (0°C) at an airflow greater than or equal to the design airflow. The SRE shall be determined from a *listed* value or from interpolation of *listed* values.

**R403.6.2 Fan efficacy for whole-house mechanical ventilation systems and outdoor air ventilation systems.** Fans used to provide whole-dwelling mechanical *ventilation* shall meet the efficacy requirements of Table R403.6.2 at one or more rating points. Fans shall be tested in accordance with the test procedure referenced by Table R403.6.2 and *listed*. The airflow shall be reported in the product listing or on the label. Fan efficacy shall be reported in the product listing or shall be derived from the input power and airflow values reported in the product listing or on the label. Fan efficacy for fully ducted HRV, ERV, balanced *ventilation* systems and in-line fans shall be determined at a static pressure of not less than 0.2 inch water gauge (50 Pa). Fan efficacy for ducted range hoods, bathroom and utility room fans shall be determined at a static pressure of not less than 0.1 inch water gauge (25 Pa).

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| --- | --- | --- | --- |
| **TABLE R403.6.2—FAN EFFICACY FOR WHOLE-HOUSE MECHANICAL VENTILATION SYSTEMS AND OUTDOOR AIR VENTILATION SYSTEMSa** | | | |
| **SYSTEM TYPE** | **AIRFLOW RATE (CFM)** | **MINIMUM EFFICACY (CFM/WATT)** | **TEST PROCEDURE** |
| HRV or ERV | Any | 1.2a | CAN/CSA C439 |
| Balanced ventilation system without heat or energy recovery | Any | 1.2a | ANSI/AMCA 210-ANSI/ASHRAE 51 |
| Range hood | Any | 2.8 |

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| --- | --- | --- | --- |
| **TABLE R403.6.2—WHOLE-DWELLING MECHANICAL VENTILATION SYSTEM FAN EFFICACYa—continued** | | | |
| **SYSTEM TYPE** | **AIRFLOW RATE (CFM)** | **MINIMUM EFFICACY (CFM/WATT)** | **TEST PROCEDURE** |
| In-line supply or exhaust fan | Any | 3.8 | ANSI/AMCA 210-ANSI/ASHRAE 51 |
| Other exhaust fan | < 90 | 2.8 |
| ≥ 90 and < 200 | 3.5 |
| ≥ 200 | 4.0 |
| Air-handling unit that is integrated to tested and listed HVAC equipment | Any | 1.2 | Outdoor airflow as specified. Air-handling unit fan power determined in accordance with the applicable US Department of Energy Code of Federal Regulations DOE10 CFR 430 or other approved test method. |
| For SI: 1 cubic foot per minute = 28.3 L/min.  a. For balanced ventilation systems, HRVs and ERVs, determine the efficacy as the outdoor airflow divided by the total fan power. | | | |

**R403.6.3 Testing.** Mechanical *ventilation* systems shall be tested and verified to provide the minimum *ventilation* flow rates required by Section R403.6, in accordance with ANSI/RESNET/ICC 380. Where required by the *code official*, testing shall be conducted by an *approved* third party. A written report of the results of the test shall be signed by the party conducting the test and provided to the *code official*.

Exceptions:

* 1. Kitchen range hoods that are ducted to the outside with ducting having a diameter of 6 inches (152 mm) or larger, a length of 10 feet (3028 mm) or less, and not more than two 90-degree (1.57 rad) elbows or equivalent shall not require testing.
  2. A third-party test shall not be required where the ventilation system has an integrated diagnostic tool used for airflow measurement, and a user interface that communicates the installed airflow rate.
  3. Where tested in accordance with Section R403.6.4, testing of each mechanical ventilation system is not required.

**R403.6.4 Unit sampling.** For *buildings* with eight or more *dwelling units* or *sleeping units,* the mechanical *ventilation* systems in the greater of seven units or 20 percent of the total units shall be tested. Tested systems shall include systems in a top floor unit, systems in a ground floor unit, systems in a middle floor unit, and the systems in the *dwelling unit* or *sleeping unit* with the largest *conditioned floor area*. Where *buildings* have fewer than eight *dwelling units* or *sleeping units*, the mechanical *ventilation* systems in each unit shall be tested. Where the *ventilation* flow rate of a mechanical *ventilation* system is less than the minimum permitted rate, corrective actions shall be taken and the system retested until it passes. For each tested *dwelling unit* or *sleeping unit* system with a *ventilation* flow rate lower than the minimum permitted, three additional systems, including the corrected system, shall be tested.

**R403.6.5 Intermittent exhaust control for bathrooms and toilet rooms.** Where an exhaust system serving a bathroom or toilet room is designed for intermittent operation, the exhaust system controls shall include one or more of the following:

1. A timer control with one or more delay setpoints that automatically turns off exhaust fans when the selected setpoint is reached. Not fewer than one delay-off setpoint shall be 30 minutes or less.
2. An *occupant sensor control* with one or more delay setpoints that automatically turns off exhaust fans in accordance with the selected delay setpoint after all occupants have vacated the space. Not fewer than one delay-off setpoint shall be 30 minutes or less.
3. A humidity control with an adjustable setpoint ranging between 50 percent or more and 80 percent or less relative humidity that automatically turns off exhaust fans when the selected setpoint is reached.
4. A contaminant control that responds to a particle or gaseous concentration and automatically turns off exhaust fans when a design setpoint is reached.

*Manual* off functionality shall not be used in lieu of the minimum setpoint functionality required by this section.

**Exception:** Bathroom and toilet room exhaust systems serving as an integral component of an outdoor air *ventilation* system or a whole-house mechanical *ventilation* system.

**R403.6.6 (M1505.2) Recirculation of air.** Exhaust air from bathrooms and toilet rooms shall not be recirculated within a residence or circulated to another *dwelling unit* and shall be exhausted directly to the outdoors. Exhaust air from bathrooms, toilet rooms and kitchens shall not discharge into an *attic*, *crawl* *space* or other areas inside the *building*. This section shall not prohibit the installation of ductless range hoods where installed in accordance with the manufacturer’s instructions, and where mechanical or natural *ventilation* is otherwise provided, *listed* and *labeled* ductless range hoods shall not be required to discharge to the outdoors.

**R403.6.7 (M1505.3) Exhaust equipment.** Exhaust fans and whole-house ventilation fans shall be *listed* and *labeled* as providing the minimum required airflow in accordance with ANSI/AMCA 210-ANSI/ASHRAE 51 or HVI 916.

**R403.6.8 (M1505.4) Whole-house mechanical ventilation system.** Whole-house mechanical ventilation systems shall be designed in accordance with Sections R403.6.8.1 through R403.6.8.4.

**R403.6.8.1 (M1505.4.1) System design.** The whole-house ventilation system shall consist of one or more supply or exhaust fans, or a combination of such, and associated ducts and controls. Local exhaust or supply fans are permitted to serve as such a system. Outdoor air ducts connected to the return side of an air handler shall be considered to provide supply ventilation.

**R403.6.8.2 (M1505.4.2) System controls.** The whole-house mechanical ventilation system shall be provided with controls that enable manual override. Controls shall include text or a symbol indicating their function.

**R403.6.8.3 (M1505.4.3) Mechanical Ventilation Rate.** The whole-house mechanical ventilation system shall provide

outdoor air at a continuous rate as determined in accordance with Table R403.6.8.3 (1) or not less than that determined by Equation 4-0.

Ventilation rate in cubic feet per minute = (0.01 x total square foot area of house) Equation 4-0

+ [7.5 x (number of bedrooms +1)]

**Exceptions:**

1. Ventilation rate credit. The minimum mechanical ventilation rate determined in accordance with Table R403.6.6.3(1) or Equation 4-0 shall be reduced by 30 percent, provided that both of the following conditions apply:
   1. A ducted system supplies ventilation air directly to each bedroom and to one or more of the following rooms:
      1. Living room.
      2. Dining room.
      3. Kitchen.
   2. The whole-house ventilation system is a balanced ventilation system.
2. Programmed intermittent operation. The whole-house mechanical ventilation system is permitted to operate intermittently where the system has controls that enable operation for not less than 25 percent of each 4-hour segment and the ventilation rate in Table R403.6.8.3(1), Equation 4-0 or Exception 1 is multiplied by the factor determined in accordance with Table R403.6.8.3(2).

**R403.6.8.3.1 Different occupant density.** Table R403.6.8.3(1) assumes two persons in a dwelling unit and an additional person for each additional bedroom. Where higher occupant densities are known, the airflow rate shall be increased by 7.5 cfm (3.5 L/s) for each additional person. Where *approved* by the *authority having jurisdiction*, lower occupant densities may be used.

**R403.6.8.4 (M1505.5) Local exhaust rates.** Local exhaust systems shall be designed to have the capacity to exhaust the minimum airflow rate determined in accordance with Table R403.6.8.4 at one or more speed settings. The *listed* exhaust airflow rate for a bathroom or toilet room exhaust fan shall equal or exceed the exhaust airflow rate in Table R403.6.8.4 at a minimum static pressure of 0.25 inch wc at one mor more speed settings in accordance with R403.6.7.

**TABLE R403.6.8.3(1) (M1505.4.3(1))**

**CONTINUOUS WHOLE-HOUSE MECHANICAL VENTILATION SYSTEM AIRFLOW RATE REQUIREMENTS**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **DWELLING UNIT FLOOR AREA**  **(square feet)** | **NUMBER OF BEDROOMS** | | | | |
| **0 – 1** | **2 – 3** | **4 – 5** | **6 – 7** | **> 7** |
| **Airflow in cfm** | | | | |
| < 1,500 | 30 | 45 | 60 | 75 | 90 |
| 1,501 **–** 3,000 | 45 | 60 | 75 | 90 | 105 |
| 3,001 **–** 4,500 | 60 | 75 | 90 | 105 | 120 |
| 4,501 **–** 6,000 | 75 | 90 | 105 | 120 | 135 |
| 6,001 **–** 7,500 | 90 | 105 | 120 | 135 | 150 |
| > 7,500 | 105 | 120 | 135 | 150 | 165 |

For SI: 1 square foot = 0.0929 m2, 1 cubic foot per minute = 0.0004719 m3/s

**TABLE R403.6.8.3(2) (M1505.4.3(2))**

**INTERMITTENT WHOLE-HOUSE MECHANICAL VENTILATION RATE FACTORSa, b**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **RUN-TIME PERCENTAGE IN EACH 4-HOUR SEGMENT** | **25%** | **33%** | **50%** | **66%** | **75%** | **100%** |
| Factor a | 4 | 3 | 2 | 1.5 | 1.3 | 1.0 |

a. For ventilation system run time values between those given, the factors are permitted to be determined by interpolation. b. Extrapolation beyond the table is prohibited.

**TABLE R403.6.8.4 (M1505.5)**

**MINIMUM REQUIRED LOCAL EXHAUST RATES FOR ONE- AND TWO-FAMILY DWELLINGS**

|  |  |
| --- | --- |
| **AREA TO BE EXHAUSTED** | **EXHAUST RATES** |
| Kitchens | 100 cfm intermittent or 25 cfm continuous |
| Bathrooms-Toilet Rooms | Mechanical exhaust capacity of 50 cfm intermittent or 20 cfm continuous |

For SI: 1 cubic foot per minute = 0.0004719 m3/s

###### **Proposal #3: Modified Appendix RK**

**Synopsis**

This proposal adopts Appendix RK with amendments to add exceptions for requirements that would necessitate an electrical service of greater than 200A.

**Related Sections Impacted by this Amendment:**

R101.2.1; R401.2; Appendix RK

**Revise as Follows (In strike-thru / underline format):**

**R101.2.1 Appendices.** Provisions in the appendices shall not apply unless specifically adopted. Appendix RK is hereby adopted into the Illinois Energy Conservation Code.

**R401.2 Application.** Residential buildings shall comply with **Appendix RK** and either **Section R401.2.1, R401.2.2, R401.2.3** or **R401.2.4**.

[…]

**RK101.1 Electric readiness.** Water heaters, household clothes dryers and cooking appliances that use *fuel gas* or *liquid fuel* shall comply with Sections RK101.1.1 through RK101.1.4.

**Exception:** Dwelling units that would require electrical service exceeding 200A to comply with Sections RK101.1.1 through RK101.1.4, and that would not otherwise have required electrical service exceeding 200A, shall comply with one or more of the following:

1. Load sharing devices shall be installed to limit the total electrical service requirements to 200A or less. The requirements of Section RK101.1.4 shall reflect the reduced total electrical service requirements due to this exception.
2. The dwelling unit shall be exempted from compliance with Section RK101.1.1, RK101.1.2, or RK101.1.3. The requirements of Section RK101.1.4 shall reflect the reduced total electrical service requirements due to this exception.

**Reason:**

The [Priority Climate Action Plan (CAP) of Illinois](https://www.epa.gov/system/files/documents/2024-03/illinois-priority-climate-action-plan.pdf) names building energy codes as an action area, stating:

**Implementing building codes to support efficiency and decarbonization.** Supporting implementation of energy-efficient and low-carbon building codes, which can achieve significant, cost-effective emissions and cost savings but may be impeded in some cases by the difficulty of initial implementation and administration. (p. 22)

Electrification readiness enables building owners to access high performance modern electric systems on their own schedule by allowing them to choose what type of equipment to install when their old equipment fails while minimizing costs. Multiple studies have assessed the relative costs of electrical retrofits to support end-use electrification compared to electric-ready infrastructure installed at the time of construction. A [PNNL analysis conducted for the Capital Development Board](https://cdb.illinois.gov/content/dam/soi/en/web/cdb/business/codes/ecacouncil/stretch/docs/residential-stretch-code-cost-analysis-4-11-24.pdf) in support of stretch energy code development assessed that electrification readiness is about half as costly as a post-construction electrification retrofit. Other studies have found even greater savings potential: for example, [a 2020 study from Group14](https://www.communityenergyinc.com/wp-content/uploads/Building-Electrification-Study-Group14-2020-11.09.pdf) estimated the cost of installing electrical infrastructure appropriate for a heat pump at the time of construction to be around $500, while they estimated the cost of a later retrofit to be around $2,100.

Without electrification ready new construction requirements, the steeper costs of retrofits could prevent some homeowners from choosing high-efficiency electric appliances, with potentially heavy and inequitable consequences. By the time homeowners are facing decisions about replacing appliances installed in 2026, the homes will have aged considerably, and the original occupants who were financially situated to buy a newly constructed residence may no longer own the home. Low- and moderate-income (LMI) households without the option to use already-installed electrical infrastructure may not be financially able to move away from the piped gas system. Particularly in metropolitan northern Illinois, the costs of that system already weigh heavily on LMI ratepayers and [are poised to grow sharply over the next 10 years](https://buildingdecarb.org/resource/the-future-of-gas-in-illinois). As wealthier households and businesses move away from piped gas, those least able to afford building renovations may be left behind, so that LMI households are at risk of shouldering an ever-increasing share of that high system cost. Electrification ready code provisions reduce that risk.

This proposal includes amendments to Appendix RK that would create exceptions to individual end use electrical infrastructure requirements if those requirements would trigger a service upgrade to 400A or more. Through a combination of reduced requirements and load sharing device installation, these exceptions would reduce the cost of compliance (see below) while minimizing the reduction in optionality offered by this appendix.

While the CAP mentions promoting stretch energy code adoption as a specific avenue of action, the issues named as potential impediments – initial implementation and administration – would be most comprehensively addressed by incorporating strong, common-sense efficiency and decarbonization provisions into the statewide energy code. The administrative burden of adopting the stretch energy code should not prevent building owners and occupants across the state from benefiting from the flexibility and cost savings offered by electrification-ready provisions.

**Cost Impact:**

As noted above, multiple studies have assessed the relative costs of electric-ready infrastructure installed at the time of construction. The [PNNL analysis conducted for the Capital Development Board](https://cdb.illinois.gov/content/dam/soi/en/web/cdb/business/codes/ecacouncil/stretch/docs/residential-stretch-code-cost-analysis-4-11-24.pdf) in support of stretch energy code development estimated the total cost of all electrification readiness provisions at about $1200. [A 2022 study from New Buildings Institute and NRDC](https://newbuildings.org/wp-content/uploads/2022/04/BuildingDecarbCostStudy.pdf) estimates the cost to range between $1000-$1800; given that this proposal includes exceptions to avoid electrical service upgrade costs, its estimated cost would be around $1000 per the NBI/NRDC study. Estimates for the long-term installation cost savings potential from these measures range from $1200 (PNNL) to over $3000 (NBI-NRDC).

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A proponent shall not submit multiple amendments to the same code section. When a proponent submits multiple amendments to the same section, the proposals shall be considered as incomplete proposals. The proponent of the proposal shall be notified and the proposal shall be held until the deficiencies are corrected, with a final date set for receipt of a corrected submittal. If the corrected amendment is received after the final date, the proposal shall not be considered by the ILECAC. This restriction shall not apply to amendments that attempt to address differing subject matter within a code section.

###### **Proposal #4: PHI/PHIUS Compliance Language.**

**Synopsis**

This proposal allows PHI and PHIUS compliance.

**R401.2.4 Passive building ~~Phius alternative~~ compliance option.** The Passive building ~~Phius Alternative~~ compliance option requires compliance with Section R409.

**SECTION R409-PASSIVE BUILDING ~~PHIUS ALTERNATIVE~~ COMPLIANCE OPTION**

**~~R409.1 Scope.~~** ~~This section establishes criteria for compliance via the Phius Standard.~~

**R409.1~~2~~ Phius standard compliance.** Compliance based on the Phius CORE 2024 of Phius ZERO 2024 (or later) ~~2021~~ Standard will include ~~its United States Department of Energy (USDOE) Energy Star and Zero Energy Ready Home co-requisites, and either~~ performance calculations by Phius-approved software or ~~through~~ the use of the Phius ~~2021~~ Prescriptive Path.

**R409.1~~2~~.1 Phius documentation.** Prior to the issuance of a building permit, a Phius Design Certification letter ~~the following items~~ must be provided to the code official:

* + 1. ~~A list of compliance features.~~
    2. ~~A Phius precertification letter.~~

**R409.1~~2~~.2 Project certificate.** Prior to the issuance of a certificate of occupancy, a Phius 2024~~1~~ (or later) Final ~~project~~ certificate must be provided to the code official.

**R409.2 PHI standard compliance.** Compliance based on the most recent PHI standards using PHPP v.10 or later, shall be shown via Low Energy Building, Classic, Plus, or Premium certification by PHI.

**R409.2.1 PHI documentation.** Prior to the issuance of a buildingpermit, a signed Design Stage Conditional Assurance Letter from a PHI-accredited Passive House Certifier confirming intent to certify the building must be provided to the code official.

**R409.2.2 Project certificate.** Prior to the issuance of a certificate of occupancy, a copy of either a Certifiers Assurance Letter by an approved PHI-accredited Certifier or a final PHI Certificate to document compliance with Passive House Standards must be provided to the code official.