CAPITAL DEVELOPMENT BOARD

NOTICE OF PROPOSED AMENDMENTS

1) Heading of the Part: Illinois Energy Conservation Code

2) Code Citation: 71 Ill. Adm. Code 600

3)

Section Numbers:	Proposed Actions:
600.100	Amendment
600.110	Amendment
600.120	Amendment
600.200	Amendment
600.300	Amendment
600.340	Amendment
600.400	Amendment
600.420	Amendment
600.Appendix A	Amendment

4) Statutory Authority: Implementing and authorized by the Capital Development Board Act [20 ILCS 3105] and the Energy Efficient Commercial Building Act [20 ILCS 3125].

5) A Complete Description of the Subjects and Issues Involved: The Energy Efficient Building Act requires the adoption of latest published edition of the International Code Council's International Energy Conservation Code (IECC) as the energy code for Illinois. This rulemaking updates the version of the Code from the 2018 IECC to the 2021 IECC and revises the Illinois specific amendments. In addition, Public Act 102-0662 amended the Energy Efficient Building Act requiring CDB to add five members to any board or group that the Capital Development Board seeks input from regarding the Code. These rules add five new members to the Illinois Energy Conservation Advisory Council.

The Act allows CDB to appropriately adapt the IECC for economic, geographical, climate, etc. considerations. The Board, through the addition of Appendix A in this Part, is recommending adaptations to various sections of the 2021 IECC. This Appendix supplants and adds sections on administration, definitions, and various technical sections related to building envelope; electrical power and lighting systems; total building performance; additions, alterations and repairs of existing buildings; alternative compliance methods; and duct and ventilation requirements for residential buildings.

6) Published studies or reports, and sources of underlying data, used to compose this rulemaking: 2021 International Energy Conservation Code® and ANSI/ASHRAE/IES Standard 90.1-2019: Energy Standard for Buildings Except Low-Rise Residential Buildings and 2021 International Residential Code.

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7) Will this rulemaking replace an emergency rule currently in effect? No

8) Does this rulemaking contain an automatic repeal date? No

9) Does this rulemaking contain incorporations by reference? No

10) Are there any other rulemakings pending on this Part? No

11) Statement of Statewide Policy Objectives: This rulemaking does not create or expand a State mandate as defined in Section 3(b) of the State Mandates Act [30 ILCS 805/3(6)].

12) Time, Place and Manner in which interested persons may comment on this proposed rulemaking: Any interested parties may submit comments, data, views or arguments concerning this proposed rulemaking in writing for a period of 45 days following publication of this Notice. All comments must be in writing and should be addressed to:

Lisa Hennigh
Administrator of Professional Services
Capital Development Board
401 S. Spring Street
3rd Floor Stratton Building
Springfield, Illinois 62706

Telephone: (217) 524-6408
E-Mail: CDB.BuildingCode@illinois.gov

Comments submitted by small business should be identified as such.

13) Initial Regulatory Flexibility Analysis:

A) Types of small businesses, small municipalities and not for profit corporations affected: Those that are constructing, renovating or adding to commercial and residential building structures or issuing build permit applications

B) Reporting, bookkeeping or other procedures required for compliance: Those necessary for regulatory compliance.

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C) Types of Professional skills necessary for compliance: Licensed Design Professionals

14) Small Business Impact Analysis:

A) Types of businesses subject to the proposed rule:

23 Construction

B) Categories that the agency reasonably believes the rulemaking will impact including:

ii. regulatory requirements;
vii. training requirements;

15) Regulatory Agenda on which this rulemaking was summarized: This rulemaking was not included on either of the 2 most recent agendas because it was not anticipated within that time period.

The full text of the Proposed Amendments begins on the next page:

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TITLE 71: PUBLIC BUILDINGS, FACILITIES, AND REAL PROPERTY
CHAPTER I: CAPITAL DEVELOPMENT BOARD
SUBCHAPTER d: ENERGY CODES

PART 600
ILLINOIS ENERGY CONSERVATION CODE

SUBPART A: GENERAL

Section
600.100 Definitions
600.110 Adoption and Modification of the Code
600.120 Illinois Energy Conservation Advisory Council
600.130 Revisions to the Code

SUBPART B: STATE FUNDED FACILITIES

Section
600.200 Standards for State Funded Facilities
600.210 Exemptions
600.220 Compliance

SUBPART C: PRIVATELY FUNDED COMMERCIAL FACILITIES

Section
600.300 Standards for Privately Funded Commercial Facilities
600.310 Exemptions
600.320 Local Jurisdiction
600.330 Compliance
600.340 Application to Home Rule Units

SUBPART D: RESIDENTIAL BUILDINGS

Section
600.400 Standards for Residential Buildings
600.410 Exemptions
600.420 Local Jurisdiction
600.430 Compliance
600.440 Application to Home Rule Units

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600.APPENDIX A Supplanted and Additional 20212~~2018~~ International Energy Conservation Code Sections

AUTHORITY: Implementing and authorized by the Capital Development Board Act [20 ILCS 3105] and the Energy Efficient Building Act [20 ILCS 3125].

SOURCE: Adopted by emergency rulemaking at 28 Ill. Reg. 11355, effective July 26, 2004, for a maximum of 150 days; emergency rules expired December 22, 2004; adopted at 29 Ill. Reg. 777, effective January 1, 2005; new Part adopted by emergency rulemaking at 29 Ill. Reg. 5736, effective April 8, 2005, for a maximum of 150 days; emergency expired September 4, 2005; emergency rulemaking repealed at 29 Ill. Reg. 6093, effective April 18, 2005, for a maximum of 150 days; emergency expired September 14, 2005; old Part repealed at 29 Ill. Reg. 16414 and new Part adopted at 29 Ill. Reg. 14790, effective April 8, 2006; amended at 31 Ill. Reg. 14422, effective October 9, 2007; emergency amendment at 33 Ill. Reg. 12407, effective August 18, 2009, for a maximum of 150 days; amended at 33 Ill. Reg. 16702, effective November 23, 2009; emergency rulemaking at 34 Ill. Reg. 2582, effective January 29, 2010, for a maximum of 150 days; emergency expired June 27, 2010; amended at 34 Ill. Reg. 11398, effective July 26, 2010; amended at 37 Ill. Reg. 789, effective January 11, 2013; amended at 37 Ill. Reg. 12822, effective July 23, 2013; amended at 40 Ill. Reg. 2754, effective January 20, 2016; amended at 43 Ill. Reg. 8707, effective August 5, 2019; amended at 47 Ill. Reg. _____, effective _____.

SUBPART A: GENERAL

Section 600.100 Definitions

Definitions of terms in the International Energy Conservation Code, incorporated by reference in Subpart C of this Part, apply, as do the following definitions:

"Act" means the Capital Development Board Act [20 ILCS 3105].

"Authority Having Jurisdiction" or "AHJ" means the organization, office or individual responsible for approving equipment, materials, an installation or procedure.

"CDB" or "Board" means the Illinois Capital Development Board.

"Commercial Facility" means any building except a building that is ~~classified as~~ a residential building as defined in the EEB Act. [20 ILCS 3125/10]

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"Council" means the Illinois Energy Conservation Advisory Council appointed under Subpart B of this Part and whose purpose it is to recommend modifications to the *Illinois Energy Conservation Code*.

"EEB Act" means the Energy Efficient Building Act [20 ILCS 3125].

"IECC" means the International Energy Conservation Code.

"Illinois Energy Conservation Code" or "Code" means:

With respect to the State facilities covered by Subpart B:

This Part, all additional requirements incorporated within Subpart B (including the 20212~~2018~~ International Energy Conservation Code that encompasses ASHRAE 90.1, including all published errata but excluding published supplements) and any statutorily authorized adaptations to the incorporated standards adopted by CDB;

With respect to the privately funded commercial facilities covered by Subpart C:

This Part, all additional requirements incorporated within Subpart C (including the 20212~~2018~~ International Energy Conservation Code that encompasses ASHRAE 90.1, including all published errata but excluding published supplements, and any statutorily authorized adaptations to the incorporated standards adopted by CDB; and

With respect to the residential buildings covered by Subpart D:

This Part, all additional requirements incorporated within Subpart D (including the 20212~~2018~~ International Energy Conservation Code, including all published errata but excluding published supplements) and any statutorily authorized adaptations to the incorporated standards adopted by CDB.

"Municipality" means any city, village or incorporated town. [20 ILCS 3125/10]

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"Residential Building" means a detached one-family or 2-family dwelling or any building that is 3 stories or less in height above grade that contains multiple dwelling units, in which the occupants reside on a primarily permanent basis, such as a townhouse, a row house, an apartment house, a convent, a monastery, a rectory, a fraternity or sorority house, a dormitory, and a rooming house; provided, however, that when applied to a building located within the boundaries of a municipality having a population of 1,000,000 or more, the term "residential building" means a building containing one or more dwelling units, not exceeding 4 stories above grade, where occupants are primarily permanent. [20 ILCS 3125/10]

"State Funded Building" means and includes buildings under the jurisdiction of each officer, department, board, commission, institution and body politic and corporate of the State, including the Illinois Building Authority, and any other person expending or encumbering State or federal funds by virtue of an appropriation or other authorization by the General Assembly or federal authorization or grant. This includes State funded *housing, hospitals, penitentiaries, laboratories, educational facilities, administrative facilities, recreational facilities, environmental equipment and parking facilities* [20 ILCS 3105/4.01].

(Source: Amended at 47 Ill. Reg. _____, effective _____)

Section 600.110 Adoption and Modification of the Code

a) The purpose of the Illinois Energy Conservation Code is to implement Section 15 of the Energy Efficient Building Act [20 ILCS 3125] that requires CDB to officially adopt, as a minimum requirement for State and commercial structures and as a minimum and maximum requirement for residential buildings, the 20212~~2018~~ International Energy Conservation Code, including all published errata but excluding any published supplements, to apply that Code to all commercial and residential structures in Illinois, and to assist local code officials with enforcing the requirements of the Code. The 20212~~2018~~ Illinois Energy Conservation Code will become effective on adoption of this rulemaking~~July 1, 2019~~.

b) This Code as described in Subpart B (State facilities) is effective July 26, 2004. This Code as described in Subpart C (privately-funded commercial facilities) is

effective April 8, 2007. The Code as described in Subpart D (residential buildings) is effective January 29, 2010.

c) Application of the Code

1) State Facilities. The Code as described in Subpart B of this Part applies to all State facilities for which money has been appropriated or authorized by the General Assembly.

2) Privately Funded Commercial Facilities and Residential Buildings. The Code as described in Subparts C and D of this Part applies *to any new building or structure in this State for which a building permit application is received by a municipality or county.* [20 ILCS 3125/20]

A) *Additions, alterations, renovations or repairs to an existing building, building system or portion thereof shall conform to the provisions of the Code as they relate to new construction without requiring the unaltered portion of the existing building or building system to comply with the Code.* [20 ILCS 3125/20(c)]

B) All exceptions listed in the Code related to additions, alterations, renovations or repairs to an existing building are acceptable provided the energy use of the building is not increased.

d) This Code, together with the standards incorporated by reference in this Part, has the force of a building code and is administrative law applicable in the State of Illinois.

(Source: Amended at 47 Ill. Reg. _____, effective _____)

Section 600.120 Illinois Energy Conservation Advisory Council

a) The Executive Director of the Capital Development Board shall appoint an Advisory Council. The Council shall be composed of the Executive Director or his or her authorized representative, who shall serve as Chairman ex-officio, and 16~~11~~ additional members appointed by the Executive Director. The appointed members shall consist of 1 person representing the Illinois Environmental Protection Agency; 2 persons representing the residential construction contracting industry; 2 licensed architects; 1 licensed mechanical engineer; 1 licensed

electrical engineer; 2 persons representing local code officials; and 2 persons representing the construction contracting industry; 1 representative from a group that represents environmental justice; 1 representative of a nonprofit or professional association advocating for the environment; 1 energy-efficiency advocate with technical expertise in single-family residential buildings; 1 energy-efficiency advocate with technical expertise in commercial buildings; and 1 energy-efficiency advocate with technical expertise in multifamily buildings, such as an affordable housing developer. Members of the Council shall be appointed for 4 year terms. The members appointed by the Executive Director shall serve for the term of their appointments and may be reappointed upon expiration of the term. Any member appointed to fill a vacancy occurring prior to the expiration of the term for which his or her predecessor was appointed shall be appointed for a full term.

b) Nine~~Seven~~ members of the Council shall constitute a quorum. The Chairman shall only vote to break a tie or when necessary to establish a quorum.

c) The purpose of the Council shall be to recommend modifications to the Illinois Energy Conservation Code.

d) Members of the Council shall serve without compensation but shall be reimbursed for reasonable travel expenses necessarily incurred in the performance of their duties.

(Source: Amended at 47 Ill. Reg. _____, effective _____)

SUBPART B: STATE FUNDED FACILITIES

Section 600.200 Standards for State Funded Facilities

a) The 2021~~2018~~ IECC, including published errata but excluding published supplements, available from the International Code Council at 200 Massachusetts Ave, NW Suite 250~~500 New Jersey Avenue NW, 6th Floor~~, Washington DC 20001, phone: 1-888-ICC-SAFE (422-7233), www.iccsafe.org, is hereby incorporated into the Illinois Energy Conservation Code, as described in this Subpart as applicable to State funded facilities, with the modifications outlined in subsection (c).

b) All incorporations by reference in this Section are of the cited standards as they existed on the date specified. These incorporations include no later editions or amendments.

c) Modifications to IECC
Under Section 15 of the EEB Act, when applying the Code to State funded facilities, CDB may modify the incorporated standards to respond to the unique economy, population distribution, geography and climate of Illinois, as long as the objectives of the EEB Act are maintained. Modifications, additions or omissions to IECC are specified in Appendix A and are rules of the CDB and are not requirements of the IECC.

(Source: Amended at 47 Ill. Reg. _____, effective _____)

SUBPART C: PRIVATELY FUNDED COMMERCIAL FACILITIES

Section 600.300 Standards for Privately Funded Commercial Facilities

a) The 20212~~018~~ IECC, including published errata but excluding published supplements, available from the International Code Council at 200 Massachusetts Ave, NW Suite 250~~500 New Jersey Avenue NW, 6th Floor~~, Washington DC 20001, phone: 1-888-ICC-SAFE (422-7233), www.iccsafe.org, is hereby incorporated into the Illinois Energy Conservation Code, as described in this Subpart as applicable to privately funded commercial facilities, with the modifications outlined in subsection (c).

b) All incorporations by reference in this Section are of the cited standards as they existed on the date specified. These incorporations include no later editions or amendments.

c) Modifications to IECC
Under Section 15 of the EEB Act, when applying the Code to privately funded commercial facilities, CDB may modify the incorporated standards to respond to the unique economy, population distribution, geography and climate of Illinois, as long as the objectives of the EEB Act are maintained. Modifications, additions or omissions to IECC are specified in Appendix A and are rules of the CDB and are not requirements of the IECC.

(Source: Amended at 47 Ill. Reg. _____, effective _____)

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Section 600.340 Application to Home Rule Units

This Section is a denial and limitation of home rule powers and functions under subsection (i) of Section 6 of Article VII of the Illinois Constitution on the concurrent exercise by home rule units of powers and functions exercised by the State. Nothing in this Section, however, prevents a unit of local government from adopting an energy efficiency code or standards for commercial buildings that are more stringent than the Code under this Act. [20 ILCS 3125/45(d)]
~~*No unit of local government, including any home rule unit, may* apply *energy efficient building standards* to privately funded commercial facilities *in a manner that is less stringent* than the Code as described in this Subpart C. However, *nothing in the EEB Act* or this Subpart *prevents a unit of local government from adopting an energy efficiency code or standards for commercial buildings that are more stringent than this Code.* [20 ILCS 3125/45(a)]~~

(Source: Amended at 47 Ill. Reg. _____, effective _____)

SUBPART D: RESIDENTIAL BUILDINGS

Section 600.400 Standards for Residential Buildings

a) The 2021~~2018~~ IECC, including published errata but excluding published supplements, available from the International Code Council at 200 Massachusetts Ave, NW Suite 250~~500 New Jersey Avenue NW, 6th Floor~~, Washington DC 20001, phone: 1-888-ICC-SAFE (422-7233), www.iccsafe.org, is hereby incorporated into the Illinois Energy Conservation Code, as described in this Subpart as applicable to residential buildings, with the modifications outlined in subsection (c).

b) All incorporations by reference in this Section are of the cited standards as they existed on the date specified. These incorporations include no later editions or amendments.

c) Modifications to IECC
Under Section 15 of the EEB Act, when applying the Code to residential buildings, CDB may modify the incorporated standards to respond to the unique economy, population distribution, geography and climate of Illinois, as long as the objectives of the Act are maintained pursuant to that statutory authority. Modifications, additions or omissions to IECC are specified in Appendix A and are rules of the CDB and are not requirements of the IECC.

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(Source: Amended at 47 Ill. Reg. _____, effective _____)

Section 600.420 Local Jurisdiction

a) Construction projects involving residential buildings and for which a municipality or county requires a building permit must comply with the Illinois Energy Conservation Code if the project involves new construction, addition, alteration, renovation or repair. *In the case of any addition, alteration, renovation or repair to an existing residential structure, the Code* as described by this Subpart D *applies only to the portions of that structure that are being added, altered, renovated or repaired.* [20 ILCS 3125/20(a)]

b) The local authority having jurisdiction (AHJ) shall establish its own procedures for enforcement of the Code.

c) *A unit of local government that does not regulate energy efficient building standards is not required to adopt, enforce or administer the Code; however, any energy efficient building standards adopted by a unit of local government must comply with the Act. If a unit of local government does not regulate energy efficient building standards, any construction, renovation or addition to buildings or structures is still subject to the provisions contained in the Act.* [20 ILCS 3125/20(d)].

(Source: Amended at 47 Ill. Reg. _____, effective _____)

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Section 600.APPENDIX A Supplanted and Additional 20212018 International Energy Conservation Code Sections

The following Code sections shall be referenced in place of the corresponding 20212018 IECC sections.

CHAPTER 1 [CE]
SCOPE AND ADMINISTRATION

SECTION C101
SCOPE AND GENERAL REQUIREMENTS

C101.1 Title. This Code shall be known as the Illinois Energy Conservation Code or Code and shall mean:

With respect to the State facilities covered by 71 Ill. Adm. Code 600.Subpart B:

This Part, all additional requirements incorporated within Subpart B (including the 20212018 International Energy Conservation Code, including all published errata but excluding published supplements that encompass ASHRAE 90.1-20192016), and any statutorily authorized adaptations to the incorporated standards adopted by CDB, are effective upon adoptionJuly 1, 2019.

With respect to the privately funded commercial facilities covered by 71 Ill. Adm. Code 600.Subpart C:

This Part, all additional requirements incorporated within Subpart C (including the 20212018 International Energy Conservation Code, including all published errata and excluding published supplements that encompass ASHRAE 90.1-20192016), and any statutorily authorized adaptations to the incorporated standards adopted by CDB, are effective upon adoptionJuly 1, 2019.

C101.1.2 Adoption. The Board shall adopt amendments to this Code within 12 months after publication of changes to the International Energy Conservation Code. Any such update in this Code shall take effect within 6 months after it is adopted by the Board and shall apply to any new building or structure in this State for which a building permit application is received by a municipality or county, except as otherwise provided by the EEB Act.

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C101.1.3 Adaptation. The Board may appropriately adapt the International Energy Conservation Code to apply to the particular economy, population distribution, geography and climate of the State and construction within the State, consistent with the public policy objectives of the EEB Act.

C101.5 Compliance. Commercial buildings shall meet the provisions of the Illinois Energy Conservation Code covered by 71 Ill. Adm. Code 600.Subpart C. The local authority having jurisdiction (AHJ) shall establish its own procedures for enforcement of the Illinois Energy Conservation Code. Minimum compliance shall be demonstrated by submission of:

1. Compliance forms published in the ASHRAE 90.1 User's Manual; or

2. Compliance Certificates generated by the U.S. Department of Energy's COMcheck™ Code compliance tool; or

3. Other comparable compliance materials that meet or exceed, as determined by the AHJ, the compliance forms published in the ASHRAE 90.1 User's Manual or the U.S. Department of Energy's COMcheck™ code compliance tool; or

4. The seal of the architect/engineer as required by Section 14 of the Illinois Architectural Practice Act [225 ILCS 305], Section 12 of the Structural Engineering Licensing Act [225 ILCS 340] and Section 14 of the Illinois Professional Engineering Practice Act [225 ILCS 325].

C102.1.1 Above Code Programs. No unit of local government, including any home rule unit, may apply energy efficient building standards to privately funded commercial facilities in a manner that is less stringent than this Code as described in 71 Ill. Adm. Code 600.Subpart C. However, nothing in the EEB Act or Subpart C prevents a unit of local government from adopting an energy efficiency code or standards that are more stringent than this Code. The requirements identified ~~as "mandatory"~~ in Table C407.2 shall be met~~Chapter 4 shall be met~~.

SECTION C110~~C109~~
BOARD OF APPEALS

C110.1~~C109.1~~ General. In order to hear and decide appeals of orders, decisions or determinations made by the code official relative to the application and interpretation of this Code, there may be created a board of appeals. The code official shall be an ex officio member of the board of appeals but shall not have a vote on any matter before the board. The board of appeals shall be appointed by the governing body and shall hold office at its pleasure. The board

shall adopt rules of procedure for conducting its business and shall render all decisions and findings in writing to the appellant with a duplicate copy to the code official.

C110.3~~C109.3~~ **Qualifications.** The board of appeals shall consist of members who are qualified by experience and training.

CHAPTER 2 [CE]
DEFINITIONS

SECTION C202
GENERAL DEFINITIONS

Authority Having Jurisdiction or **AHJ** – means the organization, officer or individual responsible for approving equipment, materials, an installation or procedure.

Board – means the Illinois Capital Development Board.

Council – means the Illinois Energy Conservation Advisory Council whose purpose is to recommend modifications to the Illinois Energy Conservation Code.

Demand Response Signal - means a signal that indicates a price or a request to modify electricity consumption for a limited time period.

Demand Responsive Control – means a control capable of receiving and automatically responding to a demand response signal.

EEB Act – means the Energy Efficient Building Act [20 ILCS 3125].

Photosynthetic Photon Efficacy (PPE) – means a photosynthetic photon flux divided by input electric power in units of micromoles per second per watt, or micromoles per joule as defined by ANSI/ASABE S640.

~~**Roof Membrane Peel and Replacement** – When an existing weather resisting roof membrane alone is removed, exposing insulation or sheathing and only a new weather resisting roof membrane is installed.~~

CHAPTER 4 [CE]
COMMERCIAL ENERGY EFFICIENCY

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SECTION C402
BUILDING ENVELOPE REQUIREMENTS

C402.4.1.3 Fenestration Orientation
The vertical fenestration shall comply with equation either (a) or (b)
a. $AW \leq (AT)/4$ and $AE \leq (AT)/4$
b. $AW \times SHGCW \leq (AT \times SHGCC)/5$ and $AE \times SHGCE \leq (AT \times SHGCC)/5$

where

Aw = west-oriented *vertical fenestration area* (oriented within 45 degrees of true west to the south and within 22.5 degrees of true west to the north in the northern hemisphere)

Ae = east-oriented *vertical fenestration area* (oriented within 45 degrees of true east to the south and within 22.5 degrees of true east to the north in the northern hemisphere)

AT = total *vertical fenestration area*

SHGCC = *SHGC* criteria in Table C402.4

SHGCE = *SHGC* for east-oriented *fenestration*

SHGCW = *SHGC* for west-oriented *fenestration*

Exceptions:

1. *Buildings* with shade on 75% of the east- and west-oriented *vertical fenestration areas* from permanent projections, *existing buildings*, existing permanent infrastructure, or topography at 9 a.m. and 3 p.m., respectively, on the summer solstice (June 21).

2. *Alterations* and additions with no increase in *vertical fenestration area*.

3. *Buildings* where the west-oriented and east-oriented *vertical fenestration area* does not exceed 20% of the *gross wall area* for each of those façades, and *SHGC* on those facades is no greater than 90% of the criteria in Table C402.4.

C402.5.1 Air Barriers. A continuous air barrier shall be provided throughout the building thermal envelope. The air barriers shall be permitted to be located on the inside or outside of the building envelope, located within the assemblies composing the envelope, or any combination

thereof. The air barrier shall comply with Sections C402.5.1.1 and C402.5.1.2. For roof air barriers on existing buildings, refer to Section C503.1 or C504.2.

Exception: Air barriers are not required in buildings located in Climate Zone 2B.

C402.5.1.1 Air Barrier Construction. The continuous air barrier shall be constructed to comply with the following:

1. The air barrier shall be continuous for all assemblies that are the thermal envelope of the building and across the joints and assemblies.

2. Air barrier joints and seams shall be sealed, including sealing transitions at joints between dissimilar materials. The joints and seals shall be securely installed in or on the joint for its entire length so as not to dislodge, loosen or otherwise impair its ability to resist positive and negative pressure from wind, stack effect and mechanical ventilation.

3. Penetrations of the air barrier shall be caulked, gasketed or otherwise sealed in a manner compatible with the construction materials and location. Sealings shall allow for expansion, contraction and mechanical vibration. Paths for air leakage from the building to the space between the roof deck and roof covering used air barrier shall be caulked, gasketed or otherwise covered with a moisture vapor-permeable material. Joints and seams associated with penetrations shall be sealed in the same manner or taped. Sealing materials shall be securely installed around the penetration so as not to dislodge, loosen or otherwise impair the penetrations' ability to resist positive and negative pressure from wind, stack effect and mechanical ventilation. Sealing of concealed fire sprinklers, where required, shall be in a manner that is recommended by the manufacturer. Caulking or other adhesive sealants shall not be used to fill voids between fire sprinkler cover plates and walls or ceilings.

4. Recessed lighting fixtures shall comply with Section C402.5.8. Where similar objects are installed that penetrate the air barrier, provisions shall be made to maintain the integrity of the air barrier.

SECTION C405
ELECTRICAL POWER AND LIGHTING SYSTEMS

C405.4 Lighting for plant growth and maintenance. All permanently installed luminaires used for plant growth and maintenance shall have a *photosynthetic photon efficacy* as defined in

accordance with ANSI/ASABE S640 of not less than 1.7 µmol/J for *greenhouses* and not less than 2.2 µmol/J for all other indoor growing spaces.

Exception: The following buildings are exempt:

1. Buildings with no more than 40kW of aggregate horticultural lighting load.

2. Cannabis facilities subject to 410 ILCS 705/10-45- the Cannabis Regulation and Tax Act.

~~**C405.1 General (Mandatory).** This section covers lighting system controls, the maximum lighting power for interior and exterior applications and electrical energy consumption.~~

~~No less than 90% of the permanently installed lighting serving dwelling units shall be provided by lamps with an efficacy of not less than 65 lm/W or light fixtures with an efficacy of not less than 55 lm/W, or with Sections C405.2.4 and C405.3. Sleeping units shall comply with Section C405.2.4 and Section R404.1 or C405.3. Lighting installed in walk-in coolers, walk-in freezers, refrigerated warehouse coolers and refrigerated warehouse freezers shall comply with the lighting requirements of Section C403.10.1 or C403.10.2.~~

SECTION C406
ADDITIONAL EFFICIENCY REQUIREMENTS

C406.1 Additional energy efficiency credit requirements. New buildings shall achieve a total of 10 credits from Tables C406.1(1) through C406.1(5) where the table is selected based on the use group of the building and from credit calculations as specified in relevant subsections of Section C406. Where a building contains multiple-use groups, credits from each use group shall be weighted by floor area of each group to determine the weighted average building credit. Credits from the tables or calculation shall be achieved where a building complies with one or more of the following:

1. More efficient HVAC performance in accordance with Section C406.2.

2. Reduced lighting power in accordance with Section C406.3.

3. Enhanced lighting controls in accordance with Section C406.4.

4. On-site supply of renewable energy in accordance with Section C406.5.

5. Provision of a dedicated outdoor air system for certain HVAC equipment in accordance with Section C406.6.

6. High-efficiency service water heating in accordance with Section C406.7.

7. Enhanced envelope performance in accordance with Section C406.8.

8. Reduced air infiltration in accordance with Section C406.9

9. Where not required by Section C405.12, include an energy monitoring system in accordance with Section C406.10.

10. Where not required by Section C403.2.3, include a fault detection and diagnostics (FDD) system in accordance with Section C406.11.

11. Efficient kitchen equipment in accordance with Section C406.12.

12. HVAC demand responsive controls and more efficient HVAC performance in accordance with Section C406.2 and Section C406.13.

13. Water heating demand responsive controls and high-efficiency service water heating in accordance with Section C406.7 and Section C406.14.

Modify Table C406.1(1) as follows:

Table C406.1(1) Additional Energy Efficiency Credits for Group B Occupants

Climate Zone:	4A	5A
C406.13 HVAC demand responsive controls	2	2
C406.14 Water heating demand responsive controls	1	1

Modify Table C406.1(2) as follows:

Table C406.1(2) Additional Energy Efficiency Credits for Group R and I Occupancies

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Climate Zone:	4A	5A
C406.13 HVAC demand responsive controls	4	3
C406.14 Water heating demand responsive controls	1	1

Modify Table C406.1(3) as follows:

Table C406.1(3) Additional Energy Efficiency Credits for Group E Occupancies

Climate Zone:	4A	5A
C406.13 HVAC demand responsive controls	4	4
C406.14 Water heating demand responsive controls	1	1

Modify Table C406.1(4) as follows:

Table C406.1(4) Additional Energy Efficiency Credits for Group M Occupancies

Climate Zone:	4A	5A
C406.13 HVAC demand responsive controls	4	3
C406.14 Water heating demand responsive controls	x	x

Modify Table C406.1(5) as follows:

Table C406.1(5) Additional Energy Efficiency Credits for Other* Occupancies

Climate Zone:	4A	5A

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C406.13 HVAC demand responsive controls	3	3
C406.14 Water heating demand responsive controls	2	2

C406.1.1 Tenant spaces. Tenant spaces shall comply with sufficient options from Tables C406.1(1) through C406.1(5) to achieve a minimum number of 5 credits, where credits are selected from Section C406.2, C406.3, C406.4, C406.6, C406.7 or C406.10. Where the entire building complies using credits from Section C406.5, C406.8, C406.9, or C406.13 tenant spaces shall be deemed to comply with this section.

C406.13 HVAC demand responsive controls. Buildings shall be provided with demand responsive controls capable of executing the following actions in response to a demand response signal:

1. Automatically increasing the zone operating cooling set point by the following values: 1°F (0.5°C), 2°F (1°C), 3°F (1.5°C), and 4°F (2°C).
2. Automatically decreasing the zone operating heating set point by the following values: 1°F (0.5°C), 2°F (1°C), 3°F (1.5°C), and 4°F (2°C).

Where a demand response signal is not available the heating and cooling system controls shall be capable of performing all other functions. Where thermostats are controlled by direct digital control including, but not limited to, an energy management system, the system shall be capable of demand responsive control and capable of adjusting all thermal setpoints to comply. The demand responsive controls shall comply with either Section C406.13.1 or Section C406.13.2

C406.13.1Air conditioners and heat pumps with two or more stages of control and cooling capacity of less than 65,000 Btu/h. Thermostats for air conditioners and heat pumps with two or more stages of control and a cooling capacity less than 65,000 Btu/h (19 kW) shall be provided with a demand responsive control that complies with the communication and performance requirements of AHRI 1380.

C406.13.2 All other HVAC systems. Thermostats for HVAC systems shall be provided with a demand responsive control that complies with one of the following:

1. Certified OpenADR 2.0a VEN, as specified under Clause 11, Conformance
2. Certified OpenADR 2.0b VEN, as specified under Clause 11, Conformance

3. Certified by the manufacturer as being capable of responding to a demand response signal from a certified OpenADR 2.0b VEN by automatically implementing the control functions requested by the VEN for the equipment it controls
4. IEC 62746-10-1
5. The communication protocol required by a controlling entity, such as a utility or service provider, to participate in an automated demand response program
6. The physical configuration and communication protocol of CTA 2045-A or CTA 2045-B.

C406.14 Water heating demand responsive controls. Electric storage water heaters with a rated water storage volume of 40 gallons (150L) to 120 gallons (450L) and a nameplate input rating equal to or less than 12kW shall be provided with demand responsive controls in accordance with Table C406.14 or another equivalent approved standard.

TABLE C406.14
DEMAND RESPONSIVE CONTROLS FOR WATER HEATING

Equipment Type	Controls	
Electric storage water heaters	Manufactured before 7/1/2025	Manufactured on or after 7/1/2025
	ANSI/CTA-2045-B Level 1 and also capable of initiating water heating to meet the temperature set point in response to a demand response signal.	ANSI/CTA-2045-B Level 2, except "Price Stream Communication" functionality as defined in the standard.

SECTION C407
TOTAL BUILDING PERFORMANCE

Modify Table C407.2 as follows:

TABLE C407.2
REQUIREMENTS FOR TOTAL BUILDING PERFORMANCE

SECTION[a]	TITLE
Envelope	
C402.4.1.3	Fenestration Orientation

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Modify Table C407.4.1(1) as follows:

TABLE C407.4.1(1)
SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

Vertical fenestration other than opaque doors	Area 1. The proposed vertical fenestration area; where the proposed vertical fenestration area is less than 40 percent of the above-grade wall area. 2. 40 percent of above grade wall area; where the proposed vertical fenestration area is 40 percent or more of the above grade wall area 3. Fenestration orientation shall comply with C402.4.1.3	As proposed
	U-factor: as specified in Table C402.4	As proposed
	1. SHGC: as specified in Table C402.4 except that for climates with no requirement (NR) SHGC = 0.40 shall be used. 2. Fenestration SHGC shall comply with C402.4.1.3	As proposed
	External shading and PF: none	As proposed

~~**CHAPTER 5 [CE]**~~
~~**EXISTING BUILDINGS**~~

~~**SECTION C503**~~
~~**ALTERATIONS**~~

~~**C503.1 General.** Alterations to any building or structure shall comply with the requirements of this Code for new construction. Alterations shall be such that the existing building or structure is no less conforming to the provisions of this Code than the existing building or structure was prior to the alteration. Alterations to an existing building, building system or portion thereof shall conform to the provisions of this Code as those provisions relate to new construction without requiring the unaltered portions of the existing building or building system to comply with this~~

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~~Code. Alterations shall not create an unsafe or hazardous condition or overload existing building systems.~~

~~Alterations complying with ANSI/ASHRAE/IESNA 90.1 need not comply with Sections C402, C403, C404 and C405.~~

~~**Exceptions:** The following alterations need not comply with the requirements for new construction, provided the energy use of the building is not increased:~~

~~1. Storm windows installed over existing fenestration.~~

~~2. Surface-applied window film installed on existing single-pane fenestration assemblies reducing solar heat gain, provided the Code does not require the glazing or fenestration to be replaced.~~

~~3. Existing ceiling, wall or floor cavities exposed during construction, provided that these cavities are filled with insulation.~~

~~4. Construction in which the existing roof, wall or floor cavity is not exposed.~~

~~5. Roof recover.~~

~~6. Roof membrane peel and replacement.~~

~~7. Air barriers shall not be required for roof recover and roof replacement when the alterations or renovations to the building do not include alterations, renovations or repairs to the remainder of the building envelope.~~

~~8. Roof replacements for roof systems 2:12 slope or less shall comply with the low-slope roof insulation requirements unless the installation of insulation above the structural roof deck, and necessary to achieve the code required *R*-value, is deemed infeasible by the code official to accommodate the added thickness of insulation above the roof deck. Conditions of infeasibility due to flashing height limitations presented by existing rooftop conditions include, but are not limited to, HVAC or skylight curb, low door or glazing, parapet, weep holes, drainage patterns, or cricket or saddle construction. These conditions are subject to manufacturer's specifications, manufacturer's installation instructions, and code official approval.~~

Chapter 6 [CE]

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Referenced Standards

ASME	*ASME* *Two Park Avenue* *New York, NY 10016-5990*
BPVC	*Boiler and Pressure Vessel Code*
AHRI	Air-Conditioning, Heating, & Refrigeration Institute 2111 Wilson Blvd, Suite 500 Arlington, VA 22201
1380-2019	Demand Response through Variable Capacity HVAC Systems in Residential and Small Commercial Applications
ANSI	American National Standards Institute 25 West 43rd Street, 4th Floor New York, NY 10036
ANSI/CTA-2045-A-2018	Modular Communications Interface for Energy Management
ANSI/CTA-2045-B-2019	Modular Communications Interface for Energy Management
CTA	Consumer Technology Association 1919 S. Eads Street Arlington, VA 22202
ANSI/CTA-2045-B	Modular Communications Interface for Energy Management *C404.11*
IEC	IEC Regional Centre for North America IEC International Electrotechnical Commission 446 Main Street 16th Floor Worcester, MA 016808
IEC 62746-10-1 - 2018	Systems interface between customer energy management system and the power management system – Part 10-1: Open automated demand response

CHAPTER 1 [RE]
SCOPE AND ADMINISTRATION

SECTION R101
SCOPE AND GENERAL REQUIREMENTS

R101.1 Title. This Code shall be known as the Illinois Energy Conservation Code or this Code, and shall mean:

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With respect to the residential buildings covered by 71 Ill. Adm. Code 600.Subpart D:

This Part, all additional requirements incorporated within Subpart D (including the 20212~~2018~~ International Energy Conservation Code, including all published errata but excluding published supplements) and any statutorily authorized adaptations to the incorporated standards adopted by CDB are effective upon adoption~~July 1, 2019~~.

R101.1.2 Adoption. The Board shall adopt amendments to this Code within 12 months after publication of changes to the International Energy Conservation Code. Any such update in this Code shall take effect within 6 months after it is adopted by the Board and shall apply to any new building or structure in this State for which a building permit application is received by a municipality or county, except as otherwise provided by the EEB Act.

R101.1.3 Adaptation. The Board may appropriately adapt the International Energy Conservation Code to apply to the particular economy, population distribution, geography and climate of the State and construction within the State, consistent with the public policy objectives of the EEB Act.

R101.5 Compliance. Residential buildings shall meet the provisions of the Illinois Energy Conservation Code covered by 71 Ill. Adm. Code 600.Subpart D. The local authority having jurisdiction (AHJ) shall establish its own procedures for enforcement of the Illinois Energy Conservation Code. Minimum compliance shall be demonstrated by submission of:

1. Compliance Certificates generated by the U.S. Department of Energy's REScheck™ Code compliance tool; or

2. Other comparable compliance materials that meet or exceed, as determined by the AHJ, U.S. Department of Energy's REScheck™ Code compliance tool; or

3. The seal of the architect/engineer as required by Section 14 of the Illinois Architectural Practice Act [225 ILCS 305], Section 12 of the Structural Engineering Licensing Act [225 ILCS 340] and Section 14 of the Illinois Professional Engineering Practice Act [225 ILCS 325].

SECTION R102
ALTERNATIVE MATERIALS DESIGN AND METHODS OF CONSTRUCTION AND EQUIPMENT

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R102.1.1 Above Code Programs. No unit of local government, including any home rule unit, may regulate energy efficient building standards for residential building in a manner that is either less or more stringent than the standards established pursuant to this Code. Buildings shall be considered to be in compliance with this code where such buildings also meet the~~The~~ requirements identified in Table R405.2 and the building thermal envelope is greater than or equal to levels of efficiency and solar heat gain coefficients (SHGC) in Tables 402.1.1 and 402.1.3 of the 2009 International Energy Conservation Code~~as "mandatory" in Chapter 4 shall be met~~.

However, the following entities may regulate energy efficient building standards for residential buildings in a manner that is more stringent than the provisions contained in this Code:

i) A unit of local government, including a home rule unit, that has, on or before May 15, 2009, adopted or incorporated by reference energy efficient building standards for residential buildings that are equivalent to or more stringent than the 2006 International Energy Conservation Code;

ii) A unit of local government, including a home rule unit, that has, on or before May 15, 2009, provided to the Capital Development Board, as required by Section 10.18 of the Capital Development Board Act, an identification of an energy efficient building code or amendment that is equivalent to or more stringent than the 2006 International Energy Conservation Code; and

iii) A municipality with a population of 1,000,000 or more.

SECTION R110~~R109~~
MEANS~~BOARD~~ OF APPEALS

R110.1~~R109.1~~ General. In order to hear and decide appeals of orders, decisions or determinations made by the code official relative to the application and interpretation of this Code, there may be created a board of appeals. The code official shall be an ex officio member of the board of appeals but shall not have a vote on any matter before the board. The board of appeals shall be appointed by the governing body and shall hold office at its pleasure. The board shall adopt rules of procedure for conducting its business and shall render all decisions and findings in writing to the appellant with a duplicate copy to the code official.

R110.3~~R109.3~~ Qualifications. The board of appeals shall consist of members who are qualified by experience and training.

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CHAPTER 2 [RE]
DEFINITIONS

SECTION R202
GENERAL DEFINITIONS

Authority Having Jurisdiction or **AHJ** – means the organization, officer or individual responsible for approving equipment, materials, an installation or procedure.

Board – means the Illinois Capital Development Board.

Council – means the Illinois Energy Conservation Advisory Council whose purpose is to recommend modifications to the Illinois Energy Conservation Code.

EEB Act – means the Energy Efficient Building Act [20 ILCS 3125].

~~**High-Efficacy Lamps** – means compact fluorescent lamps, light-emitting diode (LED) lamps, T-8 or smaller diameter linear fluorescent lamps, or other lamps with an efficacy of not less than 65 lm/W or light fixtures of not less than 55 lm/W.~~

Local Exhaust – means an exhaust system that uses one or more fans to exhaust air from a specific room or rooms within a dwelling.

Residential Building – means a detached one-family or 2-family dwelling or any building that is 3 stories or less in height above grade that contains multiple dwelling units, in which the occupants reside on a primarily permanent basis, such as a townhouse, a row house, an apartment house, a convent, a monastery, a rectory, a fraternity or sorority house, a dormitory and a rooming house; provided, however, that when applied to a building located within the boundaries of a municipality having a population of 1,000,000 or more, the term "residential building" means a building containing one or more dwelling units, not exceeding 4 stories above grade, where occupants are primarily permanent.

~~**Roof Membrane Peel and Replacement** – When an existing weather resisting roof membrane alone is removed, exposing insulation or sheathing, and only a new weather resisting roof membrane is installed.~~

Whole House Mechanical Ventilation System – means an exhaust system, supply system or combination thereof that is designed in accordance with Section R403.6 to mechanically

exchange indoor air with outdoor air when operating continuously or through a programmed intermittent schedule to satisfy the whole house ventilation rates. Outdoor air intakes and exhausts shall have automatic or gravity dampers that close when the ventilation system is not operating.

CHAPTER 4 [RE]
RESIDENTIAL ENERGY EFFICIENCY

SECTION R401
GENERAL

R401.2 Application. Residential buildings shall comply with Section R401.2.6 and either Sections R401.2.1, R401.2.2, R401.2.3, R401.2.4 or R401.2.5.

Exception: Additions, alterations, repairs and changes of occupancy to existing buildings complying with Chapter 5.

R401.2.5 Phius Alternative Compliance Option. The Phius Alternative Compliance Option requires compliance with Section R409.

R401.2.6 Additional energy efficiency. This Section establishes additional requirements applicable to all compliance approaches to achieve additional energy efficiency.

1. For buildings complying with Section R401.2.1, one of the additional efficiency package options shall be installed according to Section R408.2.

2. For buildings complying with Section R401.2.2, the building shall meet one of the following:
   2.1. One of the additional efficiency package options in Section R408.2 shall be installed without including such measures in the proposed design under Section R405; or
   2.2. The proposed design of the building under Section R405.3 shall have an annual energy cost that is less than or equal to 95 percent of the annual energy cost of the standard reference design.

3. For buildings complying with the Energy Rating Index alternative Section R401.2.3, the Energy Rating Index value shall be at least 5 percent less than the Energy Rating Index target specified in Table R406.5.

The option selected for compliance shall be identified in the certificate required by Section R401.3.

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SECTION R402
BUILDING THERMAL ENVELOPE

TABLE R402.1.2
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION *U*-FACTOR[b]	SKYLIGHT[b] *U*-FACTOR	GLAZED FENESTRATION SHGC[b,e]	CEILING *R*-VALUE	WOOD FRAME WALL *R*-VALUE	MASS WALL *R*-VALUE[i]	FLOOR *R*-VALUE	BASEMENT[c] WALL *R*-VALUE	SLAB[d] *R*-VALUE & DEPTH	CRAWL SPACE[c] WALL *R*-VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.65	0.25	38	13	4/6	13	0	0	0
3	0.32	0.55	0.25	38	20 or 13+5[h]	8/13	19	5/13[f]	0	5/13
4 except Marine	0.32	0.55	0.40	49	20 or 13+5[h]	8/13	19	10/13	10, 2 ft	10/13
5 and Marine 4	0.30	0.55	NR	49	20 or 13+5[h]	13/17	30[g]	10/13	10, 2 ft	15/19
6	0.30	0.55	NR	49	20+5 or 13+10[h]	15/20	30[g]	15/19	10, 4 ft	15/19
7 and 8	0.30	0.55	NR	49	20+5 or 13+10[h]	19/21	38[g]	15/19	10, 4 ft	15/19

NR = Not Required
For SI: 1 foot = 304.8 mm

a *R*-values are minimums. *U*-factors and SHGC are maximums. When insulation is installed in a cavity that is less than the label or design thickness of the insulation, the installed *R*-value of the insulation shall not be less than the *R*-value specified in the table.

b The fenestration *U*-factor column excludes skylights. The SHGC column applies to all glazed fenestration. Exception: In Climate Zones 1 through 3, skylights shall be permitted to be excluded from glazed fenestration SHGC requirements, provided that the SHGC for skylights does not exceed 0.30.

e "10/13" means *R*-10 continuous insulation on the interior or exterior of the home or *R*-13 cavity insulation on the interior of the basement wall. "15/19" means *R*-15 continuous insulation on the interior or exterior of the home or *R*-19 cavity insulation at the interior of the basement wall. Alternatively, compliance with "15/19" shall be *R*-13 cavity insulation on

~~the interior of the basement wall plus *R*-5 continuous insulation on the interior or exterior of the home.~~

~~d~~ ~~*R*-5 shall be provided under the full slab area of a heated slab in addition to the required slab edge *R*-value for slabs, as indicated in the table. The slab edge insulation for heated slabs shall not be required to extend below the slab.~~

~~e~~ ~~There are no SHGC requirements in the Marine Zone.~~

~~f~~ ~~Basement wall insulation is not required in warm-humid locations as defined by Figure R301.1 and Table R301.1 (of the IECC).~~

~~g~~ ~~Alternatively, insulation sufficient to fill the framing cavity and providing not less than an *R*-value of *R*-19.~~

~~h~~ ~~The first value is cavity insulation, the second value is continuous insulation. Therefore, as an example, "13+5" means *R*-13 cavity insulation plus *R*-5 continuous insulation.~~

~~i~~ ~~Mass walls shall be in accordance with Section R402.2.5. The second *R*-value applies when more than half the insulation is on the interior of the mass wall.~~

~~**TABLE R402.1.4**~~
~~**EQUIVALENT U-FACTORS**~~

~~CLIMATE ZONE~~	~~FENESTRATION *U*-FACTOR~~	~~SKYLIGHT *U*-FACTOR~~	~~CEILING *U*-FACTOR~~	~~FRAME WALL *U*-FACTOR~~	~~MASS WALL *U*-FACTOR~~	~~FLOOR *U*-FACTOR~~	~~BASEMENT WALL *U*-FACTOR~~	~~CRAWL SPACE WALL *U*-FACTOR~~
~~5 and Marine 4~~	~~0.30~~	~~0.55~~	~~0.026~~	~~0.060~~	~~0.082~~	~~0.033~~	~~0.059~~	~~0.055~~

R402.2.1 Roof/Ceilings with attic spaces. Where Section R402.1.3 requires R-49 insulation in the ceiling or attic, installing R-38 over 100 percent of the ceiling or attic area requiring insulation shall satisfy the requirement for R-49 insulation wherever the full height of uncompressed R-38 insulation extends over the wall top plate at the eaves. Where Section R402.1.3 requires R-60 insulation in the ceiling, installing R-49 over 100 percent of the ceiling area requiring insulation shall satisfy the requirement for R-60 insulation wherever the full height of uncompressed R-49 insulation extends over the wall top plate at the eaves. This reduction shall not apply to the insulation and fenestration criteria in Section R402.1.2 and the Total UA alternative in Section R402.1.5.

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R402.2.2 Roof/Ceilings Without Attic Spaces. When Section R402.1.3~~R402.1.2~~ requires insulation *R*-values greater than *R*-30 in the interstitial space above a ceiling and below the structural roof deck, and the design of the roof/ceiling assembly does not allow sufficient space for the required insulation, the minimum required insulation *R*-value for those roof/ceiling assemblies shall be *R*-30. Insulation shall extend over the top of the wall plate to the outer edge of the plate and shall not be compressed. This reduction of insulation from the requirements of Section R402.1.3~~R402.1.2~~ shall be limited to 500 square feet (46 m^2) or 20 percent of the total insulated ceiling area, whichever is less. This reduction shall not apply to ~~the *U*-factor alternative approach in Section R402.1.4 and~~ the Total UA alternative in Section R402.1.5.

~~**Exception:** For roofs on existing buildings with slope less than 2 units vertical in 12 units horizontal, refer to Section R503.1.1.~~

~~**R402.2.9 Basement Walls.** Walls associated with conditioned basements shall be insulated from the top of the basement wall down to 10 feet (3048 mm) below grade or to within 6 inches (152 mm) of the basement floor, whichever is less. Walls associated with unconditioned basements shall comply with this requirement except when the floor overhead is insulated in accordance with Sections R402.1.2 and R402.2.2.8.~~

R402.2.8.1 Basement wall insulation installation. Where basement walls are insulated, the insulation shall be installed from the top of the basement wall down to 10 feet (3048 mm) below grade or to within 6 inches (152 mm) of the basement floor, whichever is less.

~~**Exception:** Walls associated with conditioned basements may be insulated from the top of the basement wall down to 4 feet (1219 mm) below grade when the basement wall *R*-value is at least 15/19, (basement wall *U*-Factor of 0.050).~~

~~**R402.4.1.2 Testing.** The building or dwelling unit shall be tested and verified as having an air leakage rate not exceeding 4 air changes per hour (ACH) in Climate Zones 4 and 5. The building or dwelling unit shall be provided with a whole-house mechanical ventilation system as designed in accordance with Section R403.6. Testing shall be conducted in accordance with RESNET/ICC 380, ASTM E779 or ASTM E1827 and reported at a pressure of 0.2 inches w.g. (50 Pascals). When required by the code official, testing shall be conducted by an approved third party. A written report of the results of the test, indicating the ACH, shall be signed by the party conducting the test and provided to the code official. Testing shall be performed at any time after all penetrations of the building thermal envelope have been sealed.~~

~~**Exceptions:**~~

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~~1. For additions, alterations, renovations or repairs to existing buildings, building envelope tightness and insulation installation shall be considered acceptable when the items in Table R402.4.1.1, applicable to the method of construction, are field verified. When required by the code official, an approved third party independent from the installer shall inspect both air barrier and insulation installation criteria.~~

~~2. For heated attached private garages and heated detached private garages accessory to 1- and 2-family dwellings and townhouses not more than 3 stories above grade plane in height, building envelope tightness and insulation installation shall be considered acceptable when the items in Table R402.4.1.1, applicable to the method of construction, are field verified. When required by the code official, an approved third party independent from the installer shall inspect both air barrier and insulation installation criteria. Heated attached private garage space and heated detached private garage space shall be thermally isolated from all other habitable, conditioned spaces.~~

~~3. For low-rise multifamily buildings, dwelling units shall be tested and verified as having a leakage rate of not exceeding 0.25 cubic feet per minute (CFM) per square foot of enclosure area (all 6 sides of the dwelling unit) in Climate Zones 1 through 8. Testing shall be conducted with an unguarded blower door at a pressure of 0.2 inches w.g. (50 Pascal). If guarded blower door testing (a test with one or more adjacent units pressurized that should eliminate any leakage between units) is being performed, this exception is not allowed and the standard testing requirement of Section 402.4.1.2 apply. When required by the code official, testing shall be conducted by an approved third party. For buildings with more than 7 units, a sampling protocol is allowed by an approved third party. The sampling protocol requires the first 7 units to be tested without any failures. Upon successful testing of those initial 7 units, remaining units can be sampled at a rate of 1 in 7. If any sampled unit fails compliance with the maximum allowable air leakage rate, 2 additional units in the same sample set must be tested. If additional failures occur, all units in the sample set must be tested. In addition, all units in the next sample set must be tested for compliance before sampling of further units can be continued.~~

~~During testing:~~

~~1. Exterior windows and doors and fireplace and stove doors shall be closed, but not sealed, beyond the intended weatherstripping or other infiltration control measures.~~

~~2. Dampers, including exhaust, intake, makeup air, backdraft and flue dampers, shall be closed, but not sealed beyond intended infiltration control measures.~~

~~3. Interior doors, if installed at the time of the test, shall be open.~~

~~4. Exterior or interior terminations for continuous ventilation systems shall be closed and sealed.~~

~~5. Heating and cooling systems, if installed at the time of the test, shall be turned off.~~

~~6. Supply and return registers, if installed at the time of the test, shall be fully open.~~

~~**R402.4.4 Rooms Containing Fuel-burning Appliances. This section has been deleted. It is not required in Illinois.**~~

SECTION R403
SYSTEMS

R403.3 Ducts. Ducts and air handlers shall be insulated, sealed, tested and installed in accordance with Sections R403.3.1 through R403.3.7. When required by the code official, duct 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.

R403.3.5~~R403.3.3~~ Duct testing ~~(Mandatory)~~.
Ducts shall be pressure tested in accordance with ANSI/RESNET/ICC 380 or ASTM E1554 to determine air leakage by one of the following methods:

1. Rough-in test: Total leakage shall be measured with a pressure differential of 0.1 inch w.g. (25 Pa) across the system, including the manufacturer's air handler enclosure if installed at the time of the test. Registers shall be taped or otherwise sealed during the test.

2. Postconstruction test: Total leakage shall be measured with a pressure differential of 0.1 inch w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure. Registers shall be taped or otherwise sealed during the test.

   Exception: A duct air-leakage test shall not be required for ducts serving ventilation systems that are not integrated with ducts serving heating or cooling systems.

~~**Exceptions:**~~

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~~1. A duct air-leakage test shall not be required when the ducts and air handlers are located entirely within the building thermal envelope.~~

~~2. A duct air-leakage test shall not be required for ducts serving heat or energy recovery ventilators that are not integrated with ducts serving heating or cooling systems.~~

R403.3.6 Duct Leakage.

The total leakage of the ducts, where measured in accordance with Section R403.3.5, shall be as follows:

1. Rough-in test: The total leakage shall be less than or equal to 4.0 cubic feet per minute (113.3 L/min) per 100 square feet (9.29 m^2) of conditioned floor area where the air handler is installed at the time of the test. Where the air handler is not installed at the time of the test, the total leakage shall be less than or equal to 3.0 cubic feet per minute (85 L/min) per 100 square feet (9.29 m^2) of conditioned floor area.

   Exception: If the HVAC duct system is serving less than or equal to 1,500 square feet of conditioned floor area, the allowable duct leakage with the air-handler installed shall be 60 cubic feet per minute or less.

2. Postconstruction 5test: Total leakage shall be less than or equal to 4.0 cubic feet per minute (113.3 L/min) per 100 square feet (9.29 m^2) of conditioned floor area.

   Exception: If the HVAC duct system is serving less than or equal to 1,500 square feet of conditioned floor area, the allowable duct leakage shall be 60 cubic feet per minute or less.

3. Test for ducts within thermal envelope: Where all ducts and air handlers are located entirely within the building thermal envelope, total leakage shall be less than or equal to 8.0 cubic feet per minute (226.6 L/min) per 100 square feet (9.29 m^2) of conditioned floor area.

   Exception: If the HVAC duct system is serving less than or equal to 750 square feet of conditioned floor area, the allowable duct leakage with the air-handler installed shall be 60 cubic feet per minute or less.

R403.6 Mechanical Ventilation ~~(Mandatory)~~. The building or dwelling unit complying with Section R402.4.1 shall be provided with ventilation that complies with the requirements of this section 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.

R403.6.4~~R403.6.2~~ 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 in accordance with the exception to Section R403.6.5.

R403.6.5~~R403.6.3~~ Exhaust equipment. Exhaust fans and whole-house ventilation fans~~equipment serving single dwelling units~~ shall be listed and labeled as providing the minimum required airflow in accordance with ANSI/AMCA 210-ANSI/ASHRAE 51.

R403.6.6~~R403.6.4~~ Whole-house Mechanical Ventilation System. Whole-house mechanical ventilation systems shall be designed in accordance with Sections R403.6.6.1~~R403.6.4.1~~ through R403.6.6.4~~R403.6.4.~~4.

R403.6.6.1~~R403.6.4.1~~ 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.

R403.6.6.2~~R403.6.4.2~~ 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.

R403.6.6.3~~R403.6.4.3~~ Mechanical Ventilation Rate. The whole house mechanical ventilation system shall provide outdoor air at a continuous rate of not less than that determined in accordance with Table R403.6.6.3(1)~~R403.6.4.3(1)~~ or Equation 4-0~~4-1~~.

Ventilation rate in cubic feet per minute = (0.01 x total square foot area of house) + [7.5 x (number of bedrooms +1)] Equation 4-0

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:

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1.1 A ducted system supplies ventilation air directly to each bedroom and to one or more of the following rooms:

1.1.1. Living room.

1.1.2 Dining room.

1.1.3 Kitchen.

1.2 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 R403.6.6.3(1), by Equation 4-0 or by Exception 1 is multiplied by the factor determined in accordance with Table R403.6.6.3(2)

~~1. The whole-house mechanical ventilation system is permitted to operate intermittently when the system has controls that enable operation for not less than 25 percent of each 4-hour segment and the ventilation rate prescribed in Table R403.6.4.3(1) is multiplied by the factor determined in accordance with Table R403.6.4.3(2).~~

~~2. The total required outdoor air ventilation rate (Q_{tot}) shall be as specified in Table 403.6.4.3(1) or calculated in accordance with Equation 4-1.~~

~~Equation 4-1:~~

$$~~CFMtotal = 0.01CFA + 7.5(Nbr + 1)~~$$

~~Where:~~

~~*CFMtotal* = total required ventilation rate, (cfm)~~

~~*CFA* = conditioned floor area of residence, (ft^2)~~

~~*Nbr* = number of bedrooms (not to be less than 1)~~

R403.6.6.3.1~~R403.6.4.3.1~~ Different Occupant Density. Table R403.6.6.3(1)~~R403.6.4.3(1)~~ assumes 2 persons in a dwelling unit and an additional person for each additional bedroom. When higher occupant densities are known, the airflow rate shall be increased by 7.5 cfm (3.5 L/s) for each additional person. When approved by the authority having jurisdiction, lower occupant densities may be used.

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R403.6.6.3.2~~R403.6.4.3.2~~ **Airflow Measurement.** The airflow rate required is the quantity of outdoor ventilation air supplied and/or indoor air exhausted by the whole-house mechanical ventilation system installed, and shall be measured using a flow hood, flow grid, or other airflow measuring device. Ventilation airflow of systems with multiple operating modes shall be tested in all modes designed to meet Section R403.6.6.3~~R403.6.4.3~~. When required by the *code official,* testing shall be conducted by an *approved* third party. A written report of the results of the test, indicating the verified airflow rate, shall be signed by the party conducting the test and provided to the *code official.*

R403.6.6.4~~R403.6.4.4~~ **Local Exhaust Rates.** Local exhaust systems shall be designed to have the capacity to exhaust the minimum air flow rate determined in accordance with Table R403.6.6.4~~R403.6.4.4~~.

TABLE R403.6.6.3(1)~~R403.6.4.3(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 m^2, 1 cubic foot per minute = 0.0004719 m^3/s.

TABLE R403.6.6.3(2)~~R403.6.4.3(2)~~
INTERMITTENT WHOLE-HOUSE MECHANICAL VENTILATION RATE FACTORS[a, 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 R403.6.6.4~~R403.6.4.4~~
MINIMUM REQUIRED LOCAL EXHAUST RATES FOR ONE- AND TWO-FAMILY DWELLINGS

AREA TO BE EXHAUSTED	EXHAUST RATES[a]
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 m^3/s.

a. The listed exhaust rate for bathrooms-toilet rooms shall equal or exceed the exhaust rate at a minimum static pressure of 0.25 inch water column in accordance with Section R403.6.5.

~~**SECTION R405**~~
~~**SIMULATED PERFORMANCE ALTERNATIVE (PERFORMANCE)**~~

~~**TABLE R405.5.2(1)**~~
~~**SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS**~~

~~BUILDING COMPONENT~~	~~STANDARD REFERENCE DESIGN~~	~~PROPOSED DESIGN~~
~~Air Exchange Rate~~	~~The air leakage rate at a pressure of 0.2 inch w.g. (50 Pa) shall be~~ ~~Climate Zone 4 and 5: 4 air changes per hour~~ ~~The mechanical ventilation rate shall be in addition to the air leakage rate and shall be the same as in the proposed design, but no greater than 0.01 x CFA + 7.5 x (N_{br} + 1)~~ ~~where:~~ ~~CFA = conditioned floor area, ft^2~~ ~~N_{br} = number of bedrooms~~ ~~Energy recovery shall not be assumed for mechanical ventilation.~~	~~The measured air exchange rate.[a]~~ ~~The mechanical ventilation rate[b] shall be in addition to the air leakage rate and shall be as proposed.~~

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SECTION R409
PHIUS ALTERNATIVE COMPLIANCE OPTION

R409.1 Scope. This section establishes criteria for compliance via the Phius 2021 Standard.

R409.2 Phius Standard compliance. Compliance based on the Phius 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.

R409.2.1 Phius documentation. Prior to the issuance of a building permit, the following items must be provided to the code official:

1. A list of compliance features.
2. A Phius precertification letter.

R409.2.2 Project certificate. Prior to the issuance of a certificate of occupancy, the following item must be provided to the code official:

1. A Phius 2021 (or later) project certificate.

~~CHAPTER 5 [RE]~~
~~EXISTING BUILDINGS~~

~~SECTION R502~~
~~ADDITIONS~~

~~**R502.1.1.2 Heating and Cooling Systems.** New heating, cooling and duct systems that are part of the addition shall comply with Section 403.~~

~~**Exception:** When ducts from an existing heating and cooling system are extended to an addition, the new and existing duct systems shall not be required to be tested in accordance with Section R403.3.3. New duct systems shall be sealed in accordance with Section R403.3.2.~~

~~SECTION R503~~
~~ALTERATIONS~~

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R503.1.1 Building Envelope. Building envelope assemblies that are part of the alteration shall comply with Section R402.1.3 or R402.1.4, Sections R402.2.1 through R402.2.1.3, R402.3.1, R402.3.2, R402.4.3 and R402.4.5.

Exception: The following alterations are not required to comply with the requirements for new construction provided 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 in which the existing roof, wall or floor cavity is not exposed.

4. Roof recover.

5. Roof membrane peel and replacement.

6. Roofs without insulation in the cavity and when the sheathing or insulation is exposed during reroofing shall be insulated either above or below the sheathing.

7. For roof replacement on existing buildings with a roof slope of less than 2" in 12", and when the roof covering is removed and insulation remains, and when the required *R*-value cannot be provided due to thickness limitations presented by existing rooftop conditions, (including heating, ventilating and air-conditioning equipment, low door or glazing heights, parapet heights, weep holes, and roof flashing heights not meeting the manufacturer's specifications), the maximum thickness of insulation compatible with the available space and existing uses shall be installed. Insulation used shall be minimum *R*-3.5 per inch. In areas where flashing may be terminated a minimum of 8" above the roof covering (including required insulation), insulation shall be a minimum of *R*-20.

8. R-value for roof assemblies with tapered insulation above deck with slope greater than ⅛" in 12" shall average *R*-20.

9. Surface-applied window film installed on existing single pane fenestration assemblies to reduce solar heat gain provided the Code does not require the glazing or fenestration assembly to be replaced.

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~~**R503.1.2 Heating and Cooling Systems.** New heating, cooling and duct systems that are part of the alteration shall comply with Section R403.~~

~~**Exception:** When ducts from an existing heating and cooling system are extended, the new and existing duct systems shall not be required to be tested in accordance with Section R403.3.3. Altered duct systems shall be sealed in accordance with Section R403.3.2.~~

~~**SECTION R504**~~
~~**REPAIRS**~~

~~**R504.2 Application.** For the purposes of this Code, the following shall be considered repairs:~~

~~1. Glass-only replacements in an existing sash and frame.~~

~~2. Roof repairs.~~

~~3. Insulation with new roof covering for roof slopes less than 2 in 12 inches only in areas where the tapered insulation is used above an existing roof covering to create slope between drains or upslope from obstructions to water flow.~~

~~4. Repairs in which only the bulb, ballast or both within the existing luminaires in a space are replaced, provided that the replacement does not increase the installed interior lighting power.~~

(Source: Amended at 47 Ill. Reg. _____, effective _____)