Comparison of IL Commercial Energy Code (2021 IECC) and IL Commercial Stretch Code (2024 IECC with amendments)

In 2021, the Climate and Equitable Jobs Act (CEJA) was passed in Illinois, which contained a provision to create a statewide stretch energy code for the first time. CEJA requires that the Illinois stretch energy code improve energy efficiency in residential buildings by 34.2% and in commercial buildings by 9.1% compared to the current Illinois base energy code. The Illinois Capital Development Board (CDB) has completed development of the Illinois stretch code. As of January 1, 2025 municipalities may adopt the commercial and/or residential stretch codes as their local codes.

This document summarizes the differences between the current Illinois commercial base energy code (2021 IECC with weakening amendments) and the Illinois commercial stretch code (2024 IECC with strengthening amendments). There are four different compliance paths that designers/builders can choose. ***Figure 1*** provides an overview of the mandatory stretch code elements and ***Figure 2*** shows the compliance path options.

STEP 1: Identify the mandatory elements of the IL Commercial Stretch Code

The Commercial Stretch Code contains the mandatory elements that must be met for each stretch code project. They are outlined in ***Figure 1***.

Figure 1. Commercial Stretch Code Mandatory Requirements

- ✓ ASHRAE 90.1 and Mandatory Elements
- ✓ Energy Storage Ready
- ✓ Electric Vehicle Ready
- ✓ Horticultural Lighting
- ✓ Electric Ready
- ✓ Electric Vehicle Accessibility

STEP 2: Choose the compliance path

There are four different compliance paths that designers/builders can choose from in the stretch code, as shown in ***Figure 2***. Each path must be completed in its entirety; elements of different paths cannot be incorporated to achieve compliance. Mandatory elements ***(Figure 1)*** must be completed in addition to the requirements of the chosen compliance path. It is up to the local jurisdiction to determine how/if a project meets compliance.

Figure 2. Commercial Stretch Code-Specific Compliance Paths

- 2024 Commercial IECC
- ASHRAE 90.1-2022
- Alternative Compliance PHIUS (passive house)
- Alternative Compliance Commercial Net Zero Energy

Table 1 provides a brief description of each stretch code compliance pathway.

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Comparison between IL Base Code and IL Stretch Code

Table 1 compares compliance path requirements under base code and stretch code. The stretch code has several paths that are not available under base code, including the PHIUS path and the net-zero path.

The PHIUS path requires a certification from a PHIUS-certified professional to be obtained for this pathway. PHIUS is a Passive-House standard, focused on optimizing investment in passive and active conservation strategies to achieve superior performance and quality construction. PHIUS targets performance that is challenging but achievable with conservation measures only. Learn more here: **https://www.phius.org/standards/new-construction**

The Commercial Zero Energy Path allows Appendix CC to be used as a compliance path for the Illinois Commercial Stretch Code. Appendix CC requires renewable energy systems to achieve net-zero operational energy, avoiding additional emissions that arise from conventional power generation.

Table 2 lists the requirements for all compliance paths and the requirements under the base code and the stretch code. As the table indicates, most requirements are similar across the two for this set of measures. The additions are EV-readiness, solar-readiness, electric-readiness, and demand response measures.

Tables 3 and 4 include a comparison for each path available in both base and stretch code: overall requirements for all compliance paths, prescriptive path, and simulated total building performance path.

Table 3 compares the requirements for the Commercial IECC Prescriptive Paths of the base and stretch code. The prescriptive path emphasizes the main differences for insulation, roofs, and other building envelope components. This section also highlights the requirement to achieve energy credits from IECC 2024. Requires additional energy credits for buildings that do not use heat pumps for main space heating and cooling.

Table 4 compares the requirements of the Simulated Total Building Performance Path of the base and stretch code.

Comparison of IL Commercial Energy Code (2021 IECC) and IL Commercial Stretch Code (2024 IECC with amendments)

Table 1. Commercial compliance paths: base energy code compared to stretch energy code

COMPLIANCE PATH OPTIONS (Meet all Mandatory Elements, then choose ONE Compliance Path)		
COMPLIANCE PATH	**IL BASE ENERGY CODE**	**IL STRETCH ENERGY CODE**
IECC Path	2021 IECC (slightly weakened)	Buildings must comply with the requirements of the 2024 IECC commercial provisions, with prescriptive and performance options available. This pathway meets CEJA efficiency targets. **Prescriptive Path**—2024 IECC commercial provisions; includes backstop that sets glazing limits and envelope requirements. **Simulated Total Building Performance Path**—2024 IECC commercial provisions; allows trade-off of envelope components with better HVAC.
ASHRAE Path	ASHRAE 90.1-2019	Buildings must comply with ASHRAE 90.1-2022. This option revises the performance pathway to align with CEJA targets using a site EUI rather than utility cost
Passive House Path	Certify to PHIUS 2021 Standard, including US DOE Energy Star and Zero Energy Ready Home co-requisites	The PHIUS path requires a certification from a PHIUS-certified professional to be obtained for this pathway. PHIUS is a Passive-House standard, focused on optimizing investment in passive and active conservation strategies to achieve superior performance and quality construction. PHIUS targets performance that is challenging but achievable with conservation measures only. **Learn more here: https://www.phius.org/standards/new-construction**
Commercial Net Zero Energy Path	Not Available	Allows language from Appendix CC as a compliance pathway in the Illinois Stretch Code. Appendix CC requires renewable energy systems to achieve net-zero operational energy, avoiding additional emissions that arise from conventional power generation. **With On-Site Renewables:** On-site renewables or RECs required by building type to cover amount of energy. The minimum renewable energy requirement shall be determined by multiplying the gross conditioned floor area + the semi-heated gross floor area of the proposed building by the prescriptive renewable energy requirement from Table CC103.1 **Without On-Site Renewables:** Offsite renewable energy shall comply with sections CC103.3.1 and CC103.3.2

Comparison of IL Commercial Energy Code (2021 IECC) and IL Commercial Stretch Code (2024 IECC with amendments)

Table 2. Mandatory elements for all compliance paths: base energy code compared to stretch energy code (Sections C402–C403 in IL Commercial Stretch Code)

REQUIREMENT	IL BASE ENERGY CODE	IL STRETCH ENERGY CODE
Blower Door Test	Blower door test required Units shall be tested separately with an unguarded blower door test as follows: 1. Where buildings have fewer than eight testing units, each testing unit shall be tested 2. For buildings with eight or more testing units, the greater of seven units or 20% of the testing unit shall be tested	Blower door test required. Same testing requirements as base code with exceptions: 1. For buildings less than 10,000 sq ft the entire building thermal envelope shall be tested 2. For buildings greater than 50,000 sq ft portions of the building shall be tested by the area-weight.
Duct Testing	All ducts must be tested for tightness	
Duct Tightness	Conditioned: Must meet 4 cfm/100 sq ft	
Duct Insulation	R-6 for unconditioned spaces CZ 4: R-8 CZ 5: R-12	
Cavities as Ducts	Supply and return ducts and plenums	
Piping Insulation	Table C403.12.3	Table C403.13.3 (1) or Table C403.13.3 (2)
Ventilation	Comply with Chapter 4 of the IMC	
Ventilation Fan Efficiency	Table C403.8.5	
High Efficacy Lighting	For residential dwelling units—not less than 90% of the permanently installed lighting; controls for permanent fixtures are required, with some exceptions Buildings must meet lighting power allowances and lighting controls, specified by building use type	For residential dwelling units—not less than 90% of the permanently installed lighting; controls for permanent fixtures required, with some exceptions *Increased efficiency and controls*—Buildings must meet lighting power allowances and lighting controls, specified by building use type

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Comparison of IL Commercial Energy Code (2021 IECC) and IL Commercial Stretch Code (2024 IECC with amendments)

Table 2—continued. Mandatory elements for all compliance paths: base energy code compared to stretch energy code (Sections C402–C403 in IL Commercial Stretch Code)

REQUIREMENT	IL STRETCH ENERGY CODE
The following requirements are in the stretch code and do not appear in the base code	
EV-readiness	Buildings must comply w/commercial stretch code EV infrastructure require-ments. An EV-ready space is defined as an automobile parking space provided with electrical infrastructure, including raceway or cable assemblies, electrical capacity, an electrical distribution equipment space, necessary for con-nection to EV supply equipment. The number of required EV spaces, EV capable spaces and EV ready spaces shall be determined in accordance with this Section and Table C405.13.1 based on the total number of automobile parking spaces and shall be round-ed up to the nearest whole number. For R-2 buildings, the Table requirements shall be based on the total number of dwelling units or the total number of automobile parking spaces, whichever is less.
Solar-readiness	The solar-ready zone should be on the roof for buildings that are five stories or less in height above grade plane and are oriented between 110 and 270 degrees of true north, or have low-slope roofs
Electric-readiness	Full electrification is not required. Natural gas can may still be used, but commercial buildings are required to be electric-ready for water heating, space heating, cooking and clothes drying. Requires new R2 occupancy commercial buildings to include electric infrastructure that would be required for electric appliance installation at time of combustion appliance replacement.
Demand Response	Demand-response-capable thermostats and water heaters required.

Comparison of IL Commercial Energy Code (2021 IECC) and IL Commercial Stretch Code (2024 IECC with amendments)

Table 3. Prescriptive Path (C402-C406) requirements: base energy code compared to stretch energy code

REQUIREMENT	IL BASE ENERGY CODE	IL STRETCH ENERGY CODE
Maximum Envelope Air Infiltration	The measured air leakage shall not exceed 0.4 cfm/ft² of the building thermal envelope at a pressure differential of 0.3-inch water gauge (75pa)	The measured air leakage shall not be greater than 0.35 cfm/ft² of the building thermal envelope area at a pressure differential of 0.3-inch water gauge (75pa) Exception: 1. Buildings larger than 25,000 sq ft in CZ 4
Wood Frame Wall	CZ 4: R-13 + R-3.8ci or R-20 CZ 5: R-13 + R-7.5ci or R-20 +R-3.8ci	CZ 4: R-0 + R-12ci or R-13 + R-3.8ci or R-20 CZ 5: R-0 + R-16ci or R-13 + R-7.5ci pr R-20 + R3.8ci or R-27
Wood Frame Wall U-Factor	CZ 4: 0.064 CZ 5: 0.051	
Floor	R-14.6ci	
Floor U-Factor	0.057	
Below Grade Wall	R-7.5ci	
Basement Wall U-Factor	c-0.119	
Roof/Ceiling R-Value Insulation Entirely Above Roof Deck	R-30ci	
Roof/Ceiling R-Value Metal Buildings	R-19 + R-11 LS	
Roof/Ceiling R-Value Attic and Other	R-49	
Roof/Ceiling U-Factor Insulation Entirely Above Roof Deck	0.032	
Roof/Ceiling U-Factor Metal Buildings	0.035	

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Comparison of IL Commercial Energy Code (2021 IECC) and IL Commercial Stretch Code (2024 IECC with amendments)

Table 3—continued. Prescriptive Path (C402-C406) requirements: base energy code compared to stretch energy code

REQUIREMENT	ILLINOIS BASE ENERGY CODE	IL COMMERCIAL STRETCH CODE
Roof/Ceiling U-Factor Attic and Other	0.021	
Operable Fenestration	0.45	
Fixed Fenestration	0.36	0.34
Additional Compliance Package	New buildings shall achieve 10 credits from Tables C406.1(1) through C406.1(5), where the table is selected based on the building's use group.	Achieve not less than the number of required efficiency credits from Table C406.1.1(1) based on building occupancy group and climate zone. For buildings that do not use heat pumps for main space heating and cooling, energy credits from table C406.1.1(1) shall be multiplied by 1.25. **Exceptions:** **1.** Portions of buildings devoted to manufacturing or industrial use **2.** Where a building achieves more renewables and load management credits than required.

Table 4. Simulated Total Building Performance Path (C406-C407) base energy code compared to stretch energy code

REQUIREMENT	ILLINOIS BASE ENERGY CODE	IL COMMERCIAL STRETCH CODE
Total Performance Requirement	An annual energy cost that is less than or equal to 80% of the annual energy cost of the standard reference design.	Annual energy cost that is less than or equal to the percent of the annual energy cost of the standard reference design calculated in Equation 4-33. Overall compliance with sections indicated within Table C407.2(1).
Maximum Air Infiltration	The measured air leakage of the building envelope shall not exceed 0.25 cfm/ft^2 at a pressure differential of 0.3-inch water gauge (75pa) **Exception:** Buildings over 25,000 sq ft of conditioned floor area	
Additional Compliance Package	Must choose one 5% additional efficiency package from C406 (without including it in proposed design) OR proposed design must achieve 95% of annual energy cost of reference design.	Buildings shall comply with measures from C406.2 to achieve not less than the number of required efficiency credits from table C406.1.1(1) based on building occupancy group and climate zone including any energy credit adjustments in accordance with C406.1.1.1