FSEC Energy Research Center

UNIVERSITY OF CENTRAL FLORIDA

Comparison of the 2023 Commercial Florida Building Code, Energy Conservation, 8th Edition with 2024 IECC & ASHRAE 90.1-2022

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Executive Summary

The State of Florida desired to conduct a qualitative and quantitative comparative analysis of commercial provisions of the 8th Edition (2023) Florida Building Code, Energy Conservation (FBCEC) against IECC-2024 and ASHRAE 90.1-2022. The primary tasks included in this draft final report are:

- Review and compare the 2023 FBCEC against the draft 2024 IECC
- Review and compare the 2023 FBCEC against 2022 ASHRAE 90.1
- Identify and list code changes with an energy impact
- Conduct a preliminary analysis of the ASHRAE 90.1-based 2023 FBCEC and 2022 ASHRAE 90.1 and determine the relative energy use performances of the codes

Two code change reviews were meticulously conducted: the code change between the IECC-based 2023 FBCEC code with draft 2024 IECC and the ASHRAE 90.1-based 2023 FBCEC with the 2022 ASHRAE 90.1. These reviews were carried out with attention to detail, ensuring the accuracy and reliability of the findings.

For this purpose, a review of the changes between the 2021 IECC and IECC-based 2023 FBCEC relative to the draft 2024 IECC code was conducted and summarized. The review also identified the changes' energy and construction cost impacts. Appendix A provides a detailed listing of the code changes with and without energy impact and a brief description of each code change, offering a complete understanding of the changes. A total of 239 code changes were introduced into the draft 2024 IECC, with ninety-four having energy impacts. Mechanical systems, lighting systems, and additional energy efficiency measures changes account for 89% of the energy impact, highlighting the areas of significant change.

Furthermore, a comprehensive review of the ASHRAE 90.1-based 2023 FBCEC and the 2022 ASHRAE 90.1 code changes was conducted. This review identified code changes with energy impact and code sections excluded from the 2023 FBCEC. The ASHRAE 90.1-based 2023 FBECE change review, comparison, and identification of the most impactful listing tasks were completed. The details of the listing of the ASHRAE 90.1 code changes with and without energy impact and a brief description of each code change are summarized in Appendix B. The ASHRAE 90.1-2022 changes review identified eighty-eight code modifications. Twenty-nine of the eighty-eight code modifications have energy impacts, of which fifteen were quantitatively analyzed, providing a comprehensive understanding of the energy impact of the code changes.

A comparative energy use performance analysis of the ASHRAE 90.1-based 2023 FBCEC, and the 2022 ASHRAE 90.1 U.S. National Building Energy Code was conducted. The comparative analysis was conducted using modified DOE commercial prototype building energy models. Sixteen commercial prototype building energy models for each climate zone and code base were used in the analysis. EnergyPlus, a whole-building energy simulation program, was used to analyze those energy-impactful changes quantitatively.

The state's annual site Energy Utilization Intensity (EUI) of the ASHRAE 90.1-based 2023 FBCEC and ASHRAE 90.1-2022 code by prototype building types were determined and are shown in Table I. The annual site EUI aggregated across the sixteen prototype buildings was

45.92 kBtu/ft^2-yr and 41.46 kBtu/ft^2-yr for the ASHRAE 90.1-Based 2023 FBCEC and the 2022 ASHRAE 90.1 code, respectively. The ASHRAE 90.1-based 2023 FBCEC weighted average energy use was higher by about 9.70 percent due to the exclusion of Section 8.4.2 Automatic receptacle control and Section 9.4.1.1(g) Automatic partial-off interior lighting control, and due to the fifteen energy impactful code modification added to the 2022 ASHRAE 90.1 code. It is crucial to note that this analysis indicates the need to update the ASHRAE 90.1-based 2023 FBCEC to catch up with the latest 2022 ASHRAE Standard 90.1 U.S. national building energy code if equivalency is desired.

Table-I Florida Average Site EUI of the ASHRAE 90.1 Building Energy Code

	ASHRAE 90.1-Based 2023 FBCEC, kBtu/ft^2-yr	**ASHRAE 90.1-2022, kBtu/ft^2-yr**	**Difference, %**
Florida Average	45.92	41.46	9.70

The relative energy performance analysis of the IECC-based 2023 FBCEC and the 2024 IECC were not conducted due to unavoidable delays in the official publication of the 2024 IECC book.

Acknowledgments

This report was prepared by the Florida Solar Energy Center/University of Central Florida for the Florida Department of Business and Professional Regulation (DBPR). The authors thank Mo Madani and the DBPR staff for their support and guidance during the project.

Acronyms and Abbreviations

ANSI	American National Standards Institute
ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers
DOE	U.S. Department of Energy
ECI	Annual Energy Cost Index, $/(ft^2-yr)
EUI	Annual Energy Utilization Intensity, kBtu/(ft^2-yr)
FBCEC	Florida Building Code, Energy Conservation
FBCEC-2023	2023 Florida Building Code, Energy Conservation
FSEC	Florida Solar Energy Center
HVAC	Heating, ventilation, and air-conditioning
IES	Illuminating Engineering Society of North America
IECC	International Energy Conservation Code
PNNL	Pacific Northwest National Laboratory

Simulation Prototype Terminology

IECC-Based 2023 FBCEC	is a building energy model designed to simulate the 8th Edition (2023) FBCEC, which is IECC-based.
ASHRAE 90.1-Based *2023* FBCEC	is a building input designed to simulate the 8th Edition (2023) FBCEC, the 2019 ASHRAE Standard 90.1 compliance option.
ASHRAE 90.1-2019	is a building energy model that simulates the 2019 ASHRAE standard 90.1.
ASHRAE 90.1-2022	is a building energy model that simulates the 2022 ASHRAE standard 90.1.

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1. Introduction

The State of Florida, in its pursuit of a comprehensive understanding of the commercial provisions of the 8th Edition (2023) Florida Building Code, Energy Conservation (FBCEC), has commissioned a qualitative and quantitative comparative analysis. This report, of significant importance to State officials, building code professionals, and energy conservation experts, presents a summary of the code changes between the 2023 FBCEC and the draft 2024 IECC, as well as the changes between the ASHRAE 90.1-based 2023 FBCEC and the 2022 ASHRAE 90.1. The ASHRAE 90.1-based 2023 FBCEC is a modified version of the 2019 ASHRAE 90.1. The draft 2024-IECC was used since the official version has not been published. The report also identifies code changes with energy impact for both the 2024 IECC changes and the 2022 ASHRAE 90.1. Furthermore, the relative energy performance of the ASHRAE 90.1 code was determined by the energy use performance using simulation. This report marks a significant milestone in our progress.

Code Changes Qualitative Analysis:

- Review and compare the code changes between the IECC-based 2023 FBCEC and the 2024 IECC
- Review and compare the code changes between the ASHRAE 90.1-based 2023 FBCEC and the 2022 ASHRAE Standards 90.1
- Provide code change listing and identifying changes with energy impact

Our review and comparison of the IECC-Based 8th Edition (2023) FBCEC and the draft 2024 IECC energy code, despite the official 2024 IECC not being published at the time of writing this report. Identified code changes with energy cost impact. We have also highlighted the implications of these changes on the construction cost, where possible, providing a practical understanding of the report's findings. Appendix A provides a brief description of each of the changes incorporated into the draft 2024 IECC and a brief description of the anticipated changes relative to the 2023 FBCEC.

Reviewed and compared the ASHRAE 90.1-based 8th Edition (2023) FBCEC and the 2022 ASHRAE 90.1 code, the latest U.S. National Building Energy Code. Identified code changes with energy impact and those excluded from the ASHRAE 90.1-based 2023 FBCEC. A brief description of each of the 2022 ASHRAE Standard 90.1 code changes is listed in Appendix B. The IECC-based 2023 FBCEC and the 2024-IECC qualitative and quantitative comparison have yet to start due to delays in the 2024 IECC publication.

Code Change Quantitative Analysis:

FSEC conducted a preliminary energy use comparative analysis of the ASHRAE 90.1-based compliance options of the 2023 FBCEC and the 2022 ASHRAE 90.1 for climate zones 1A and 2A. Each code base and climate zone is represented using sixteen commercial prototype building energy models. These prototype building energy models were created by modifying the DOE/PNNL prototype building model energy codes. The ASHRAE 90.1-based 2023 FBCEC is a modified 2019 ASHRAE 90.1 code that excludes Sections 8.4.2, 8.4.3, and 9.4.1.1(g). A

preliminary comparative energy use analysis between the ASHRAE 90.1-based 2023 FBCEC and the 2022 ASHRAE 90.1 code is summarized in Section 6.

The comparative energy performance analysis of the IECC-based 2023 FBCEC and the 2024 IECC and the cost-benefit analysis of the changes were not conducted due to unavoidable delays in the official publication of the 2024 IECC.

2. The 2023 FBCEC Qualitative Comparison with 2024 IECC

The 8th Edition (2023) Florida Building Code, Energy Conservation (FBCEC) was compared with the draft 2024 IECC document provided by the Florida Department of Professional Regulation (DBPR). Appendix-A summarizes the changes between the 2021 IECC and the 2024 IECC and between the IECC-based 2023 FBC-EC and the 2024 IECC. The summary also indicates the impact of energy and construction costs if FBC were to adopt the changes. The code change review covers the 239 code modifications in the draft 2024 IECC document. The review identified 94 code modifications with energy impact, and thirty-nine of the changes were additional energy efficiency measures. Table 1 summarizes the code change distribution by code sections.

Table 1 Distribution of Code Modifications Count Approved for the Draft 2024 IECC

Commercial Code Section	Code Changes, Count	Code Change with Energy
Chapter C1: Scope and Administration	10	-
Chapter C2: Definitions	(41)	-
Chapter C3: General Requirements	3	-
Chapter C4: Commercial Energy Efficiency	198	81
Chapter C5: Existing Buildings	27	13
Appendix CC: Zero Energy Commercial Building Provisions	1	-
Appendix CD: The 2030 Glide Path	1	-
Appendix CE: Required HVAC Total System Performance Ratio (TSPR)	1	-
Appendix CF: Energy Credits	1	-
Appendix CG: Electrical Vehicle Charging Infrastructure	1	-
Appendix CH: Electrical-Ready Commercial Building Provisions	1	-
Appendix CI: Demand Responsive Controls	1	-
Appendix CJ: Electrical Energy Storage System	1	-
Resource CRB: The 2023 Glide Path (Prescriptive)	1	-
Resource CRB: All-Electric Commercial Building Provisions	1	-
Total	239	94

3. The 2023 ASHRAE-Based Florida Building Energy Code

Qualitative analysis of code changes is performed for every code development cycle. The qualitative analysis is performed based on the code addenda published in informative appendix M of the 2022 ASHRAE Standard 90.1 (ASHRAE, 2022) and the addenda forward published on the ASHRAE website[1]. Furthermore, the qualitative analysis identifies which code changes impact energy use. Appendix B briefly describes each code change, indicating whether they have energy impacts and should be included in the quantitative analysis. Table 2 summarizes the number of changes by code section and those that directly impact building energy use.

Table 2 Code changes addenda to ASHRAE Standard 90.1-2019

Section	Number of Addenda	Number of Addenda with Energy Impact
2. Purpose and Scope	1	-
3. Definitions, Abbreviations, and Acronyms	2	-
4. Administration and Enforcement	4	-
5. Building Envelope	6	2
6. Heating Ventilation and Air Conditioning	29	9
7. Service Water Heating	1	1
8. Power	3	-
9. Lighting	13	12
10. Other Equipment	3	3
11. Additional Efficiency Requirements	1	1
12. Energy Cost Budget Method	10	1
13. Normative References	1	-
14. Appendices A – M	14	0
Total	88	29

ASHRAE Standard 90.1-2022 includes eighty-eight code change addenda. Twenty-nine of the addenda were identified to impact energy use. Fifteen of the twenty-nine addenda items were identified as suitable for quantitative analysis using a building energy simulation program. These fifteen addenda items were quantitatively analyzed to determine the ASHRAE 90.1-2022 code's energy impact on the State building energy code and compared with the 2023 (8th Edition) Florida Building Code, Energy Conservation. The 8th Edition (2023) Florida Building Code, Energy Conservation, excludes Sections 8.4.2, 8.4.3, and 9.4.1.1(g) of the 2019 ASHRAE Standard 90.1. Thus, the ASHRAE 90.1-based 2023 FBCEC lags behind the 2022 ASHRAE 90.1 code due to the new changes included in the 2022 ASHRAE 90.1 and the code sections excluded from the 2019 ASHRAE Standard 90.1.

[1] https://www.ashrae.org/technical-resources/standards-and-guidelines/standards-addenda/addenda-to-standard-90-1-2019

4. Florida Climate Zones

Based on DOE's climate zone classification, Florida has two climate zones: very hot and humid (1A) and hot and humid (2A). Representative site locations for climate zones 1A and 2A selected for the quantitative analysis were Miami, Florida (1A, very hot, humid) and Orlando, Florida (2A, hot, humid). Orlando was selected as a representative site location for Climate Zone 2A mainly because it is the geographic center for large cities in the Climate Zone 2A region of the State. Miami, the largest city in Climate Zone 1A, was selected as a representative site location. The Florida commercial building stock floor area distribution by climate zones and building types and the data used to drive them are provided in Appendix D.

5. Quantitative Analysis of the 2023 Florida Energy Code Performance

The quantitative analysis determined and compared annual total Energy Utilization Intensity (EUI) and annual Energy Cost Index (ECI) by prototype building type and floor area weighted Florida average. Sixteen commercial prototype building types represented the Florida commercial new construction building's total floor area stock. The floor area weighing factors by building type used for the analysis are summarized in Table 3. The annual energy use and cost comparison of the prototype buildings' energy model designed with the 2019 ASHRAE 90.1-based 2023 FBCEC against the 2022 ASHRAE 90.1 code were determined. The comparative energy performance analysis between the IECC-based 2023 FBCEC and the 2024 IECC has not been conducted due to delays in the latter's publication.

The 2022 ASHRAE 90.1 code prototype building energy models were DOE reference prototype building energy models published by the Pacific Northwest National Laboratory (PNNL) (DOE, 2023). The DOE reference prototype building energy models were also modified for this study to account for site location and location-dependent parameters. The ASHRAE 90.1-based 2023 FBCEC prototype building energy models were developed by modifying the 2019 ASHRAE 90.1 prototype buildings. The sixteen prototype commercial building energy models of the ASHRAE 90.1-based 2023 FBCEC, and the 2019 ASHRAE 90.1 code were simulated for Miami and Orlando site locations.

Finally, the EUI and ECI of the prototype building energy models designed with the ASHRAE 901-based 2023 FBCEC and ASHRAE 90.1-2022 code were determined and evaluated. The weighted Florida average site EUI and ECI were calculated from the EUI and ECI of the sixteen commercial prototype buildings using weighting factors that account for the prototype building's floor area distribution by climate zones and building type. The EUI for each prototype building was determined by dividing the annual total energy use of a building by its total floor area. The ECI for each prototype building was obtained by dividing the total annual energy cost of a building by its total floor area. The total annual energy cost includes electric, demand changes, and natural gas energy costs. The standards energy rates for electricity, demand charges, and natural gas used in this analysis are provided in Appendix C.

The EUI and ECI percent difference between the 2023 FBCEC and the ASHRAE 90.1-2022 US national building energy codes were calculated as follows:

$$\Delta X = 100 \cdot \frac{X_{BaseCode} - X_{FBCEC}}{X_{BaseCode}}$$

Where X represents the EUI or ECI value of a prototype building or an aggregate of the sixteen prototype buildings, $X_{BaseCode}$ represents the EUI or ECI value of a prototype building or a weighted average of the sixteen prototype buildings of the 2022 ASHRAE 90.1 code, and X_{FBCEC} represents EUI or ECI value of a prototype building or a weighted average of the sixteen prototype buildings of the ASHRAE 90.1-based 2023 FBCEC prototype buildings.

5.1 Prototype Buildings and Floor Area Distribution

Quantitative analysis of the Florida commercial building energy code performance was investigated using the sixteen prototype building energy models representing climate zones 1A and 2A. Figure 1 shows the commercial building's total floor area weighting factors used for Florida by prototype buildings. The eight building types and sixteen prototype energy models shown in Table 3 represent the commercial building's stock floor area and floor area distribution by prototype building in Florida.

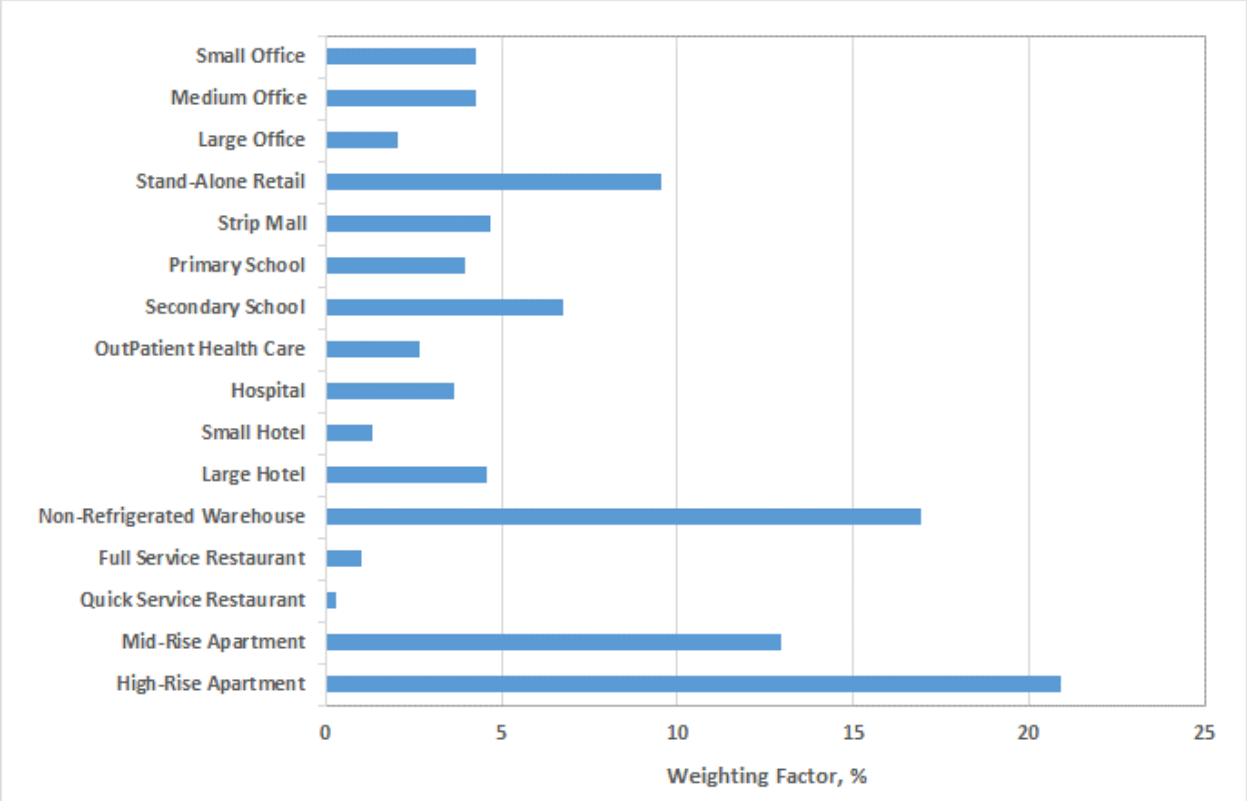

Figure 1 Commercial Prototype Buildings Type and Floor Area Distribution in Florida

The DOE uses the same prototype buildings to represent the US national commercial building stock for building energy use quantitative analysis. They claim these building types represent 75% of the US national commercial building floor area stock (Lei et al., 2020). The prototype building floor area weighting factors presented here are specific to the State of Florida and were determined as described in Appendix D.

Table 3 Commercial Prototype Buildings Type and Floor Area Distribution in Florida

Building Type	**Prototype Building**	**Prototype Building Floor Area, ft^2**	**Total Building Floor Area, 1000 ft^2**	**Floor Area Weighting Factors, %**
Office	Small Office	5,502	60,118	4.27
	Medium Office	53,628	59,533	4.27
	Large Office	498,588	28,515	2.06
Retail	Stand-Alone Retail	24,692	132,725	9.57
	Strip Mall	22,500	64,402	4.71
Education	Primary School	73,959	55,681	3.98
	Secondary School	210,887	95,221	6.77
HealthCare	Outpatient Health Care	40,946	36,318	2.65
	Hospital	241,501	51,718	3.68
Lodging	Small Hotel	43,202	16,958	1.33
	Large Hotel	122,120	64,988	4.57
Warehouse	Non-Refrigerated Warehouse	52,045	235,608	16.94
Food Service	Full-Service Restaurant	2,501	12,756	1.03
	Quick Service Restaurant	5,502	4,850	0.29
Apartment	Mid-Rise Apartment	33,741	181,057	12.96
	High-Rise Apartment	84,360	292,976	20.91
Total		1,515,674	1393,424	100.00

6. Comparative Performance of the 2023 FBCEC and ASHRAE 90.1-2022

The 8th Edition (2023) Florida Building Code, Energy Conservation, allows ASHRAE Standard 90.1-2019 as a compliance option. However, the 2019 ASHRAE 90.1-based compliance option of the 2023 FBCEC excludes code sections 8.4.2 Automatic receptacle control, 8.4.3 Energy monitoring, and 9.4.1.1(g) Automatic partial-off of the 2019 ASHRAE 90.1 standard. This analysis compares the ASHRAE 90.1-based 2023 FBCEC against the 2022 ASHRAE 90.1 U.S. National Building Energy Code. Sixteen prototype building models and two climate zones were used for the energy use comparative analysis. There are 32 prototype building energy models, each representing the ASHRAE 90.1-based 2023 FBCEC and the 2022-ASHRAE 90.1 Code.

Prototype building models of the ASHRAE 90.1-based 2023 FBCEC buildings were created by removing impacts of the interior lighting automatic partial-off section 9.4.1.1(g) and the automatic receptacle control section 8.4.2 from the 2019 ASHRAE 90.1 DOE reference prototype building models. The automatic receptacle control impacts all sixteen prototype buildings, and the automatic full-off control replaced the partial-off interior lighting control. Automatic receptacle control in the prototype building energy models was accounted for using reduced hourly fractions for receptacle loads. Section 8.4.3 Energy monitoring is not amenable to simulation-based quantitative analysis; hence, it is not included in this analysis. The 2022-ASHRAE 90.1 prototype building model energy code includes some code modifications with energy impacts listed in Appendix A. Table 4 summarizes energy impactful changes of the 2022 ASHRAE 90.1 included in the quantitative analysis.

The Energy Utilization Intensity (EUI) of each prototype building for each climate zone was aggregated by Florida climate zone floor area weighing factors to determine the EUI by prototype building. The Florida commercial buildings' stock floor area distribution by the building type and climate zones were derived from the latest PNNL report (Lei et al., 2020). The energy performance of the ASHRAE 90.1-based 2023 FBCEC was determined by comparing the annual site EUIs against the 2022 ASHRAE 90.1 standard by prototype buildings. As expected, the ASHRAE 90.1-based 2023 FBCEC prototype building models use higher energy than the ASHRAE 90.1-2022 U.S. National Building Energy Code. Florida's average EUI were 45.92 kBtu/ft^2-yr and 41.46 kBtu/ft^2-yr for ASHRAE 90.1-based 2023 FBCEC and ASHRAE 90.1-2022, respectively. Florida's average EUI of the ASHRAE 90.1-based 2023 FBCEC was higher by about 9.70% relative to the ASHRAE 90.1-2022 U.S. National Building Energy Code. The U.S. national site energy use savings[2] estimate of the 2022 ASHRAE 90.1 compared to the 2019 ASHRAE 90.1 code was 9.8 percent.

Figure 2 shows the annual site EUI plots of the ASHRAE 90.1-based 2023 FBCEC and the 2022 ASHRAE 90.1 standard by prototype buildings. Figure 2 shows the annual site Energy Cost Index (ECI) plots of the ASHRAE 90.1-based 2023 FBCEC and the 2022 ASHRAE 90.1 standards by prototype buildings.

[2] https://www.energycodes.gov/determinations

Table 4 Impactful code changes added to ASHRAE Standard 90.1-2022

Addendum	Code Change Summary b/t ASHRAE 90.1-2019 and ASHRAE 90.1-2022	Discussion
t	This amendment requires whole-building air leakage testing and measurement on buildings less than 10,000 ft^2, specifies performance requirements for compliance, references the applicable ASTM standard, and modifies the relevant definition.	It adds whole-building air leakage and measurement requirements, increases stringency for buildings less than 10,000 ft2 floor area, and impacts small office and restaurant prototype buildings.
bc	It requires condensing boilers for new construction to achieve condensing-level efficiency (i.e., 90% Et) for large boiler systems (i.e., between 1 and 10 MBtuh) and, to ensure condensing occurs, requires the boiler entering water to be within the prescribed limits for temperature or flow rate.	Increases efficiency requirements for large boilers in new construction. It may impact large hotel prototype buildings.
a	Establish minimum fan efficacy requirements for low-power ventilation fans and reference Standard 62.2 to determine the minimum ventilation rates for nontransient dwelling units.	This amendment adds minimum fan efficiency requirements for smaller ventilation fans not covered by section 6.5.3.6.
b	Revises demand control ventilation parameters to be determined based on climate zone and Standard 62.1 airflow requirements.	For cost-effectiveness, the DCV requirement is based on occupancy, floor-area size, and climate zone.
c	Requires residential HVAC systems greater than 2.1 kW to be equipped with start/stop and setback controls.	Adds advanced HVAC control in dwelling units. This control features impact apartment prototype buildings.
am	Updates exterior lighting power and control requirements based on technological improvements and revised lighting practices; restructure portions of Section 9 to communicate exceptions to those requirements better.	Reduces the exterior lighting power allowances and adds control requirements based on specific applications.
o	This change reduces the minimum connected load that triggers daylighting responsive control requirements for sidelighting and toplighting.	Improved LED technology reduces the minimum connected load for daylighting responsive controls for side-lighting from 150 to 75 W and top-lighting from 300 W to 150 W.
br	Increases the efficacy threshold for lamps and luminaires in dwelling units and specifies interior and exterior lighting control requirements.	Increased lighting efficacy and added control requirements for interior and exterior lighting. This change also reMoves the exception due to permanent control requirements.

Addendum	Code Change Summary b/t ASHRAE 90.1-2019 and ASHRAE 90.1-2022	Discussion
ba	Updates space-by-space lighting power density (LPD) values and interior control requirements in Section 9.4.1.1 and Table 9.5.2.1.	Increased lighting efficacy and added control requirements for interior lighting.
bf	This change updates the decorative and retail lighting power allowances, adds allowance for videoconferencing, and moves the additional power allowances and required controls to a table for easy reference.	Reduces decorative and retail lighting power allowances. Impacts retail prototype buildings.
ah	Increases the thermal efficiency required for high-capacity gas-fired service water-heating equipment and provides the U.S. DOE criteria for defining high-capacity water heaters.	A single high-capacity water heater supplies a system, or if multiple high-efficiency water heaters provide a single system, the minimum efficiency increases to 92 %. This change may impact large hotel prototype buildings.
by	Adds a minimum prescriptive requirement for on-site renewable energy.	The building site must have equipment for on-site renewable energy with a rated capacity >= 0.5W/ft² multiplied by the sum of the gross conditioned floor area for all floors up to the three largest floors.
cf	Introduces provisions that improve elevator fan, lighting, and movement efficiency.	This change increases elevator fan efficiency, reduces lighting allowance, and improves standby mode energy use.
ci	This lowers the threshold for air-economizers for packaged fan cooling units installed outside the building to 33 kBtuh from 54 kBtuh. It does not apply to interior installation.	It reduces the cooling energy required for smaller packaged systems where applicable.
ap	This section introduces a new section to ASHRAE Standard 90.1, enabling energy credits to save approximately 4% to 5% of energy costs. There are 32 individual measures from which users can earn the required number of credits for their building type and climate zone.	Thirty-three cost-effective energy credit prescriptive requirements are included in a new Section 11. Supports eight building use types.

The 2023 FBCEC prototype building energy models of ASHRAE 90.1 consume more energy in one part due to the exclusion of Sections 8.4.2 Automatic receptacle control and 9.4.1.1(g) Partial-off interior lighting control and in another part due to the addition of fifteen code modifications to the 2022 ASHRAE 90.1, which is the latest U.S. National Building Energy Code. Therefore, if equivalency is desired, the ASHRAE 90.1-based 2026 (9th Edition) FBCEC needs to catch up with the latest U.S. National Building Energy Code.

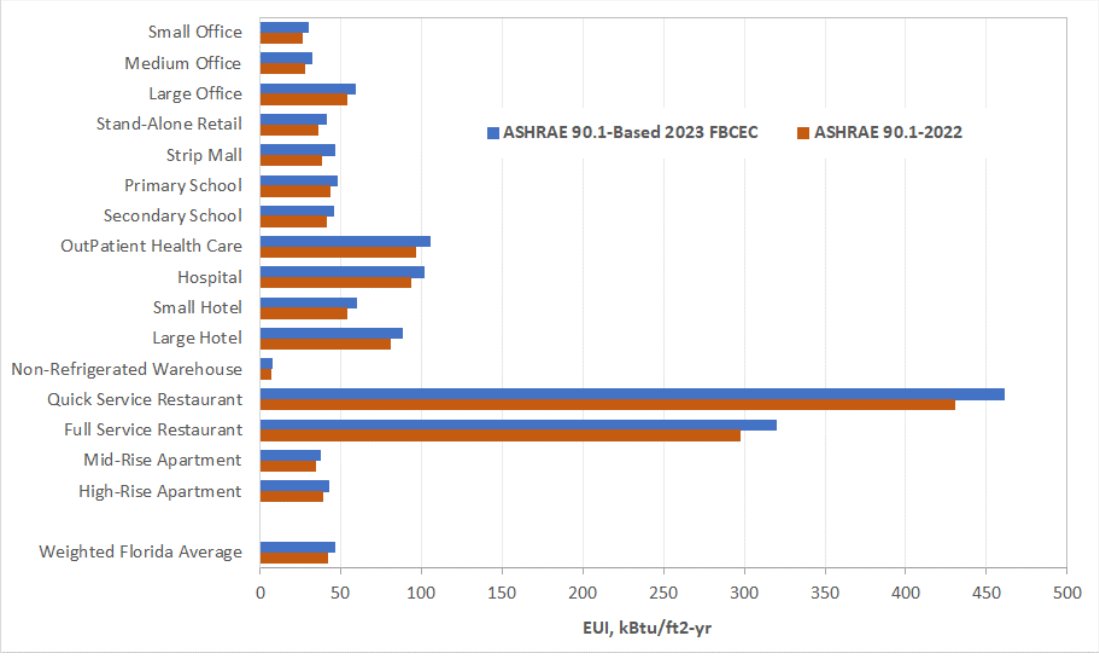

Figure 2 Site EUI of the 2023 FBCEC and ASHRAE 90.1-2022 by Prototype Building

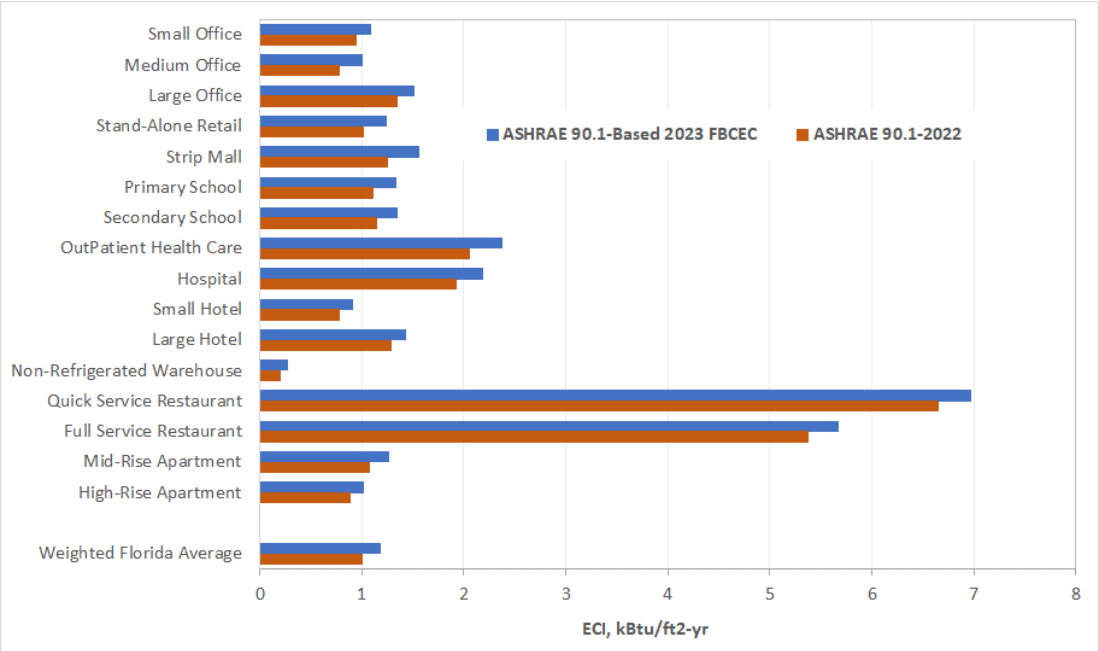

Figure 3 Site ECI of the 2023 FBCEC and ASHRAE 90.1-2022 by Prototype Building

7. Conclusion

The two Florida commercial code provisions change reviews were conducted: the code change between the IECC-based 2023 FBCEC code with draft 2024 IECC and the ASHRAE 90.1-based 2023 FBCEC with the 2022 ASHRAE 90.1. These reviews were conducted with attention to detail, ensuring the accuracy and reliability of the findings. The findings are presented next.

A comprehensive review of the changes between the 2021 IECC and IECC-based 2023 FBCEC relative to the draft 2024 IECC code was conducted and summarized. The review also identified the impacts of the changes in energy and construction costs. Appendix A summarizes the details of the listing of the code changes with and without energy impact and a brief description of each code change, providing insight into the changes' construction cost impacts. There are 239 code changes introduced into the draft 2024 IECC, and ninety-four have energy impacts. Mechanical systems, lighting, and additional energy efficiency measures account for 89% of the code changes with an energy impact.

Reviewed the 2022 ASHRAE Standard 90.1 code changes and identified code changes with energy impact. The list of code changes is summarized in Appendix B. This appendix lists all the code changes, briefly describes each change, and identifies if the change has an energy impact and whether the changes were included in the quantitative analysis. The qualitative analysis identified eighty-eight code change addenda. Twenty-nine of the eighty-eight addenda were identified to impact energy use. Fifteen of the twenty-nine addenda items were identified as suitable for quantitative analysis using a building energy simulation program. The fifteen addenda were analyzed quantitatively to determine the ASHRAE 90.1-2022 code's impact on the State building energy code relative to the 2023 Florida Building Code. The impacts of these changes were quantitatively compared with the ASHRAE 90.1-based 2023 (8th Edition) Florida Building Code, Energy Conservation (FBCEC). The ASHRAE 90.1-based 2023 FBCEC excludes Sections 8.4.2, 8.4.3, and 9.4.1.1(g) of the 2019 ASHRAE Standard 90.1. Thus, this quantitative analysis entails the impacts of the new codes included in the 2022 ASHRAE 90.1 and the code sections excluded from the ASHRAE 90.1-Based 2023 FBCEC.

The quantitative analysis results aggregated across the commercial building sector show that the ASHRAE 90.1-based 8th Edition (2023) Commercial FBCEC was determined to lag significantly behind that of the 2022 ASHRAE Standard 90.1, the latest U.S. National Building Energy Code. The ASHRAE 90.1-based 2023 FBCEC, and the 2022 ASHRAE 90.1 code average EUIs were 45.92 kBtu/ft^2-yr and 41.46 kBtu/ft^2-yr, respectively. This analysis demonstrated that the ASHRAE 90.1-based 2023 FBCEC, a modified version of the ASHRAE Standard 90.1-2019 code, annual site's energy use was higher than that of the 2022 ASHRAE Standard 90.1 by about 9.70 percent. Therefore, if code equivalency is the desired target, then the 9th Edition (2026) FBCEC must catch up with the latest U.S. National Building Energy Code.

The relative energy performance of the IECC-based 2023 FBCEC and the 2024 IECC and cost-benefit analysis of the changes were not conducted due to unavoidable delays in the official publication of the 2024 IECC.

8. Reference

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Appendix-A: Commercial Code Change for 8th Edition (2023) FBCEC vs. 2024 IECC

Table A summarizes commercial 2024 IECC changes with respect to 2021 IECC and the 8th Edition (2023) Florida Building Code Energy Conservation (FBCEC). The table has six columns, each defined as follows.

2024 IECC Section and Title: is the code Section and title for the 2024 IECC.

ICC Code Change No: Proposed code change number in the ICC's *Complete Revision History to the 2024 I-Codes* draft document.

Change Summary b/t 2021 IECC and 2024 IECC: a brief description of the code change between the 2021 IECC and the draft 2024 IECC. The description also includes construction costs and code stringency changes.

Change Summary b/t 2023 FBC-EC and 2021 IECC: a brief description of the code change between the 2023 FBC-EC and 2024 IECC.

Anticipated Energy Impact on FBCEC if Adopted: Anticipated energy use impact from the code change if adopted in the FBCEC. This is usually a decrease in energy use, an increase in energy use, or none. "None" means the code change has no or negligible impact on energy use.

Anticipated Cost Impact on FBC-EC if Adopted: Anticipated construction cost impact from the code change if adopted in the FBCEC. This usually results in a decrease in construction cost, an increase in construction cost, or nothing. "None" means the code change has no or negligible impact on construction cost.

Table A: Commercial Code Change Summary for 8th Edition (2023) Florida Energy Code vs. 2024 IECC

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
Chapter C1: Scope and Administration					
C101.2 Scope	CED1-2-22	Clarifies how the commercial energy code applies.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C101.2.1 Appendices		A new clarification subsection states that appendices are not applicable unless adopted.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C101.3 Intent	CED1-1-22	Provides expanded clarification on the intent of this code.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C101.4 Compliance	CED1-1-22	Renumbers Section C101.5 to C101.4.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C101.4.1 Compliance materials	CED1-1-22	Renumbers sub-section C101.5.1 to C101.4.1.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
Section C102 Applicability	CED1-1-22	Creates new Section C102. Created by moving an existing Section.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C102.1 Applicability	CED1-1-22	Moves and Renumbers Section C101.4.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C102.1.1 Mixed residential and commercial buildings		Moves and Renumbers Section C101.4.1.	Same as the change between the 2021 IECC and the 2024 IECC. Also, change the sub-section title to “Mixed residential and commercial building” from “Mixed Occupancy” for consistency.	None	None
C102.2 Other laws		Moves and Renumbers Section C108.3.	Same as the change between the 2021 IECC and the 2024	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
			IECC. The equivalent Section is C106.3.		
C102.3 Applications of references		Moves and renumbers Section C108.2.	Same as the change between the 2021 IECC and the 2024 IECC. The equivalent Section is C106.2.	None	None
C102.4 Referenced codes and standards		Moves and renumbers Section C108.1.	Same as the change between the 2021 IECC and the 2024 IECC. The equivalent Section is C106.1.	None	None
C102.4.1 Conflicts		Moves and renumbers Section C108.1.1.	Same as the change between the 2021 IECC and the 2024 IECC. The equivalent Section is C106.1.1.	None	None
C102.4.2 Provisions in referenced codes and standards		Moves and renumbers Section C108.1.2.	Same as the change between the 2021 IECC and the 2024 IECC. The equivalent Section is C106.1.2.	None	None
C102.5 Partial invalidity		Moves, renamed, and renumbers Section C107.1 General.	Same as the change between the 2021 IECC and the 2024 IECC. The equivalent Section is C105.1 General.	None	None
Section C103 Code Compliance Agency	CED1-3-22	Created new Section C103.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C103.1 Creation of enforcement agency		Created new sub-section C103.1.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C103.2 Appointment		Created new sub-section C103.2.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C103.3 Deputies		Created new sub-section C103.3.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
Section C104 Alternative Materials, Design, and Methods of Construction and Equipment		Renumbers Section C102.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C104.1 General		Renumbers sub-section C102.1.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C104.2 Above code programs		Renumbers sub-section C102.2.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
Section C105 Construction Documents	CED1-2-22 CECP1-2-21, CEDP1-4-21, CEPI-7-21	Renumbers Section C103.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C105.1 General		Renumbers sub-section C103.1.	The change between the 2021 IECC and the 2024 IECC is the same. Subsection renumbering is required for C103.1.1, etc.	None	None
C105.2 Information on construction documents		Renumbers sub-section C103.2. Added four new construction document requirement items to the existing lists: • *Thermal bridges* as identified in Section C402.6. • Location reserved for inverters, metering equipment, and energy storage systems (ESS), and a pathway reserved for routing raceways or conduits from the renewable energy system to the point of interconnection with the electrical service and the ESS. • The location of pathways for routing raceways or cable from the on-site renewable energy system to the electrical distribution equipment.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
		• Location and layout of a designated area for ESS. • Rated energy capacity and rated power capacity of the installed or panned ESS.			
C105.2.1 Building thermal envelope depiction		Renumbers sub-section C103.2.1.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C105.3 Examination documents		Renumbers sub-section C103.3.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C105.3.1 Approval of construction documents		Renumbers sub-section C103.3.1.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C105.3.2 Previous approvals		Renumbers sub-section C103.3.2.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C105.3.3 Phased approval		Renumbers sub-section C103.3.3.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C105.4 Amended construction documents		Renumbers sub-section C103.4.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C105.5 Retention of construction documents		Renumbers sub-section C103.5.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C105.6 Building documentation and closeout submittal requirements		Renumbers Section C103.6 and sub-sections C103.6.1, C103.6.2, and C103.6.3.	Not Applicable. This sub-section doesn't exist in the 2023 FBC-EC.	None	None
C105.6.2 Compliance document	CE2D-29-23	Adds a new planning requirement for annual energy use data gathering and disclosure as specified per the energy monitoring section C405.13.	Not Applicable. This sub-section doesn't exist in the 2023 FBC-EC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
Section C106 Fee	CEPI-8-21 PI	Renumbers Section C104.	Renumbering is not applicable, and the sections don't exist in the 2023 FBC-EC.	None	None
C106.1 Fees		Renumbers Section C104.1 and made edited the text for clarity.		None	None
C106.2 Schedule of permit fees		Renumbers Section C104.2.		None	None
C106.3 Valuation of work		Adds a new sub-section, C106.3.		None	None
C106.4 Work commencing before permit issuance		Renumbers Section C104.3 and edited the text.		None	None
C106.5 Related fees		Renumbers Section C104.4.		None	None
C106.6 Refunds		Renumbers Section C104.5.		None	None
Section C107 Inspection	CED1-5-22,CED1-87-22, CED1-92-22, CEPI-7-21	Renumbers Section C105.	Same as the change between the 2021 IECC and 2024 IECC. The equivalent Section is C104.	None	None
C107.1 General		Renumbers Section C105.1.	Same as the change between the 2021 IECC and 2024 IECC. The equivalent Section is C104.1.		
C107.2 Required inspection		Renumbers Section C105.2. Re-numbered referenced sub-sections.	Same as the change between the 2021 IECC and 2024 IECC. The equivalent Section is C104.2.	None	None
C107.2.1 Footing and foundation insulation		Renumbers Section C105.2.1.	Same as the change between the 2021 IECC and 2024 IECC. The equivalent Section is C104.2.1.	None	None
C107.2.2 Building thermal envelope		Renumbers Section C105.2.2 renames the section title and edits the text for clarity.	Same as the change between the 2021 IECC and 2024 IECC, albeit with sub-section renaming. The equivalent Section is C104.2.2.	None	None
C107.2.3 Plumbing system		Renumbers Section C105.2.3.	Same as the change between the 2021 IECC and 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
			The equivalent Section is C104.2.3.		
C107.2.4 Mechanical system		Renumbers Section C105.2.4 and edits the text for clarity.	Same as the change between the 2021 IECC and 2024 IECC. The equivalent Section is C104.2.4.	None	None
C107.2.5 Electrical system		Renumbers Section C105.2.5.	Same as the change between the 2021 IECC and 2024 IECC. The equivalent Section is C104.2.5.	None	None
C107.2.6 Final inspection		Renumbers Section C105.2.6.	Same as the change between the 2021 IECC and 2024 IECC. The equivalent Section is C104.2.6.	None	None
C107.3 Reinspection		Renumbers Section C105.3.	Same as the change between the 2021 IECC and 2024 IECC. The equivalent Section is C104.3.	None	None
C107.4 Approved inspection agencies		Renumbers Section C105.4.	Same as the change between the 2021 IECC and 2024 IECC. The equivalent Section is C104.4.	None	None
C107.5 Inspection request		Renumbers Section C105.5.	Same as the change between the 2021 IECC and 2024 IECC. The equivalent Section is C104.5.	None	None
C107.6 Reinspection and testing		Renumbers Section C105.6.	Same as the change between the 2021 IECC and 2024 IECC. The equivalent Section is C104.6.	None	None
Section C108 Notice of Approval		Renumbers Section C106.	The 2023 FBCEC doesn't have an equivalent Section.	None	None
C108.1 Approval		Renumbers Section C106.1.	Same as the change between the 2021 IECC and 2024 IECC. The equivalent Section is C104.7.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C108.2 Revocation		Renumbers Section C106.2.	Same as the change between the 2021 IECC and 2024 IECC. The equivalent Section is C104.7.1.	None	None
Section C109 Means of Appeals	CED1-6-22, CEC2D-4-23 Part I	Renumbers and renamed Section C110.	There is no equivalent Section in the 2023 FBCEC. There is a Board of Appeal – Commercial provision in Appendix CD.	None	None
C109.1 General	CED1-6-22	Renumbers and modified Section C110.1 for clarity.	Not applicable.	None	None
C109.2 Limitation on authority		Renumbers Section C110.2.	Not applicable.	None	None
C109.3 Qualification		Renumbers and edited Section C110.3 for clarity.	Not applicable.	None	None
C109.4 Administration		Adds new Section C109.4. The code official must take action per the board's decision.	Not applicable.	None	None
Section C110 Stop Work Order	CEC2D-4-23 Part I	Renumbers Section C109.	Same as the change between the 2021 IECC and 2024 IECC. The equivalent Section is C108.	None	None
C110.1 Authority		Renumbers Section C109.1.	Same as the change between the 2021 IECC and 2024 IECC. The equivalent Section is C108.1.	None	None
C110.2 Issuance		Renumbers Section C109.2.	Same as the change between the 2021 IECC and 2024 IECC. The equivalent Section is C108.2.	None	None
C110.3 Emergencies		Renumbers Section C109.3.	Same as the change between the 2021 IECC and 2024 IECC. The equivalent Section is C108.3.	None	None
C110.4 Failure to comply		Renumbers Section C109.4.	Same as the change between the 2021 IECC and 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
			The equivalent Section is C108.4.		
Chapter C2: Definitions					
C202 Air Curtain Unit	CEPI-72-21	Renames "Air Curtain" and edits the definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Air Leakage	CEPI-32-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Approved Source	CEPI-225-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Best Efficiency Point (BEP)	CEPI-83-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Biomass Waste	CEPI-12-21 Part I	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 CHI-Factor (X-Factor)	CECPI-4-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Clean Water Pump	CEPI-83-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Common Areas	RED1-360-22	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Community Renewable Energy Facility	CECPI-5-21, CECPI-2-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Congregate Living Facilities	CEC2D-3-23	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Construction Documents	CEPI-225-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Dedicated Outdoor Air System (DOAS)	CEPI-14-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Dehumidifier	CEPI-84-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C202 Demand Control Kitchen Ventilation (DCKV)	CEPI-9-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Demand Response Signal	CEPI-99-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Demand Response Control	CEPI-99-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Desiccant Dehumidification System	CEPI-84-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 DX-Dedicated Outdoor Air System Unit (DX-DOAS Unit)	CEPI-14-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 East-Oriented	CEPI-121-22	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Emittance	CE2D-4-23	Modified an existing definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Energy Recovery, Series	CEPI-112-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Energy Recovery Ratio, Series (SERR)	CEPI-116-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Energy Storage System (ESS)	CEPI-7-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Enthalpy Recovery Ratio (ERR)	CEPI-119-21	Adds acronym to an existing definition of "*Enthalpy Recovery Ratio*" definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Exterior Wall Envelope	CEPI-217-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Fan Electrical Input Power	CEPI-119-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C202 Fan Nameplate Electrical Input Power	CEPI-119-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Fan System	CEPI-119-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Fan System, Complex	CEPI-119-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Fan System, Exhaust or Relief	CEPI-119-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Fan System, Return	CEPI-119-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Fan System, Single-Cabinet	CEPI-119-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Fan System, Transfer	CEPI-119-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Fan System Airflow	CEPI-119-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 F-Factor	CECPI-4-21	Modified an existing definition for clarity.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Financial Renewable Energy Power Purchase Agreement	CECPI-2-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Green Retail Tariff	CED1-208-22	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Greenhouse	CEPI-185-21	Modified an existing definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 High-Capacity Gas-Fired Water Heaters	CE2D-5-23	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Horticultural Lighting	CEPI-185-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C202 Humidistatic Controls	CEPI-102-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 HVAC Total System Performance Ratio (TSPR)	CEPI-76-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Indoor Grow	CEPI-84-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Integrated HVAC System	CEPI-84-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Large-Diameter Ceiling Fan	CEPI-124-21	Modified an existing definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Low Slope	CECD1-11-22	Renamed an existing definition "*Low-Sloped Roof*."	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 North-Oriented	CEPI-121-22	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Occupied Standby Mode	CEPI-108-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Owner		Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Parking Area, Exterior	CECD1-23-22	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Parking Area, Interior	CECD1-23-22	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Parking Garage Section	CECPI-6-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Photosynthetic Photon Efficacy (PPE)	CEPI-185-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Physical Renewable Energy Power Purchase Agreement	CECPI-2-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C202 Process Application	CEPI-97-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 PSI-Factor (Ψ-Factor)	CECPI-4-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Pump Energy Index (PEI)	CEPI-83-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Purchased Energy	CECD1-18-22	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Renewable Energy Certificate (REC)	CECPI-2-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Renewable Energy Investment Fund (REIF)	CECPI-5-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Roof Replacement	CEPI-17-21 Part I	Modified an existing definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Sensible Energy Recovery Ratio	CEPI-193-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Simulated Building Performance	CEPI-24-21 Part I	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 South-Oriented	CEPI-121-22	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Standard Reference Design	CEPI-24-21 Part I	Modified an existing definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Substantial Improvement	CE2D-2-23	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Testing Unit Enclosure Area	CEPI-58-21	Modified an existing definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Thermal Block	CED1-182-22	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Thermal Bridge	CECPI-4-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C202 Time-Switch Control		Replaces "*Time Switch Control*" with "*Time-Switch Control*."	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Wall, Above-Grade	CED1-106-22	Modified an existing definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 West-Oriented	CEPI-121-22	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C202 Work Area	CEPI-217-21	Adds new definition.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
Chapter C3: General Requirements					
C303.1.2 Insulation mark installation	CEPI-23-21, CEPI-24-21 Part I	Adds new exception. Roof insulation installed above the deck, the *R-value* must be *labeled* as specified by the material standards in Table 1508.2 of the *IBC.*	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C303.1.3 Fenestration product rating	CED1-90-22	Revised the requirements of Section C303.1.3. U-factors, SHGC, and VT ratings of fenestration products must be determined in accordance with NFRC 100 and *NRFC 200*. And the manufacturer certificate label must fixed on the product or project.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
Table C303.1.3(1) Default Glazed Window, Glass Door and Skylight U-Factors	CED1-91-22	Replaced Frame Type "*Glazed block*" with "*Glass block*."	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
Chapter C4: Commercial Energy Efficiency					
C401.2.1 International Energy Conservation Code	CEPI-23-21, CEPI-24-21 Part I	Modified prescriptive compliance requirements for *Dwelling Units* and *Sleeping Units*. *Dwelling and Sleeping Units* in Group R-2 buildings that meet	Same as the change between the 2021 IECC and the 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
		the requirements of Section R406 are considered to be in comply with this chapter. In item #2, the phrase "*Total Building Performance*" was replaced with "*Simulated Building Performance*" per the new definition created for the latter.			
C401.3 Building thermal envelope certificate	CED1-92-22, CED1-94-22, CED1-95-22	Renamed the section C401.3 title "*Thermal envelope certificate.*" Made similar editorial changes in the body of this sub-section for clarity.	Not applicable. The 2023 FBCEC does not have an equivalent sub-section.	None	None
Section C402 Building Thermal Envelope Requirements		Renames the Section C402 Building Envelope Requirements.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.1 General	CEPI-29-21, CEPI-28-21, CECPI-4-21, CEPI-27-21, CEPI-32-21, CEPI-31-21, CED1-92-22, CED1-94-22	Revises the section for clarification and adds new requirements. Revises item #1. Edits requirements for clarity and adds new thermal envelope requirements per section C402.1.2.1.8 when mechanical equipment envelope penetration area exceeds 1%. Adds new item #2. Exterior wall solar reflectance and thermal *emittance* must comply with Section C402.3. *Edits item #3 and adds new requirements. Fenestration* in the *building thermal envelope* assemblies must comply with Section C402.5. *Building* and *building thermal envelope* must comply with Item 2 of Section C401.2.1, C401.2.2, or C402.1.4 if the	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
		vertical fenestration area or skylight exceeds Section C402.5 requirements. Edits item #4 or #5 for clarity (duplicate items). #4/#5. *Air leakage* of the building thermal envelope must comply with Section C402.6. Created new bullet items #6 and #7 from the existing code language. #6. *Thermal bridges* in *above-grade walls* must comply with Section C402.7. #7. *Walk-in coolers*, *walk-in freezers*, *refrigerated warehouse coolers,* and *refrigerated warehouse freezers* must comply with Section C403.12. Some of the changes may increase the code stringency but are cost-effective.			
C402.1.1 Low-energy buildings and greenhouses	CEPI-34-21, CED1-92-22	Moves the two requirements to a new sub-section C402.1.1.1 to create the low energy building specifications.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.1.1.1 Low energy buildings		Adds new sub-section C402.1.1.1.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.1.1.2 Greenhouses		Renumbers an existing section and made editorial changes.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
Table C402.1.1.2 Fenestration Building Thermal Envelope Maximum Requirements	CEPI-34-21	Renumbers an existing table C402.1.1.1 and renamed the table header.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.1.1.3 Equipment buildings	CEPI-34-21, CED1-99-22	Renumbers Section C402.1.2, made editorial changes, and increased the heating capacity threshold to 20 kBth from 17 kBtuh.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.1.2 Assembly *U*-factor, *C*-factor, or *F*-factor-based method.	CEPI-27-21, CEPI-28-21, CED1-94-22	Renumbers section C402.1.4 and made editorial changes for clarity.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
Table C402.1.2 Opaque Thermal Envelope Assembly Maximum Requirements, *U*-Factor Method	CEPI-28-21,CED1-92-22, CED1-100-22	Renumbers Table C402.1.4. Deleted footnote text "*ci = Continuous Insulation, NR = No Requirement, LS = Liner System.*"	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.1.2.1 Methods of determining *U*-, *C*- and *F*-factors	CEPI-27-21	Renumbers Section C402.1.4.1, renamed the section title and revised the opaque assembly provisions. This is a re-organized new section. *U-factors*, *C*-factors, and *F*-factors of assemblies and calculation procedures from ASHRAE 90.1 Appendix A can be a compliance alternative, provided they meet the criteria of table C402.1.2. *U-factors* of opaque assemblies determined by testing in accordance with ASTM C1363 can be a	Same as the change between the 2021 IECC and the 2024 IECC. The equivalent section is C402.1.4.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
		compliance alternative, provided they meet the criteria of Table C402.1.4. The *R-value* of *continuous insulation* must be permitted to be added to or subtracted from the original tested design, and airspaces used for assembly evaluations must comply with Section C402.2.7.			
C402.1.2.1.1 Tapered, above-deck insulation based on thickness	CEPI-27-21	Renumbers sub-section C402.1.4.1.1. Revised the section provision to say that an approved method must determine tapered, above-deck roof insulation and area-weighted U-factors of non-uniform insulation thickness. Adds a new exception for calculating the U-factor for concrete masonry integral insulation.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC-related code is in Section C402.2.2.	None	None
C402.1.2.1.2 Suspended ceilings	CEPI-41-21, CED1-103-22	Renumbers Section C402.1.4.1.2.	The 2023 FBCEC equivalent section is C402.2.2.	None	None
C402.1.2.1.3 Concrete masonry units, integral insulation	CEPI-27-21	Adds new subsection C402.1.2.1.3. In determining compliance with Table C402.1.2, the *U-factor* of concrete masonry units with integral insulation shall be permitted to be used.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.1.2.1.4 Mass walls and floors	CEPI-27-21, CED1-100-21	Adds new subsection C402.1.2.1.4. Assembly complying with Section C402.1.3.4 must be permitted to comply with the required maximum U-factors for mass walls and mass floors in accordance with Table C402.1.2.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C402.1.2.1.5 Area-weighted averaging of above-grade wall *U*-factors.	CED1-107-22	Adds new subsection C402.1.2.1.5. Where *above-grade walls* include more than one assembly type or penetration of the opaque wall area, an approved method can determine the area-weighted U-factor of the above-grade wall.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.1.2.1.6 Cold-formed steel assemblies	CEPI-27-21, CEPI-43-21, CED1-92-22, CED1-108-22	Renumbers Section C402.1.4.2, renames title and revises the provision of how it is applied depending on cavity insulation, frame spacing, and shape of frames.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.1.2.1.7 Spandrel panels	CEPI-44-21	Adds new subsection C402.1.2.1.7. This section clarifies and improves the consistency of thermal performance specification for spandrel panels. No change in code stringency.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
Table C402.1.2.1.7 Effective U-Factor for Spandrel Panels	CEPI-44-21, CED1-110-22	Adds new table C402.1.2.1.7.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.1.2.1.8 Mechanical equipment penetrations	CEPI-29-21, CED1-106-22, CED1-108-22	Adds new subsection C402.1.2.1.8. The changes requires to use an approved u-factor for the equipment or a default u-factor of 0.5 for the envelope impacted. This change increases the code stringency but is a cost-effective measure.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C402.1.3 Insulation component R-value-based method	CEPI-27-21, CEPI-28-21, CEPI-35-21, CEPI-36-21, CEPI-37-21, CEPI-38-21, CED1-92-22, CED1-94-22, CED1-100-22, CED1-111-22, CED1-112-22, CE2D-7-23	Revised the provision of Section C402.1.3 for clarity.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
Table C402.1.3 Opaque Thermal Envelope Insulation Component Minimum Requirements, R-Value Method	CEPI-27-21, CE2D-7-23	Provides an alternative combination of cavity and continuous minimum insulation requirements for Metal and Wood Frames above grade walls. Also, make editorial changes to the footnotes. No change to the code stringency.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.1.3.1 R-value of multi-layered insulation components		Adds new Section C402.1.3.1.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.1.3.2 Area-weighted averaging of R-values		Adds new Section C402.1.3.2.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C402.1.3.3 Suspended ceilings	CEPI-41-21	Renumbers Section C402.2.1.3.	The 2023 FBCEC has a similar provision as a paragraph in Section C402.2.2. It might be worth considering creating a standalone sub-section for suspended ceilings.	None	None
C402.1.3.4 Mass walls and mass floors	CEPI-27-21, CED1-100-21	Adds new Section C402.1.3.4. Section C402.1.2.1.4 references this section.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.1.4 Component performance method	CECPI-4-21, CED1-92-22, CED1-94-22	Renumbers Section C402.1.5, renames the section title, updates the referenced sections, and updates the compliance equation to account for thermal bridges.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
Table C402.1.4 PSI- and CHI-Factors to Determine Thermal Bridges for the Component Performance Method	CECPI-4-21, CED1-138-22	Adds new table C402.1.4. This change is consistent with the thermal performance of products currently in the market.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.1.5 Rooms containing fuel-burning appliances	CECPI-3-21	Renumbers Section C402.5.5. Made editorial changes.	Same as the change between the 2021 IECC and the 2024 IECC. The equivalent section is C402.5.3.	None	None
C402.2 Specific insulation and installation requirements	CEPI-27-21	Renames Section C402.2 title, makes editorial change and updates the referenced sections.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.2.1 Roof-ceiling construction	CEPI-27-21, CED1-118-22	Renames the section title "*Roof assembly."* Revises the provision for clarity and updates referenced sections.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C402.2.1.1 Tapered, above-deck insulation based on thickness	CEPI-27-21, CEPI-47-21	Deletes Section C402.2.1.1.	The 2023 FBCEC doesn't have a matching section.	None	None
C402.2.1.1 Joints staggered	CEPI-27-21, CEPI-42-21	Renumbers Section C402.2.1.4 and edits the provision.	The 2023 FBCEC doesn't have a matching section.	None	None
C402.2.1.2 Skylight curbs	CEPI-27-21	Renumbers Section C402.2.1.5 and edits the provision.	The 2023 FBCEC doesn't have a matching section. However, the provision is covered in Section C402.2.2 Roof assembly.	None	None
C402.2.1.3 Minimum thickness of tapered insulation	CED1-118-22, CE2D-8-23	Adds new Section C402.2.1.3. This new section clarifies the minimum thickness requirements of tapered insulation.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.2.2 Above-grade walls	CEPI-27-21	Revises the provision to include insulation installation requirements and removes the reference to the minimum efficiency level requirement tables.	Same as the change between the 2021 IECC and the 2024 IECC. The equivalent section is C402.2.3.	None	None
C402.2.3 Floors over outdoor air or unconditioned space		Renames the section title, revises the provision, and removes the minimum requirement table references.	Same as the change between the 2021 IECC and the 2024 IECC. The equivalent section is C402.2.4.	None	None
C402.2.4 Slabs-on-grade		Revises the provision and combines the subsection C402.2.4.1.	Same as the change between the 2021 IECC and the 2024 IECC. The equivalent section is C402.2.5.	None	None
C402.2.4.1 Insulation installation		Deletes Section C402.2.4.1.	Same as the change between the 2021 IECC and the 2024 IECC. The equivalent section is C402.2.5.1.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C402.2.5 Below-grade walls		Revises the provision of section C402.2.5.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC doesn't have a matching section.	None	None
C402.2.6 Insulation of radiant heating systems		Deletes an exception.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.2.7 Airspaces	CEPI-48-21	Revises the provision. The changes enforce best practices that minimize airflow into enclosed air spaces and improve their thermal performance.	The 2023 FBCEC is already up-to-date with the 2024 IECC.	Decrease	None
C402.3 Above-grade wall solar reflectance	CEPI-31-21, CED1-121-22	Adds new section C402.3. Requires minimum solar reflectance of 0.3 for above grade walls. Current products in the market meet this requirement but may slightly increase the stringency.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
C402.4 Roof solar reflectance and thermal emittance		Renumbers Section C402.3 and replaced the text "*Sloped*" with "*Slope*."	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
Table C402.4 Minimum Roof Reflectance and Emittance Option		Renumbers table C402.3.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.4.1 Aged roof solar reflectance		Renumbers Section C402.3.1.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.5 Fenestration		Renumbers Section C402.4.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
Table C402.5 Building Envelope Fenestration Maximum U-Factor and SHGC Requirements	CED1-126-22	Renumbers Table C402.4 and decreased the *U-factor* of fixed fenestration for climate zones 3, 4, 5, 7, and 8.	Same as the change between the 2021 IECC and the 2024 IECC. Florida climate zones are not impacted.	None	None
C402.5.1 Maximum area	CEPI-167-21	Renumbers Section C402.4.1.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.5.1.1 Increased vertical fenestration area with daylight responsive controls		Renumbers Section C402.4.1.1 and edits the code language to clarify its applicability is to primary sidelit or toplit daylight zones.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.5.1.2 Increased skylight area with daylight responsive controls		Renumbers Section C402.4.1.2 and makes editorial changes.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.5.2 Minimum skylight fenestration area		Renumbers Section C402.4.2.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.5.2.1 Lighting controls in toplit daylight zones		Renumbers Section C402.4.2.1.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.5.2.2 Haze factor		Renumbers Section C402.4.2.2.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.5.3 Maximum U-factor and SHGC		Renumbers Section C402.4.3 and Renumbers the equation.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.5.3.1 Increased skylight SHGC		Renumbers Section C402.4.3.1.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C402.5.3.2 Increased skylight U-factor		Renumbers Section C402.4.3.2.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.5.3.3 Dynamic glazing		Renumbers Section C402.4.3.3.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.5.3.4 Area-weighted U-factor		Renumbers Section C402.4.3.4.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.5.4 Daylight zones		Renumbers Section C402.4.4.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.5.5 Doors		Renumbers Section C402.4.5.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.5.5.1 Opaque swinging doors		Renumbers subsection C402.4.5.1.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.5.5.2 Nonswinging doors		Renumbers subsection C402.4.5.2.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.6 Air leakage—building thermal envelope	CECPI-3-21,CEPI-58-21,CEPI-32-21,CED1-92-22	Renumbers Section C402.5 renames the title and revises the provision.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.6.1 Air barriers	CECPI-3-21,CEPI-32-21,CED1-128-22	Renumbers Section C402.5.1 and revises the provision. This requires air leakage performance of the air barrier must be verified per Section C402.6.2.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C402.6.1.1 Air barrier design and documentation requirements	CECPI-3-21,CED1-92-22,CED1-128-22	Adds new Section C402.6.1.1. New section was creating by re-organizing an existing section for clarity.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.6.1.2 Air barrier construction	CECPI-3-21,CEPI-60-21,CEPI-32-21,CED1-130-22	Renumbers Section C402.5.1.1 and revises the provision. Adds new requirements for the electrical and communication boxes to comply with a new sub-section C402.6.1.2.2.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.6.1.2.1 Recessed lighting	CECPI-3-21	Renumbers Section C402.5.10 and makes editorial changes.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent code section is C402.5.8.	None	None
C402.6.1.2.2 Electrical and communication boxes	CEPI-60-21, CECPI-3-21	Adds new Section C402.6.1.2.2. This new subsection was created due to section re-arrangement.	The 2023 FBCEC already has this provision under Section C402.5.10.	None	None
C402.6.1.2.2.1 Air-sealed boxes	CECPI-3-21	Adds new Section C402.6.1.2.2.1. This new subsection was created due to section re-arrangement.	The 2023 FBCEC already has this provision under Section C402.5.10.1.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C402.6.2 Air leakage compliance	CECPI-3-21,CEPI-58-21,CEPI-32-21,CEPI-61-21,CED1-131-22,CED1-132-22,CE2D-9-23, CEPI-71-21	Renumbers and renames the title of Section C402.5.1.2, revises the testing requirements, re-arranges the provisions, and modifies the exceptions. Reduces the measured air leakage threshold to 0.35 cfm/ft^2 from 0.40 cfm/ft^2 due to advances in air leakage control technology. Also, the measured air leakage upper limit was reduced to 0.45 cfm/ft^2 from 0.60 cfm/ft^2 for the exception. Exempts buildings larger than 25,000 ft^2 floor area from the testing requirement in climate zones 0 through 4. Allows alternative testing method and maximum air-leakage rate for dwelling and sleeping units per Section C402.6.2.2. It increases the code stringency, but it is a cost-effective change and is equivalent to the ASHRAE 90.1-2022 requirement.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent code section is C402.5.1.2.	Decrease	Increase
C402.6.2.1 Whole building test method and reporting	CECPI-3-21, CE2D-9-23	Renumbers and renames the title of Section C402.5.3, re-arranges the provision, moves part of the requirements, and updates referenced sections. The modified exception permits air leakage testing of the entire building's thermal envelope for buildings with less than 10,000 ft^2 of floor area and of a portion of the building's thermal	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent code section is C402.5.1.2.3.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
		envelope for buildings with greater than 50,000 ft^2 of floor area.			
C402.6.2.2 Dwelling and sleeping unit enclosure method and reporting	CECPI-3-21, CE2D-9-23	Renumbers and renames Section C402.5.2 and revises the provision to clarify the testing method and requirements. No change in the stringency.	The 2023 FBCEC doesn't have an equivalent section. Consider adding the subsection.	None	None
C402.6.2.3 Building thermal envelope design and construction verification criteria	CECPI-3-21, CED1-92-22, CE2D-10-23	Renumbers and renames Section C402.5.1.5 and makes editorial changes to clarify the code.	The 2023 FBCEC doesn't have an equivalent section. Consider adding this section.	None	None
C402.6.2.3.1 Materials	CECPI-3-21	Renumbers Section C402.5.1.3.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent code section is C402.5.1.2.1.	None	None
C402.6.2.3.2 Assemblies	CECPI-3-21	Renumbers Section C402.5.1.3 and makes editorial changes.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent code section is C402.5.1.2.2.	None	None
C402.6.3 Air leakage of fenestration and opaque doors	CECPI-3-21,CEPI-16-21 Part I	Renumbers Section C402.5.4, renames the title, and makes editorial changes.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent code section is C402.5.2.	None	None
Table C402.6.3 Maximum Air Leakage Rate for Fenestration Assemblies	CECPI-3-21	Renumbers table C402.5.2.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C402.6.4 Doors and access openings to shafts, chutes, stairways, and elevator lobbies	CECPI-3-21	Renumbers Section C402.5.6 and makes editorial changes.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent code section is C402.5.4.	None	None
C402.6.5 Air intakes, exhaust openings, stairways, and shafts	CECPI-3-21, CED1-92-22	Renumbers Section C402.5.7 and replaces the text "*envelope*" with "*thermal envelope*."	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent code section is C402.5.5.	None	None
C402.6.6 Vestibules	CECPI-3-21	Renumbers Section C402.5.9, makes editorial changes, and revises the exception.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent code section is C402.5.7.	None	None
C402.6.7 Loading dock weather seals	CECPI-3-21,CEPI-32-21	Renumbers Section C402.5.8 and replaces the text "*infiltration*" with "*air leakage*."	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent code section is C402.5.6.	None	None
C402.7 Thermal bridges in above-grade walls	CECPI-4-21, CED1-107-22, CED1-138-22 CED1-139-22, CED1-110-22	Adds a new section C402.7. Adds a provision for treatment of thermal bridges in above grade walls. Exempts climate zones 0 through 3 only. This increases the stringency for climate zones 4 through 8.	Same as the change between the 2021 IECC and the 2024 IECC. No impact on Florida code due the exemption.	None	None
C402.7.1 Balconies and Floor Decks		Adds a new subsection C402.7.1.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.7.2 Cladding supports		Adds a new subsection C402.7.2.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C402.7.3 Structural beams and columns		Adds a new subsection C402.7.3.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.7.4 Vertical fenestration		Adds a new subsection C402.7.4.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C402.7.5 Parapets		Adds a new subsection C402.7.5.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
Section C403 Building Mechanical Systems					
C403.1 General	CEPI-76-21, CED1-198-22	Revises the section to clarify the compliance requirements of mechanical systems and data center systems.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C403.1.2 Data centers	CEPI-75-21	Revises the provision that data centers must comply with Sections 6 and 8 of ASHRAE 90.4.	The 2023 FBCEC doesn't have an equivalent section.	None	None
Table C403.1.2(1) Maximum Design Mechanical Load Component (Design MLC)		Deletes Table C403.1.2(1). Now the section directly references ASHRAE 90.4.	The 2023 FBCEC doesn't have an equivalent section.	None	None
Table C403.1.2(2) Maximum Annualized Mechanical Load Component (Annualized MLC)		Deletes Table C403.1.2(2). Now the section directly references ASHRAE 90.4.	The 2023 FBCEC doesn't have an equivalent section.	None	None
C403.2.3 Fault detection and diagnostics	CEPI-86-21	Editorial changes for clarification.	The 2023 FBCEC doesn't have an equivalent section. Consider adding the subsection.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C403.3 Heating and cooling equipment efficiencies	CE2D-11-23	Editorial changes for clarification and removes minimum efficiency values of before 1/1/2023.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent table is C403.2.3(1). Check the federal minimum requirements.	None	None
Table C403.3.2(1) Electrically Operated Unitary Air Conditioners and Condensing Units-Minimum Efficiency Requirements	CED1-156-22, CE2D-13-23, CE2D-16-23, CE2D-18-23, CED1-157-22, , CE2D-17-23, CE2D-19-23, CECD1-12-22	Aligns the minimum efficiency requirements with the 2022 ASHRAE 90.1. Removes minimum efficiency values of before 1/1/2023.	The 2023 FBCEC is already up-to-date. The 2023 FBCEC equivalent table is C403.2.3(1).	None	None
Table C403.3.2(2) Electrically Operated Air-Cooled Unitary Heat Pumps—Minimum Efficiency Requirements		Aligns the minimum efficiency requirements with the 2022 ASHRAE 90.1. Removes minimum efficiency values of before 1/1/2023.	The 2023 FBCEC is already up-to-date. The 2023 FBCEC equivalent table is C403.2.3(2).	None	None
Table C403.3.2(3) Liquid-Chilling Packages—Minimum Efficiency Requirements		Deletes footnote f, which references ASHRAE 90.1.	The 2023 FBCEC is already up-to-date. The 2023 FBCEC equivalent table is C403.2.3(7).	None	None
Table C403.3.2(4) Electrically Operated Packaged Terminal Air Conditioners, Packaged Terminal Heat Pumps, Single-Package Vertical		Aligns the minimum efficiency requirements with the 2022 ASHRAE 90.1.	The 2023 FBCEC is already up-to-date. The 2023 FBCEC equivalent table is C403.2.3(3). Also, check federal minimum requirements.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
Air Conditioners, Single-Package Vertical Heat Pumps, Room Air Conditioners, and Room Air Conditioner Heat Pumps-Minimum Efficiency Requirements					
Table C403.2.3(5) Warm Air Furnaces and Combination Warm Air Furnaces/Air-Conditioning Units, Warm Air Duct Furnaces and Unit Heaters, Minimum Efficiency Requirements		Aligns the minimum efficiency requirements with the 2022 ASHRAE 90.1. Removes minimum efficiency values of before 1/1/2023.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent table is C403.2.3(4). Also, check federal minimum requirements.	None	None
Table C403.3.2(6) Gas- and Oil-Fired Boilers—Minimum Efficiency Requirements		Aligns the minimum efficiency requirements with the 2022 ASHRAE 90.1.	Partly Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent table is C403.2.3(5). Also, check federal minimum requirements.	None	None
Table C403.3.2(7) Performance Requirements for Heat Rejection Equipment-Minimum Efficiency Requirements		Aligns the minimum efficiency requirements with the 2022 ASHRAE 90.1.	The 2023 FBCEC is already up-to-date. The 2023 FBCEC equivalent table is C403.2.3(8). Also, check federal minimum requirements.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
Table C403.3.2(8) Electrically Operated Variable Refrigerant Flow Multi-Split Air Conditioners-Minimum Efficiency Requirements		Aligns the minimum efficiency requirements with the 2022 ASHRAE 90.1.	The 2023 FBCEC is already up-to-date. The 2023 FBCEC equivalent table is C403.2.3(11). Also, check federal minimum requirements.	None	None
Table C403.2.3(9) Electrically Operated Variable Refrigerant-Flow and Applied Heat Pumps-Minimum Efficiency Requirements		Aligns the minimum efficiency requirements with the 2022 ASHRAE 90.1.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent table is C403.2.3(12). Change efficiency metrics to SEER2 and HSPF2. Also, check federal minimum requirements.	None	None
Table C403.3.2(10) Floor-Mounted Air Conditioners and Condensing Units Serving Computer Rooms-Minimum Efficiency Requirements		Aligns the minimum efficiency requirements with the 2022 ASHRAE 90.1.	The 2023 FBCEC is already up-to-date. The 2023 FBCEC equivalent table is C403.2.3(9). Also, check federal minimum requirements.		
Table C403.2.3(11) Vapor-Compression-Based Indoor Pool Dehumidifiers-Minimum Efficiency Requirements		Aligns the minimum efficiency requirements with the 2022 ASHRAE 90.1.	The 2023 FBCEC is already up-to-date. The 2023 FBCEC equivalent table is C403.2.3(13). Also, check federal minimum requirements.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
Table C403.3.2(12) Electrically Operated DX-DOAS Units, Single-Package, and Remote Condenser, without Energy Recovery—Minimum Efficiency Requirements		Aligns the minimum efficiency requirements with the 2022 ASHRAE 90.1.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent table is C403.2.3(14). Change efficiency metrics to ISMRE2 and ISCOP2. Also, check federal minimum requirements.	None	None
Table C403.3.2(13) Electrically Operated DX-DOAS Units, Single-Package and Remote Condenser, with Energy Recovery—Minimum Efficiency Requirements		Aligns the minimum efficiency requirements with the 2022 ASHRAE 90.1.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent table is C403.2.3(15). Change efficiency metrics to ISMRE2 and ISCOP2. Also, check federal minimum requirements.	None	None
Table C403.3.2(14) Electrically Operated Water-Source Heat Pumps—Minimum Efficiency Requirements		Aligns the minimum efficiency requirements with the 2022 ASHRAE 90.1.	The 2023 FBCEC is already up-to-date. The 2023 FBCEC equivalent table is C403.2.3(16). Also, check federal minimum requirements.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
Table C403.3.2(15) Heat-Pump and Heat Recovery Chiller Packages—Minimum Efficiency Requirements		Aligns the minimum efficiency requirements with the 2022 ASHRAE 90.1.	The 2023 FBCEC doesn't have an equivalent table. Also, check federal minimum requirements.	None	None
Table C403.3.2(16) Ceiling-Mounted Computer Room Air Conditioners—Minimum Efficiency Requirements		Aligns the minimum efficiency requirements with the 2022 ASHRAE 90.1.	The 2023 FBCEC is already up-to-date. The 2023 FBCEC equivalent table is C403.2.3(17). Also, check federal minimum requirements.	None	None
C403.3.2.1 Water-cooled centrifugal chilling packages		Renumbers equation.	Same as the change between the 2021 IECC and the 2024 IECC may apply. The 2023 FBCEC equivalent Section is C403.2.3.1.	None	None
C403.3.4 Boilers	CEPI-97-21, CED1-158-22	Adds a new Section C403.3.4. It requires combustion air positive shutoff control, and fan motors larger than 10 hp require a variable speed drive or control rather than a modulated fan air flow. This change increase the stringency of the code.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increases
C403.3.4.1 Boiler oxygen concentration controls		Adds a new subsection C403.3.4.1.	Same as the change between the 2021 IECC and the 2024 IECC.	None	Increase
Table C403.3.4.1 Boiler Oxygen Concentrations		Adds a new table C403.3.4.1.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C403.3.4.2 Boiler turndown		Renumbers Section C403.3.4.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C403.4.2.5.	None	None
Table C403.3.4.2 Boiler Turndown		Renumbers Table C403.3.4.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent Table is C403.4.2.5.	None	None
C403.4 Heating and cooling system controls	CEPI-99-21	Replaces the text "*Each heating*" with "*Heating*" and updates referenced section.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C403.2.4.	None	None
C403.4.1 Thermostatic controls	CED1-92-22	Replaces the text "*building envelope*" with "*building thermal envelope*" in the exception.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C403.2.4.1.	None	None
C403.4.1.2 Deadband	CEC2D-6-23	Revises thermostat deadband requirements for zones with heating and cooling controls. Requires: separately adjustable cooling and heating set-points, minimum dead band range of 1°F (0.56°C), and capable of supporting a dead band range of 5°F (3°C). Also revises the exceptions. This requirement already exists and it is current technology in most products. The change may increase the stringency in some circumstances but is cost-effective.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C403.2.4.1.2.	Decrease	Increase

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C403.4.1.3 Setpoint adjustment and display		Adds new Section C403.4.1.3. This is mainly a clarification but may increase the stringency in some circumstances.	Same as the change between the 2021 IECC and the 2024 IECC.	None	Increase
C403.4.1.4 Setpoint overlap restriction		Renumbers Section C403.4.1.3 and revises the requirement that mechanical or software means must be used to prevent heating set-point and cooling set-point overlap. In some situation the stringency may increase.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C403.2.4.1.3.	Decrease	Increase
C403.4.1.5 Heated or cooled vestibules	CEC2D-6-23	Renumbers Section C403.4.1.4.	The 2023 FBCEC doesn't have an equivalent section.	None	None
C403.4.1.6 Hot water boiler outdoor temperature setback control		Renumbers Section C403.4.1.5.	This change may not be applicable. The 2023 FBCEC equivalent section is C403.2.5.	None	None
C403.4.2.3 Optimum start and stop	CEPI-100-21, CED1-160-22	Renames the section and makes editorial changes for clarification. The change exempts Dwelling and Sleeping units from the optimum start and stop requirement. The exemption may decrease the stringency.	Consider changing the title and applying the editorial changes to clarify the provision. The 2023 FBCEC equivalent section is C403.2.4.2.3.	None	Decrease
C403.4.6	CEPI-99-21, CEC2D-1-23, CED1-161-22, CED1-164-22	Reserved.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C403.4.7 Heating and cooling system controls for operable openings to the outdoors	CEPI-65-21, CED1-160-22	Renumbers Section C402.5.11, renames the section titled "*Operable openings interlocking*" and revises the provision. Reduces HVAC system disabling cut-out time to 5 minutes from 10 minutes. Adds six new exemptions.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C403.5.11.	Decrease	None
C403.4.8 Humidification and dehumidification controls	CEPI-102-21	Adds new Section C403.4.8 and three subsections. This change adds clarifications to humidity control requirements and allows lower relative humidity where mechanical cooling is used for temperature control. No impact on construction costs but may avoid simultaneous dehumidification and humidification process that reduces energy use. May decrease the stringency in some circumstances.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	None
C403.4.8.1 Dehumidification		Adds new Section C403.4.8.1.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C403.4.8.2 Humidification		Adds new Section C403.4.8.2.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C403.4.8.3 Control interlock		Adds new Section C403.4.8.3.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C403.5 Economizers	CEPI-103-21	Removes air-economizer exception for VRF systems installed with a dedicated outdoor air system(DOAS) but adds an air-economizer exemption for DX systems with multi stage compressor capacity less than 54 kBtuh used with DOAS. Reduces the stringency by adding exception for the most common used DX system types.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C403.3.	None	Decrease
C403.5.3.4 Relief of excess outdoor air	CEPI-106-21	Revised the provision to clarify how to relieve excess outdoor air during economizer operation when the building is pressurized. Two options are provided that add to design flexibility.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C403.3.3.4.	None	None
C403.6.1 Variable air volume and multiple-zone systems	CEPI-107-21	Revised the minimum airflow requirement for VAV systems. For the DDC systems the minimum flow can be sized using the ASHRAE 62.1 minimum ventilation requirement per the *Simplified Ventilation Procedure*. The modification provides design flexibility and in some cases may reduce energy cost.	Partly same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C403.4.4.	Decrease	None
C403.7 Ventilation and exhaust systems.	CEPI-108-21	Replaces referenced code Sections "*C403.7.1 through C403.7.7*" with "*C403.7.1 through C403.7.9*."	The 2023 FBCEC equivalent sections are in different Sections including C403.2.6, C403.2.7 and C403.2.8.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C403.7.1 Demand control ventilation	CEPI-110-21, CED1-165-22, CE2D-23-2	Revised demand control ventilation (DCV) requirements. Modified the minimum floor area threshold for the DCV requirement by climate zones. This change has no impact on the construction cost and reduces the stringency for climate zone 1A. Also, adds one new exception: ventilation system design professional engineers prevent the maximum limit of contaminant concentration from being higher than that obtainable by the required outdoor ventilation rate and maintain a ventilation threshold of 15% or higher.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C403.2.6.1.	None	Decrease
C403.7.2 Parking garage ventilation controls	CECPI-6-21, CED1-166-22	Renamed the title of Section C403.7.2, and revised the provision to comply with Section C404.1 of IMC. Also modified the exception to be based on the fan motor power instead of the ventilation flow rate.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C403.2.6.2.	Decrease	Increase
C403.7.3 Ventilation air heating control	CEPI-112-21	Adds new exception: "*Units that heat the airstream using only series energy recovery when representative building loads or outdoor air temperature indicates that the majority of zones require cooling in Climate Zones 0A, 1A, 2A, 3A, and 4A.*"	The 2023 FBCEC doesn't have an equivalent section.	None	Decrease

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C403.7.4.1 Nontransient dwelling units	CEPI-113-21, CECD1-25-22, CED1-167-22	Revised the subsection to include sensible recovery efficiency (SRE) and net moisture transfer (NMT) requirements as an alternative to enthalpy recovery ratio requirement.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C403.2.7.	None	None
C403.7.4.2 Spaces other than nontransient dwelling units	CEPI-116-21	Revises two existing exceptions. Exception item #4 only applies to climate zones 5 through 8. Exception item #7 only applies to climate zones 0 through 4 and has a minimum SERR value of 0.4.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C403.2.7.	None	None
C403.7.5 Kitchen exhaust systems	CEPI-9-21	Clarifies the provision to require demand control ventilation (DCKV) for Kitchen exhaust hood systems serving Type I only. Revised an existing exception and added a new exception, "An energy recovery ventilation system installed on the kitchen exhaust with a sensible heat recovery effectiveness of ≥ 40 percent on not less than 50 percent of the total exhaust hood airflow." No change in stringency.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C403.2.8.	None	None
C403.7.6 Automatic control of HVAC systems serving guestrooms	CEPI-169-21	Deletes the text "*Card key controls comply with these requirements.*"	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C403.2.4.8.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C403.7.7 Shutoff dampers	CEPI-118-21	Made editorial changes by adding the texts "*elevator*", "*or by thermostatic control systems*", and deleting the text "*or*" for clarity.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C403.2.4.3.	None	None
C403.7.8 Occupied standby controls	CEPI-108-21, CED1-168-22, CE2D-24-23	Adds a new Section C403.7.8. Occupied standby controls are required in the following space types: postsecondary classrooms, lecture rooms, and training rooms; Conference/meeting/multipurpose rooms; Lounges/breakrooms; Enclosed offices; Open-plan office areas; and Corridors. The change incurs minimal or no construction cost increase while reduces lighting and fan power energy. This change is cost-effective and already included in the 2022 ASHRAE 90.1 code.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
C403.7.8.1 Occupied-standby zone controls		Adds new subsection C403.7.8.1.	Same as the change between the 2021 IECC and the 2024 IECC.		
C403.7.8.1.1 Multiple-zone system controls		Adds new subsection C403.7.8.1.1.	Same as the change between the 2021 IECC and the 2024 IECC.		
C403.7.9 Dwelling unit ventilation system	CEPI-120-21	Adds a new Section C403.7.9. This change prohibits integrated central fan system design for ventilation air delivery.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	May slightly increase

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C403.8.1 Allowable fan horsepower	CEPI-119-21, CECD1-17-22	Editorial changes for clarification.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C403.2.12.1.	None	None
C403.8.4 Fractional hp fan motors	CEPI-120-21	Editorial changes for clarification.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C403.2.12.4.	None	None
C403.8.5 Low-capacity ventilation fans	CEPI-121-21	Revises Section C403.8.5 for clarity, adds three new exceptions that preempts the federal regulations and aligns the section with ASHRAE 90.1 and Energy Star requirements. No change in stringency.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C403.2.12.7.	None	None
Table C403.8.5 Low-Capacity Ventilation Fan Efficacy		Updates Table C403.8.5 by adding test procedure by system type. Adds new system type category and edits the footnote.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent table is C403.2.12.7.	None	None
C403.8.6.2 Intermittent exhaust control for bathrooms and toilet rooms	CEPI-123-21	Adds new Section C403.8.6.2. This change make increase construction cost but reduce energy cost by reducing the fan runtime and avoid increasing the infiltration of outside air.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C403.9 Large-diameter ceiling fans	CEPI-124-21	Revised Section C403.9. Adds minimum efficiency requirement based on current technology in the market. The change has no impact on the construction cost.	The 2023 FBCEC is already up-to-date, and the equivalent section is C403.2.12.6.	None	None
Table C403.9 Ceiling Fan Efficiency Requirements		Adds new Table C403.9.	The 2023 FBCEC is already up-to-date, and the equivalent table is C403.2.12.6.	None	None
C403.9.1 Ceiling Fan Energy Index (CFEI)		Adds new subsection C403.9.1.	The 2023 FBCEC is already up-to-date, and the equivalent table is C403.2.12.6.1.	None	None
C403.10 Buildings with high-capacity space-heating gas boiler systems	CEPI-77-21	Adds new Section C403.10. The changes require new construction condensing boiler to reach 90.0% efficiency levels. The changes increase the code stringency but is cost-effective.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
C403.10.1 Boiler efficiency		Adds new subsection C403.10.1.	Same as the change between the 2021 IECC and the 2024 IECC.		
C403.10.2 Hot water distribution system design		Adds new subsection C403.10.2.	Same as the change between the 2021 IECC and the 2024 IECC.		
C403.11 Heat rejection equipment	?	Renumbers Section C403.10.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C403.4.3.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C403.11.1 Fan speed control		Renumbers Section C403.10.1.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C403.4.3.1.	None	None
C403.11.2 Multiple-cell heat rejection equipment		Renumbers Section C403.10.2.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C403.4.3.2.	None	None
C403.11.3 Limitation on centrifugal fan open-circuit cooling towers		Renumbers Section C403.10.3.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C403.4.3.3.	None	None
C403.11.4 Tower flow turndown		Renumbers Section C403.10.4.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C403.4.3.4.	None	None
C403.11.5 Heat recovery for service water heating		Renumbers Section C403.10.5.	The 2023 FBCEC doesn't have an equivalent section.	None	None
C403.11.6 Heat recovery for space conditioning in health care facilities	CECD1-13-22	Renumbers Section C403.10.6, revises the provision to clarify the heat recovery implementation, and updates exception item #1. This change neither impacts the stringency nor impacts the construction cost.	The 2023 FBCEC doesn't have an equivalent section.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C403.12 Refrigeration equipment performance	CED1-156-22	Renumbers Section C403.11.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent Section is C403.2.14.	None	None
C403.12.1 Commercial refrigerators, refrigerator-freezers and refrigeration		Renumbers Section C403.11.1.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent Section is C403.2.14.1.	None	None
Table C403.12.1 Minimum Efficiency Requirements: Commercial Refrigerators and Freezers and Refrigeration		Renumbers Table C403.11.1.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent Table is C403.2.14.1(1).	None	None
C403.12.2 Walk-in coolers and walk-in freezers		Renumbers Section C403.11.2.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent Section is C403.2.14.2.	None	None
C403.12.2.1 Performance standards		Renumbers Section C403.11.2.1.	The 2023 FBCEC doesn't have an equivalent section.	None	None
Table 403.12.2.1(1) Walk-In Cooler and Freezer Display Door Efficiency Requirements		Renumbers Table C403.11.2.1(1).	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent Table is C403.2.14.2(1).	None	None
Table C403.12.2.1(2) Walk-In Cooler and		Renumbers Table C403.11.2.1(2).	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
Freezer NonDisplay Door Efficiency Requirements			equivalent Table is C403.2.14.2(2).		
Table C403.12.2.1(3) Walk-In Cooler and Freezer Refrigeration System Efficiency Requirements		Adds new Table C403.11.2.1(3).	The 2023 FBCEC is current and equivalent to Table C403.2.14.2(3).	None	None
C403.12.3 Refrigeration systems	CEPI-79-21	Renumbers Section C403.11.3.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent Section is C403.5.	None	None
C403.12.3.1 Condensers serving refrigeration systems		Renumbers subsection C403.11.3.1.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent Section is C403.5.1.	None	None
C403.12.3.2 Compressor systems		Renumbers subsection C403.11.3.2 and replaces referenced "*Table C403.12.3*" with "*Table C403.13.3(1) or C403.13.3(2).*"	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent Section is C403.5.2.	None	None
C403.13 Construction of HVAC system elements		Renumbers Section C403.12.	The 2023 FBCEC doesn't have an exact matching section.	None	None
C403.13.1 Duct and plenum insulation and sealing		Renumbers Section C403.12.1.	The 2023 FBCEC doesn't have an exact matching section.	None	None
C403.13.2 Duct construction		Renumbers Section C403.12.2.	The 2023 FBCEC equivalent Section is C403.2.9.2.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C403.13.2.1 Low-pressure duct systems		Renumbers Section C403.12.2.1.		None	None
C403.13.2.2 Medium-pressure duct systems		Renumbers Section C403.12.2.2.		None	None
C403.13.2.3 High-pressure duct systems		Renumbers Section C403.12.2.3.		None	None
C403.13.3 Piping insulation		Renumbers Section C403.12.3.	No need to renumber the section. The 2023 FBCEC equivalent Section is C403.2.10.	None	None
Table C403.13.3(1) Minimum Pipe Insulation Thickness (in inches or R-value)		Updates Table C403.13.1(1). The table were revised to provide the minimum insulation thickness or the equivalent minimum insulation R-value. No stringency change.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent Table is C403.2.10.	None	None
Table C403.13.3(2) Minimum Pipe Insulation R-Value		Adds new Table C403.13.3(2).	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C403.13.3.1 Protection of piping insulation	CEPI-80-21	Renumbers Section C403.12.3.1 and makes editorial changes to clarity the intent of the code.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent Section is C403.2.10.1.	None	None
C403.14 Operable opening interlocking controls	CEPI-65-21	Deletes with substitution.		None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C403.14 Mechanical systems located outside of the building thermal envelope	CEPI-65-21	Renumbers Section C403.13 and adds the text "*building*" for code clarity.	The 2023 FBCEC doesn't have an exact matching section.	None	None
C403.14.1 Heating outside a building	CEPI-82-21	Renumbers Section C403.13.1.	No need to renumber the section. The 2023 FBCEC equivalent Section is C403.2.13.	None	None
C403.14.2 Snow- and ice-melt system controls		Renumbers Section C403.13.2.	No need to renumber the section. The 2023 FBCEC equivalent Section is C403.2.4.5.	None	None
C403.14.3 Roof and gutter deicing controls		Adds new Section C403.13.3.	Same as the change between the 2021 IECC and the 2024 IECC.	None	Increase
C403.14.4 Freeze protection system controls		Renumbers Section C403.13.3.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C403.2.4.6.	None	None
C403.15 Dehumidification in spaces for plant growth and maintenance	CEPI-84-21	Adds new Section C403.15. This measure requires installation of efficient dehumidification technology that may increase the initial equipment cost but saves operational energy and maintenance costs; it is a cost-effective code requirement.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C403.16 Service water pressure-booster systems	CEPI-85-21	Adds new Section C403.16. A variable speed pressure booster systems can realize from 20%-50% energy savings using on-board pressure sensor and software for control logic, instead of a costly remote pressure sensors. This code change uses currently technology and has no impact on construction cost.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	None
C403.17 Clean water pumps	CEPI-83-21	Adds new Section C403.17. This change specifies federal minimum efficiency requirements for clean water pumps and increases the stringency.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
SECTION C404 SERVICE WATER HEATING					
Table C404.2 Minimum Performance of Water-Heating Equipment	CEPI-127-21, CECD1-19-22, CE2D-26-23	Updated the minimum efficiency requirements. Now, the efficiency levels vary by water draw patterns. The update is based on the federal minimum requirements.	The 2023 FBCEC efficiency values are already up-to-date. Update the footnotes as needed and the test conditions for heat pump water heaters.	None	None
C404.2.1 High-input service water-heating systems	CEPI-128-21, CECD1-14-22	Revised the Section provision and the exceptions for clarity.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C404.4 Service water heating system piping insulation	CEPI-130-21	This section renames the Section title, revises the code language for clarity, and adds an equation for insulation thickness update for alternate equivalent insulation material. It also revises the existing exceptions for tubular insulation and adds a new exception for piping not heated with fossil fuel or electricity.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C404.4.1 Installation requirements		Adds a new Section C404.4.1.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
Table C404.4.1 Minimum Piping Insulation Thickness for Service Water Heating Systems		Adds a new Table C404.4.1 instead of referencing from a different section. The insulation efficiency levels did not change.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C404.6.1 Circulation systems	CEPI-131-21	The code is revised to require circulation pumps with thermostatic flow balancing valves and ECM motors. This increases construction costs but saves operating energy costs. The code change increases the stringency but is a cost-effective change.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
C404.8.3 Covers	CECD1-14-22	Modifies the exception by adding the text, "*On-site renewable energy used to meet Section C405.15.1 or C406.3.1 shall not be used to meet this exception.*" No change to the stringency.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C404.9.3.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
SECTION C405 ELECTRICAL POWER AND LIGHTING SYSTEMS					
C405.1 General	CEPI-134-21, CEPI-133-21, CEPI-135-21, CECPI-2-21, CECD1-21-22, CED1-27-22	Revises the code provision for clarity. Adds a new exception for dwelling and sleeping units lighting requirements.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C405.1.1 Lighting for dwelling units		Deletes the Section and moves its provision to new Section C405.3.3.	The 2023 FBCEC does not have equivalent section.	None	None
C405.2 Lighting controls	CEPI-150-21, CEPI-147-21, CEPI-148-21, CEPI-152-21, CEPI-187-21, CECD1-21-22, CECD1-23-22, CED1-65-22	Revises the section such that interior parking area lighting requirement to comply with Section C405.2.9 and all other interior lighting system to comply with Sections C405.2.1 through C405.2.8. Revises the existing exceptions for security and emergency areas and adds two new ones related to emergency exit access and fire alarm lighting systems. No change to code stringency.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C405.2.1 Occupant sensor controls	CECD1-3-22, CE2D-39-23	This amendment adds four new space types to an existing space list requiring occupancy sensor lighting controls: a computer room, a data center, a medical supply room in a health care facility, a Laundry/washer area, and a telemedicine room in a health care facility. This change may increase the construction cost by expanding the occupancy sensor requirements to new	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
		space types but is a cost-effective measure.			
C405.2.1.1 Occupant sensor control function	CECD1-3-22	Replaces the text "*warehouse*" with "*warehouse storage areas*" for clarity.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C405.2.2 Time-switch controls	CEPI-152-21	Deletes three exceptions and modifies an existing exception in Section C405.2 as a substitute. No change in the code stringency.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C405.2.2.1 Time-switch control function	CECD1-22-22	Replaces the text "*Automatically*" with " *Programmed to automatically*" for clarity. Adds a new requirement that says, "*For spaces where schedules are not available, time switch controls are programmed to a schedule that turns off lights not less than 12 hours per day.*" Improves compliance enforcement when the schedule in not available but no impact on construction costs.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	None
C405.2.3 Dimming controls	CEPI-154-21, CEPI-156-21	Renames the Section title, revises the section code provision, lists space types where dimming controls are required for general lighting, and removes the existing exceptions but adds a new exception for special application lighting.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C405.2.3.1 Dimming control function	CEPI-156-21, CECD1-4-22	Renames the Section title, revises the section code provision, and reduces the dimming limit to 10% of full power output from 20% for dimming controls and from 30% for switchable controls. Adds two new exceptions from manual dimming control requirements for spaces with high-end trim lighting controls.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	None
C405.2.4 Daylight-responsive controls	CEPI-161-21, CEPI-164-21	Reduces the interior lights connected to the load threshold for daylighting responsive controls. Primary sidelit area and toplit areas lighting connected load were reduced to 75W from 150W, and combined primary and secondary sidelit areas were reduced from 300 W to 150 W. Also revises exception item #3 and deletes equation 4-9 to simplify the compliance process.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	None
C405.2.4.2 Sidelit daylight zone	CEPI-167-21, CEPI-166-21	Replaces the text "*sidelit daylight zone*" with "*primary sidelit daylight zone*" in requirement items #1 and #2 for code clarity. Adds a clarifying text "*Where the fenestration is located in a wall*" for item #3 and removes the secondary sidelit daylighting zone calculation requirement.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C405.2.5 Specific application controls	CEPI-168-21, CEPI-169-21, CEPI-135-21, CECD1-1-22, CED1-27-22	Revises the provision for clarity, removes sleeping and dwelling units lighting requirements from this section, and adds a new requirement, "*lighting integrated into range hoods and exhaust fans must be controlled independently of fans*."	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	None
C405.2.7 Exterior lighting controls	CECD1-23-22	Edits the language for clarity.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C405.2.7.2 Building facade and landscape lighting	CEPI-172-21	Edits the code language for clarity.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C405.2.7.3 Lighting setback	CEPI-172-21, CEPI-173-21, CECD1-23-22	Edits the code language for clarity, and reduces parking lot luminaire's total wattage threshold to 40 W from 78 W. This change increases the stringency but is cost-effective.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
C405.2.8 Reserved	CEPI-176-21, CECD1-5-22, CE2D-44-23, CE2D-45-23, CECD1-23-22	New reserved Section. *This reserved Section must have a title and requirement compatible with its sub-section. It looks like an incomplete code modification*.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C405.2.8.1 Demand responsive lighting controls function	CE2D-45-23, CECD1-5-22	It adds a new Section C405.2.8.1: Simplifies the code by limiting the demand responsive lighting controls requirements to *B*, *E*, *M*, and *S* building occupancies group. Adds an exception for storage rooms and warehouse spaces from dimming control; instead, use 25% or more switch-off control for general lighting. Decreases the code stringency.	Same as the change between the 2021 IECC and the 2024 IECC.	None	Decrease
C405.2.9 Interior parking area lighting control	CECD1-23-22	Renumbers Section C405.2.8 renames the title and edits the text for clarity.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C405.2.8.	None	None
C405.2.10 Sleeping unit and dwelling unit lighting and switched receptacle controls	CED1-27-22	Adds new Section C405.2.10 requiring sleeping and dwelling units to be provided with lighting controls and switched receptacles, instead of occupancy sensor based lighting and receptacle controls. This change simplifies the requirements for dwelling and sleeping units. Thus decreases the stringency.	Same as the change between the 2021 IECC and the 2024 IECC.	None	Decrease

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C405.2.10.1 Sleeping units and dwelling units in hotels, motels and vacation timeshare properties	CE2D-40-23, CED1-27-22	Adds new subsection C405.2.10.1. Requires a switched receptacle and occupant sensor lighting controls. Automatic shutoff is not required where captive key override controls all lighting and switched receptacles in units with five or fewer permanently installed lights and switched receptacles.	Same as the change between the 2021 IECC and the 2024 IECC.	None	Decrease
C405.2.10.2 Sleeping units in congregate living facilities	CE2D-40-23, CE2D-41-23, CED1-27-22	Adds new subsection C405.2.10.2. Requires bathroom lighting to be controlled by an occupant sensor control that can turn-off lighting automatically within 20 minutes not occupied and a manual lighting control at the entrance of each unit that can turn-off lighting and switched receptacle in the unit, except for lighting in bathrooms and kitchens.	Same as the change between the 2021 IECC and the 2024 IECC.	None	Decrease
C405.3.1 Total connected interior lighting power	CEPI-177-21, CEPI-135-21, CEPI-187-21, CE2D-47-23	Renumbers Equation 4-10 and revises the list of lighting equipment and applications not included in calculating total connected lighting power.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C405.3.2.1 Building Area Method	CEPI-135-21, CECD1-21-22	Adds a clarifying statement that sleeping and dwelling units are excluded from lighting power allowance calculations by applying a new Section C405.3.3, and their floor area is not included in the calculation.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C405.3.2.2 Space-by-Space Method	CEPI-135-21, CEPI-181-21, CECD1-21-22	A clarifying statement was added that sleeping and dwelling units are excluded from lighting power allowance calculations by applying a new Section C405.3.3, and their area is not included in the calculation. Also, the total connected lighting power maximum allowance for unfinished spaces reduced to 0.10 W/ft^2 from 0.20 W/ft^2.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	None
Table C405.3.2(1) Interior Lighting Power Allowances: Building Area Method	CECPI-7-21, CEPI-135-21, CEPI-254-21	Updates the LPD values in Table C405.3.2(1) based on improved lighting technologies and other requirements. The LPD values were mostly reduced. The measure is based on improved technology with little to no impact on the construction cost.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	None
Table C405.3.2(2) Interior Lighting Power Allowances: Space-by-Space Method	CED1-9-22, CED1-75-22, CECPI-7-21, CEPI-135-21	Updates the LPD values in Table C405.3.2(2) based on improved lighting technologies and other requirements. The LPD values were mostly reduced. The measure is based on improved technology with little to no impact on the construction cost.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	None
C405.3.2.2.1 Additional interior lighting power	CECPI-7-21, CED1-76-22	Revises the code language for clarifications.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C405.3.3 Lighting power for sleeping units and dwelling units	CE2D-48-23, CECD1-21-22, CECD1-1-22	Adds a new Section C405.3.3 by moving from a deleted Section C405.1.1. No change in stringency.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C405.4 Horticultural lighting	CEPI-185-21	It renames the section title, edits the code language, and increases the photon efficiency. This change may slightly increase construction costs but saves more energy costs due to the improved efficiency requirement. It increases the stringency but is cost-effective.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent Section is C405.9.	Decrease	Increase
C405.5.1 Total connected exterior lighting power	CEPI-177-21, CEPI-188-21, CEPI-187-21, CED1-65-22	Renames the Section title, edits the code language and existing exception items #7 and #14 for clarity, and adds a new exception item #15. No change in code stringency.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent Section is C405.4.1.	None	None
C405.5.2 Exterior lighting power allowance	CED1-65-22	Revises the code language of exterior lighting power allowance to include "*building site lighting for which the building owner is responsible*." This change improves the code clarity.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent Section is C405.4.2.	None	None
Table C405.5.2(2) Lighting Power Allowances for Building Exteriors	CECD1-23-22, CEPI-189-21,CEPI-254-21	Updates the exterior lighting power allowance values in Table C405.5.2(2). Reduces the lighting power allowances based on advances in lighting technology and aligns with ASHRAE 90.1 requirements.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent Table is C405.4.2(2).	Decrease	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
Table C405.5.2(3) Individual Lighting Power Allowances for Building Exteriors	CEPI-189-21, CEPI-254-21, CECD1-23-22	Updates the individual exterior lighting power allowance values in Table C405.5.2(3). Reduced the lighting power allowances based on advances in lighting technology and aligns with ASHRAE 90.1 requirements. It increases the stringency but has no impact on the construction cost.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent Table is C405.4.2(3).	Decrease	None
C405.7 Electrical transformers	CEPI-192-21	Revises the exception per the DOE definition of Distribution Transformers found in 10 CFR 431.192	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent Section is C405.6.	None	None
Table C405.7 Minimum Nominal Efficiency Levels for DOE 10 CFR 431 Low-Voltage Dry-Type Distribution Transformers		Adds a new footnote and renumbers the existing ones for clarification. No impact on the stringency and construction cost.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent Table is C405.6.	None	None
C405.8 Electric motors	CED1-77-22	Adds a new exception, item #6, that says, "*Definite-purpose machines within the scope of ANSI/NEMA MG 1, Part 18*." This new exception prevents the construction increase.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent Table is C405.7.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C405.9 Data centers and computer rooms	CEPI-134-21, CED1-78-22	It adds a new Section C405.9 by moving the provision from Section C405.1 and aligns the requirement with the ASHRAE Standard 90.4 for computer rooms. This change may increase the stringency of computer room requirements and hence the construction cost.	The 2023 FBCEC does not have equivalent code. This aligns the efficiency requirements of computer room with data centers as defined in ASHRAE Standard 90.4. It increases the stringency.	Decrease	Increase
C405.9.1 Data centers	CED1-78-22	It adds a new subsection C405.9.1 for data centers by moving data center requirements from Section C405.1. No impact on the stringency.	The 2023 FBCEC does not have equivalent code. Adds ASHRAE Standard 90.4 requirements for data centers. This change increases the stringency but is a cost-effective.	Decrease	Increase
C405.9.2 Computer rooms	CED1-78-22	It adds a new Section C405.9.2 for computer rooms that aligns with ASHRAE Standard 90.4. This change increases the stringency of computer rooms code provision; hence, the construction cost of computer rooms.	The 2023 FBCEC does not have equivalent code. Adds ASHRAE Standard 90.4 requirements for computer rooms. This change increases the stringency but is a cost-effective.	Decrease	Increase
C405.10 Vertical and horizontal transportation systems and equipment		Renumbers Section C405.9.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C405.8.	None	None
C405.10.1 Elevator cabs		Renumbers subsection C405.9.1.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C405.8.1.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C405.10.2 Escalators and moving walks		Renumbers subsection C405.9.2.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C405.8.2.	None	None
C405.10.2.1 Energy recovery		Renumbers subsection C405.9.2.1	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C405.8.2.1.	None	None
C405.11 Voltage drop		Renumbers Section C405.10.	Same as the change between the 2021 IECC and the 2024 IECC. The 2023 FBCEC equivalent section is C405.5.3.	None	None
C405.12 Automatic receptacle control		Renumbers Section C405.11.	The 2023 FBCEC doesn't have this section.	None	None
C405.12.1 Automatic receptacle control function		Renumbers subsection C405.11.1.	The 2023 FBCEC doesn't have this section.	None	None
C405.13 Energy monitoring	CEPI-138-21, CEPI-203-21, CED1-31-22, CED1-30-22, CE2D-29-23, CE2D-33-23	Renumbers Section C405.12. Reduces the building floor area threshold for energy monitoring from 25,000 ft^2 to 10,000 ft^2, makes editorial changes, updates referenced code section, and adds a new exceptions for dwelling units. Increases the stringency by reducing the floor area threshold but exempts all residential unit, which may reduce the stringency. Therefore, the stringency may increase depending on the building occupancy group but is a cost-effective change.	The 2023 FBCEC doesn't have this section. Consider adding this as a new section including its subsections but there is a code overlap. Previous FSEC investigation has demonstrated that this code modification is cost-effective.	Decrease	Increase

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C405.13.1 Electrical energy metering	CE2D-33-23	Renumbers subsection C405.12.1.	The 2023 FBCEC doesn't have this section.	None	None
C405.13.2 End-use electric metering categories	CEPI-203-21, CE2D-33-23, CED1-30-22	Renumbers subsection C405.12.2 and replaces the text "*measured load*" with "*design load*."	The 2023 FBCEC doesn't have this section.	None	None
Table C405.13.2 Electrical Energy Use Categories	CE2D-33-23, CED1-30-22, CED1-36-22, CEAPP-01-24	Renumbers Table C405.12.2, renames the title, edits texts for clarity, and adds "*Electric hot water heating for uses other than space conditioning*" as a new energy use category.	The 2023 FBCEC doesn't have this section.	None	None
C405.13.3 Electrical meters	CEPI-203-21, CE2D-33-23, CED1-30-22	Renumbers Section C405.12.3, renames the title and edits the code language for clarity.	The 2023 FBCEC doesn't have this section.	None	None
C405.13.4 Electrical energy data acquisition system	CEPI-203-21, CED1-30-22	Renumbers Section C405.12.4, renames the title and edits the code language for clarity.	The 2023 FBCEC doesn't have this section.	None	None
C405.13.5 Graphical energy report	CEPI-203-21, CED1-30-22, CE2D-10-23, CE2D-33-23	Renumbers Section C405.12.5 and edits the code language for clarity.	The 2023 FBCEC doesn't have this section.	None	None
C405.13.6 Renewable energy	CEPI-203-21, CED1-30-22, CE2D-33-23	Adds a new subsection C405.13.6.	This new subsection is not applicable without the "Energy Monitoring" Section.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C405.13.7 Nonelectrical energy submetering	CE2D-33-23	Adds a new subsection C405.13.7.	This new subsection is not applicable without the "Energy Monitoring" Section.	None	None
C405.13.8 End-use nonelectrical submetering categories		Adds a new subsection C405.13.8.	This new subsection is not applicable without the "Energy Monitoring" Section.	None	None
Table C405.13.8 Nonelectrical Energy Use Categories		Adds a new Table C405.13.8.	This new table is not applicable without the "Energy Monitoring" Section.	None	None
C405.13.9 Nonelectrical submeters		Adds a new subsection C405.13.9.	This new subsection is not applicable without the "*Energy Monitoring*" Section.	None	None
C405.13.10 Nonelectrical energy data acquisition system		Adds a new subsection C405.13.10.	This new subsection is not applicable without the "Energy Monitoring" Section.	None	None
C405.13.11 Graphical energy report		Adds a new subsection C405.13.11.	This new subsection is not applicable without the "Energy Monitoring" Section.	None	None
C405.14 Reserved.	CECPI-1-21, CED1-39-22	Adds a reserved Section C405.14.	Not relevant. The intent is not clear.	None	None
C405.15 Renewable energy systems	CECPI-2-21	Adds a new Section C405.15. Adds on-site renewables energy requirement to reduce consumer energy cost and societal protection.	Same as the change between the 2021 IECC and the 2024 IECC. The energy and construction cost impacts are reflected at the individual subsections.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C405.15.1 On-site renewable energy systems.	CECPI-2-21, CED1-50-22	Adds a new subsection C405.15.1. Requires that buildings must be provided with on-site renewable electricity generation systems with a direct current (DC) nameplate power rating of not less than 0.75 W/ft^2 (8.1 W/m^2) multiplied by the sum of the gross conditioned floor area of all floors, but not to exceed the combined gross conditioned floor area of the three largest floors. Has four exceptions. This change increases the code stringency but is cost-effective change.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
C405.15.2 Off-site renewable energy		Adds a new subsection C405.15.2. Must procure off-site renewable electrical energy per Section C405.15.2.1 and C405.15.2.2 if it qualifies for one of the exceptions in Section C405.15.1.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
Table C405.15.2 Annual Off-Site Renewable Energy Requirements	CECPI-2-21, CED1-50-22	Adds a new Table C405.15.2.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C405.15.2.1 Off-site procurement	CECPI-2-21, CED1-50-22, CED1-55-22, CED1-56-22	Adds a new subsection C405.15.2.1.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C405.15.2.2 Off-site contract	CECPI-2-21, CED1-50-22	Adds a new subsection C405.15.2.2.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C405.15.3 Renewable energy certificate (REC) documentation		Adds a new subsection C405.15.3.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C405.15.4 Renewable energy certificate purchase		Adds a new subsection C405.15.4.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C405.16 Inverters	CEPI-142-21	Adds a new Section C405.16. This change slightly increase stringency and hence the construction cost but is cost-effective.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
SECTION C406 ADDITIONAL EFFICIENCY, RENEWABLE AND LOAD MANAGEMENT REQUIREMENTS					
C406	CEPI-193-21	Deletes the existing Section C406 and replaces it with an expanded scope Section C406 measures to choose from and renames the title. Separate new measures for renewable energy and load management requirements. Increased the number of energy efficiency measures to 32 from 11 that provide design flexibility.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C406.1 Compliance	CEPI-193-21, CED1-185-22, CED1-187-22	This amendment renames the title and rearranges the subsection for on-site renewable energy generation and load management requirements. It moves some of the section content to a new subsection, C406.1.1.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C406.1.1 Additional energy efficiency credit requirements	CEPI-193-21, CED1-187-22, CED1-190-22, CE2D-51-23	It adds a new subsection, C406.1.1, that specifies the energy credit requirements by building occupancy group and climate zones. The building occupancy group has been increased, and efficiency measures have been expanded, which provides design flexibility by better matching the measures with building occupancy group. Most of the new measures may increase the stringency but are cost-effective.	Same as the change between the 2021 IECC and the 2024 IECC. Since the 2023 FBCEC lags behind on this section, there is going to be an overlap. The energy and construction cost impacts are reflected in the individual measure's subsection.	None	None
Table C406.1.1(1) Energy Credit Requirements by Building Occupancy Group	CEPI-193-21, CED1-190-22	It adds a new Table, C406.1.1(1), specifying the energy credit requirements by building occupancy group and climate zones. Increased the number of measures to 32 from 11 and expanded the building occupancy group that provides design flexibility.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
Table C406.1.1(2) Limit to Energy Efficiency Credit Carryover from Renewable and Load Management Credits	CEPI-193-21, CED1-190-22, CE2D-51-23	It adds a new Table, C406.1.1(2), that specifies limits to energy efficiency credit carryover from renewable and load management by building occupancy group and climate zones.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C406.1.1.1 Reserved	CEPI-193-21, CECD1-18-22, CE2D-51-23, CE2D-57-23, As further modified by ICC Board Action	Reserves Section C406.1.1.1.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C406.1.1.2 Building core/shell and build-out construction	CEPI-193-21, CECD1-18-22	Adds new Section C406.1.1.2. It increases the stringency for building types but is cost-effective measure.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
C406.1.2 Additional renewable and load management credit requirements	CEPI-193-21, CED1-192-22, CE2D-58-23	Adds new Section C406.1.2. It increases the stringency for some of the building types but is cost-effective measure.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
Table C406.1.2 Renewable and Load Management Credit Requirements by Building Occupancy Group	CEPI-193-21, CED1-185-22, CED1-192-22	Adds new Table C406.1.2.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C406.2 Additional energy efficiency credits achieved	CEPI-193-21, CED1-185-22, CED1-187-22, CE2D-61-23	Renames Section C406.2 title and describes achievable energy efficiency credits for each measure by building occupancy group and climate zones.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
Table C406.2(1) Base Energy Credits for Group R-2, R-4 and I-1 Occupancies	CEPI-193-21, CECD1-6-22, CED1-185-22, CED1-194-22	Table C406.1(1) has been renamed, renumbered and rearranged. The measures have been expanded to 32 from 11, and the achievable energy credits have been updated.	The 2023 FBCEC didn't have this table. Thus entails more changes than the change between the 2021 IECC and the 2024 IECC.	None	None
Table C406.2(2) Base Energy Credits for Group I-2 Occupancies		Table C406.1(2) has been renamed, renumbered and rearranged. The measures have been expanded to 32 from 11, and the achievable energy credits have been updated.	The 2023 FBCEC didn't have this table, so it entails more changes than the changes between the 2021 IECC and the 2024 IECC.	None	None
Table C406.2(3) Base Energy Credits for Group R-1 Occupancies		Table C406.1(3) has been renamed, renumbered and rearranged. The measures have been expanded to 32 from 11, and the achievable energy credits have been updated.	The 2023 FBCEC didn't have this table, so it entails more changes than the changes between the 2021 IECC and the 2024 IECC.	None	None
Table C406.2(4) Base Energy Credits for Group B Occupancies	CEPI-193-21, CED1-185-22, CED1-194-22	Table C406.1(4) has been renamed, renumbered and rearranged. The measures have been expanded to 32 from 11, and the achievable energy credits have been updated.	The 2023 FBCEC didn't have this table, so it entails more changes than the changes between the 2021 IECC and the 2024 IECC.	None	None
Table C406.2(5) Base Energy Credits for Group A-2 Occupancies	CEPI-193-21, CECD1-6-22, CED1-185-22, CED1-194-22	Table C406.1(5) has been renamed, renumbered and rearranged. The measures have been expanded to 32 from 11, and the achievable energy credits have been updated.	The 2023 FBCEC didn't have this table, so it entails more changes than the changes between the 2021 IECC and the 2024 IECC.	None	None
Table C406.2(6) Base Energy Credits for Group M Occupancies	CEPI-193-21, CED1-185-22,	Adds a new base energy credits Table C406.2(6) for group M occupancies with 32 measures.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
Table C406.2(7) Base Energy Credits for Group E Occupancies	CED1-194-22	Adds new based energy credits Table C406.2(7) for group E occupancies with 32 measures.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
Table C406.2(8) Base Energy Credits for Group S-1 and S-2 Occupancies		Adds a new base energy credits Table C406.2(8) for group S-1 and S-2 occupancies with 32 measures.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
Table C406.2(9) Base Energy Credits for Other Occupancies	CEPI-193-21, CECD1-6-22, CED1-185-22, CED1-194-22	Adds a new base energy credits Table C406.2(9) for group S-1 and S-2 occupancies with 32 measures.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C406.2.1 More efficient building thermal envelope	CEPI-193-21, CED1-92-22	Adds new Section C406.2.1 for achieving energy credits with the improved building envelope. It increases the stringency but is cost-effective measure.	Same as the change between the 2021 IECC and the 2024 IECC. The energy and impact are accounted in the subsections.	None	None
C406.2.1.1 E01 Improved envelope performance ASHRAE 90.1 Appendix C	CEPI-193-21, CED1-92-22, CED1-110-22, CE2D-61-23	It adds a new subsection, C406.2.1.1. The improved envelope performance requirement increases the stringency. It is a cost-effective measure.	Same as the change between the 2021 IECC and the 2024 IECC	Decrease	Increase
C406.2.1.2 E02 Component performance envelope reduction	CEPI-193-21	Adds new subsection C406.2.1.2 based on the existing code C406.8. No change on stringency.	The 2023 FBCEC didn't have this requirement option. It is going to be a new measure for FBCEC but with an overlap.	Decrease	Increase
C406.2.1.3 E03 Reduced air leakage	CEPI-193-21, CE2D-9-23	Adds new subsection C406.2.1.3 based on the existing code C406.9. No change on stringency.	The 2023 FBCEC didn't have this requirement option. Thus it is going to be a new measure for FBCEC but with an overlap.	Decrease	Increase

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C406.2.1.4 E04 Added roof insulation	CEPI-193-21	Adds new subsection C406.2.1.4. It increases the stringency but is cost-effective.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
C406.2.1.5 E05 Added wall insulation	CEPI-193-21	Adds new subsection C406.2.1.5. It increases the stringency but is cost-effective.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
C406.2.1.6 E06 Improve fenestration	CEPI-193-21, CED1-185-22, CED1-195-22	Adds new subsection C406.2.1.6. It increases the stringency but is cost-effective.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
Table C406.2.1.6 Vertical Fenestration Requirements for Energy Credit E06	CEPI-193-21, CED1-194-22	Adds new Table C406.2.1.6. Decreases the U-Factor and the SHGC hence it increases the stringency.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C406.2.2 More efficient HVAC equipment performance	CEPI-193-21, CED1-185-22	Added new Section C406.2.2 for achieving credits with improved HVAC equipment. It increases the stringency but is cost-effective.	Same as the change between the 2021 IECC and the 2024 IECC. The energy and impact are accounted in the subsections.	None	None
C406.2.2.1 H01 HVAC Total System Performance Ratio (TSPR)	CEPI-193-21, CED1-198-22, CE2D-61-23	Adds new subsection C406.2.2.1.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
C406.2.2.2 H02 More efficient HVAC equipment heating performance	CEPI-193-21, CED1-185-22	Adds new subsection C406.2.2.2 by expanding an existing measure. It increases the stringency but is cost-effective.	Same as the change between the 2021 IECC and the 2024 IECC. Not applicable to the Florida climate zones.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C406.2.2.3 H03 More efficient HVAC cooling equipment and fan performance	CEPI-193-21, CED1-185-22	Adds new subsection C406.2.2.3 by expanding an existing measure. It increases the stringency but is cost-effective.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
C406.2.2.4 H04 Residential HVAC control	CEPI-193-21	Adds new subsection C406.2.2.4. Requires centralized HVAC setback control in multi-family buildings. It increase the stringency but is cost effective.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
C406.2.2.5 H05 Dedicated outdoor air system	CEPI-193-21, CED1-173-22, CED1-185-22	Adds new subsection C406.2.2.5 by modifying an existing measure. It increases the stringency but is cost effective.	Same as the change between the 2021 IECC and the 2024 IECC	Decrease	Increase
Table C406.2.2.5 DOAS Energy Recovery Adjustments	CEPI-193-21, CED1-185-22	Adds new Table C406.2.2.5.	Same as the change between the 2021 IECC and the 2024 IECC	None	None
C406.2.3 Reduced energy use in service water heating	CEPI-193-21	Adds new Section C406.2.3. Achieving energy credits by reducing water heating energy for SWH.	Same as the change between the 2021 IECC and the 2024 IECC	None	None
C406.2.3.1 Service water heating system efficiency	CEPI-193-21	Adds new subsection C406.2.3.1 based on existing requirements.	Same as the change between the 2021 IECC and the 2024 IECC	None	None
C406.2.3.1.1 W01 Recovered or renewable water heating	CEPI-193-21, CED1-185-22	Adds new subsection C406.2.3.1.1 based on the existing code C406.7.2. No change on stringency.	Same as the change between the 2021 IECC and the 2024 IECC	None	None
C406.2.3.1.2 W02 Heat pump water heater	CEPI-193-21, CED1-185-22	Adds new subsection C406.2.3.1.2 by modifying an existing measure.	The 2023 FBCEC didn't have this requirement option. It is going to be a new measure for FBCEC.	Decrease	Increase

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C406.2.3.1.3 W03 Efficient fossil fuel water heater	CEPI-193-21, CED1-185-22	Adds new subsection C406.2.3.1.3 based on the existing code C406.7.3. No change on stringency.	The 2023 FBCEC didn't have this requirement option. It is going to be a new measure for FBCEC.	Decrease	Increase
C406.2.3.1.4 Combination service water heating systems	CEPI-193-21	Adds new subsection C406.2.3.1.4. It increases the stringency but is a cost-effective measure.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C406.2.3.2 W04 Service hot water piping insulation increase	CEPI-193-21, CED1-185-22	Adds new subsection C406.2.3.2. It increases the stringency but is a cost-effective measure.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
C406.2.3.3 Service water-heating distribution temperature maintenance	CEPI-193-21, CED1-185-22, CED1-174-22	Adds new subsection C406.2.3.3. It increases the stringency but is a cost-effective measure.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
		1. W05 Point of use water heaters. It increases the stringency but is a cost-effective measure.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
		2. W06 Thermostatic balancing valves. It increases the stringency but is a cost-effective measure.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
		3. W07 Heat trace system. It increases the stringency but is a cost-effective measure.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
C406.2.3.4 W08 Water-heating system submeters	CEPI-193-21	Adds new subsection C406.2.3.4. It increases the stringency but is a cost-effective measure.	Same as the change between the 2021 IECC and the 2024 IECC	Decrease	Increase
C406.2.3.5 W09 Service hot water flow reduction		Adds new subsection C406.2.3.5. It increases the stringency but is a cost-effective measure.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C406.2.3.6 W10 Shower drain heat recovery		Adds new subsection C406.2.3.6. It increases the stringency but is a cost-effective measure.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
Table C406.2.3.5 Maximum Flow Rating for Residential Plumbing Fixtures with Heated Water		Adds new Table C406.2.3.5.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C406.2.4 P01 Energy monitoring	CEPI-193-21	Adds new Section C406.2.4 based on an existing measure. Achieving energy credits using an energy monitoring system.	The 2023 FBCEC didn't have this requirement option. It is going to be an overlap new measure for FBCEC.	Decrease	Increase
C406.2.5 Energy savings in lighting systems	CEPI-193-21, CED1-81-22	Adds new Section C406.2.5. Achieving energy credits by enhancing lighting performance.	Same as the change between the 2021 IECC and the 2024 IECC	None	None
C406.2.5.1 L01 Lighting system performance	CEPI-193-21	Reserves for future use.	Same as the change between the 2021 IECC and the 2024 IECC	None	None
C406.2.5.2 L02 High-end trim lighting controls	CEPI-193-21, CECD1-4-22	Adds new Section C406.2.5.2 by modifying an existing lighting control measure.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
C406.2.5.3 L03 Increase occupancy sensor	CEPI-193-21	Adds new Section C406.2.5.3. It increases the stringency but is a cost-effective measure.	Same as the change between the 2021 IECC and the 2024 IECC	Decrease	Increase
C406.2.5.3.1 Occupant sensor controls	CEPI-193-21, CECD1-3-22, CED1-185-22	Adds new subsection C406.2.5.3.1.	Same as the change between the 2021 IECC and the 2024 IECC	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C406.2.5.3.2 Occupant sensor control function	CEPI-193-21, CECD1-3-22, CED1-185-22	Adds new subsection C406.2.5.3.2.	Same as the change between the 2021 IECC and the 2024 IECC	None	None
C406.2.5.3.3 Occupant sensor time delay and setpoint	CEPI-193-21, CECD1-3-22, CED1-185-22	Adds new subsection C406.2.5.3.3.	Same as the change between the 2021 IECC and the 2024 IECC	None	None
C406.2.5.4 L04 Increased daylight area	CEPI-193-21, CED1-185-22, CECD1-6-22	Adds new subsection C406.2.5.4. It may lightly increases the stringency but is a cost-effective measure.	Same as the change between the 2021 IECC and the 2024 IECC	Decrease	Increase
Table C406.2.5.4 Added Daylighting Parameters	CEPI-193-21, CECD1-6-22	Adds new Table C406.2.5.4.	Same as the change between the 2021 IECC and the 2024 IECC	None	None
C406.2.5.5 L05 Residential light control	CEPI-193-21, CE2D-64-23, CECD1-16-22, CE2D-64-23	Adds new subsection C406.2.5.5. This is simpler lighting control strategy. It does impact the stringency since lighting control is required elsewhere in the code.	Same as the change between the 2021 IECC and the 2024 IECC	Decrease	None
C406.2.5.6 L06 Reduced lighting power	CEPI-193-21, CECD1-7-22	Adds new subsection C406.2.5.6 by expanding an existing measure.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
C406.2.6 Efficient equipment credits	CEPI-193-21	Adds new Section C406.2.6.	Same as the change between the 2021 IECC and the 2024 IECC	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C406.2.6.1 Q01 Efficient elevator equipment	CEPI-193-21, CED1-185-22	Adds new subsection C406.2.6.1. The measure requires the installation of higher-efficiency elevator equipment. Thus, it increases the stringency but is cost-effective measure.	Same as the change between the 2021 IECC and the 2024 IECC	Decrease	Increase
C406.2.6.2 Q02 Efficient commercial kitchen equipment	CEPI-193-21	Adds new subsection C406.2.6.2 based on an existing measure. No change in stringency.	This requirement is not an option in the 2023 FBCEC, so it will be a new measure for FBCEC.	Decrease	Increase
Table C406.2.6.2(1) Minimum Efficiency Requirements: Commercial Fryers		Adds new Table C406.2.6.2(1) based on an existing Table C406.12(1). No change in stringency.	This requirement is not an option in the 2023 FBCEC, so it will be a new Table for FBCEC.	None	None
Table C406.2.6.2(2) Minimum Efficiency Requirements: Commercial Steam Cookers		Adds new Table C406.2.6.2(2) based on an existing Table C406.12(2). No change in stringency.	This requirement is not an option in the 2023 FBCEC, so it will be a new Table for FBCEC.	None	None
Table C406.2.6.2(3) Minimum Efficiency Requirements: Commercial Dishwashers		Adds new Table C406.2.6.2(3) based on an existing Table C406.12(3). No change in stringency.	This requirement is not an option in the 2023 FBCEC, so it will be a new Table for FBCEC.	None	None
Table C406.2.6.2(4) Minimum Efficiency Requirements: Commercial Ovens		Adds new Table C406.2.6.2(4) based on an existing Table C406.12(4). No change in stringency.	This requirement is not an option in the 2023 FBCEC, so it will be a new Table for FBCEC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C406.2.6.3 Q03 Efficient residential kitchen equipment	CEPI-193-21, CED1-175-22	Adds new subsection C406.2.6.3. Requires the installation of higher efficiency or the highest Energy Star refrigerators in apartment and hotel guestrooms. It slightly increases the stringency but is a cost-effective measure.	Same as the change between the 2021 IECC and the 2024 IECC	Decrease	Increase
C406.2.6.4 Q04 Fault detection and diagnostics system	CEPI-193-21	Adds new subsection C406.2.6.4 based on an existing measure. No change in stringency.	This requirement is not an option in the 2023 FBCEC, so it will be a new measure for FBCEC.	Decrease	Increase
C406.3 Renewable and load management credits achieved	CEPI-193-21, CED1-175-22	Adds new Section C406.3. Achieving energy credits for renewable and load management measures. It increase the stringency but is cost-effective measure.	Same as the change between the 2021 IECC and the 2024 IECC	None	None
Table C406.3(1) Renewable and Load Management Credits for Group R-2, R-4 and I-1 Occupancies	CEPI-193-21	Adds new Table C406.3(1).	Same as the change between the 2021 IECC and the 2024 IECC	None	None
Table C406.3(2) Renewable and Load Management Credits for Group I-2 Occupancies		Adds new Table C406.3(2).	Same as the change between the 2021 IECC and the 2024 IECC	None	None
Table C406.3(3) Renewable and Load Management Credits for Group R-1 Occupancies		Adds new Table C406.3(3).	Same as the change between the 2021 IECC and the 2024 IECC	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
Table C406.3(4) Renewable and Load Management Credits for Group B Occupancies		Adds new Table C406.3(4).	Same as the change between the 2021 IECC and the 2024 IECC	None	None
Table C406.3(5) Renewable and Load Management Credits for Group A-2 Occupancies		Adds new Table C406.3(5).	Same as the change between the 2021 IECC and the 2024 IECC	None	None
Table C406.3(6) Renewable and Load Management Credits for Group N Occupancies		Adds new Table C406.3(6). It slightly increase the stringency.	Same as the change between the 2021 IECC and the 2024 IECC	None	None
Table C406.3(7) Renewable and Load Management Credits for Group E Occupancies		Adds new Table C406.3(7).	Same as the change between the 2021 IECC and the 2024 IECC	None	None
Table C406.3(8) Renewable and Load Management Credits for Group S-1 and S-2 Occupancies		Adds new Table C406.3(8).	Same as the change between the 2021 IECC and the 2024 IECC	None	None
Table C406.3(9) Renewable and Load Management Credits for Other Occupancies		Adds new Table C406.3(9).	Same as the change between the 2021 IECC and the 2024 IECC	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C406.3.1 R01 Renewable energy	CEPI-193-21	Adds new Section C406.3.1 by expanding an existing additional energy efficiency measure. Increases the renewable energy generation capacity by at least 0.1 watts per gross square foot (1.08 W/m2) of building area or securing off-site renewable energy. This change may increases the code stringency but provides simpler compliance verification alternative.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
C406.3.2 G01 Lighting load management	CEPI-193-21, CECD1-5-22	Adds new Section C406.3.2. Lighting dimming reduces lighting levels and power. The lighting dimming control requires integration with automated controls that interface with utility signals or local building demand monitoring software. Thus, it increases the stringency but is a cost-effective measure.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
C406.3.3 G02 HVAC load management	CEPI-193-21, CED1-161-22	Adds new Section C406.3.3. Requires thermostats to be reset during peak price periods or a gradual pre-cooling set-point adjustment control sequence, as well as integration with automated controls that interface with utility signals or local building demand monitoring software. Thus, it increases the stringency but is cost-effective measure.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
Table C406.3.3 Energy Credit Adjustment Based on Use of	CEPI-193-21, CED1-161-22	Adds new Table C406.3.3	Same as the change between the 2021 IECC and the 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
Ventilation Shift or Demand Response					
C406.3.4 G03 Automated shading load management	CEPI-193-21, CED1-141-22	Adds new Section C406.3.4. The measure requires an automated external exterior roller, movable blind, or movable shutter shading devices to reduce solar gain through fenestration during peak price hours. Thus, it increases the stringency but is cost-effective measure.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
C406.3.5 G04 Electric energy storage	CEPI-193-21	Adds new Section C406.3.5. Batteries or other electric energy storage devices are required, as is integration with automated controls that interface with utility signals or local building demand monitoring software. Thus, it increases the stringency but is cost-effective measure.	Same as the change between the 2021 IECC and the 2024 IECC..	Decrease	Increase
C406.3.6 G05 Cooling energy storage	CEPI-193-21, CED1-185-22	Adds new Section C406.3.6. Ice or chilled water cooling energy storage is required, as is integration with automated controls that interface with utility signals or local building demand monitoring software. Thus, it increases the stringency but is cost-effective measure.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase
C406.3.7 G06 Service hot water energy storage	CEPI-193-21, CED1-176-22	Adds new Section C406.3.7. Requires integration with automated controls that interface with utility signals or local building demand monitoring software. Thus, it increases the stringency but is cost-effective measure.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	Increase

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
Table C406.3.7 Energy Credit Adjustment Based on Use of Heat Pump Water Heater or Demand Response	CEPI-193-21, CED1-176-22	Adds new Table C406.3.7.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
C406.3.8 G07 Building thermal mass	CEPI-193-21, CED1-92-22, CED1-185-22	Adds new Section C406.3.8. This measure is primarily an operational strategies change and the use of interior thermal mass. Has no impact on the stringency.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	None
SECTION C407 SIMULATED BUILDING PERFORMANCE					
Section C407 Simulated Building Performance	CEPI-24-21 Part I	Renames the Section title by replacing the text "*Total*" with "*Simulated*."	Same as the change between the 2021 IECC and the 2024 IECC	None	None
C407.1 Scope		Replace the text "*total*" with "*simulated*."	Same as the change between the 2021 IECC and the 2024 IECC	None	None
C407.2 Mandatory requirements	CEPI-193-21, CEPI-207-21, CEPI-24-21 Part I, CED1-185-22	Replaces text "*total*" with "*simulated*." Revises the provision that the proposed building design's annual energy cost is compared to a percentage calculated based on a new equation 4-33 that accounts for energy credits instead of a fixed percentage of 80.0%. Also Adds a new exception, which allows to use source energy as a substitute for energy cost.	Same as the change between the 2021 IECC and the 2024 IECC if the latest additional efficiency credit section is adopted. The relevant Section is C401.2.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
Table C407.2(1) Requirements for Simulated Building Performance	CEPI-193-21, CEPI-24-21 Part I, CED1-92-22	Updated Table C407.2(1).	The 2023 FBCEC doesn't have this table.	None	None
Table C407.2(2) Source Energy Conversion Factors for Electricity	CEPI-207-21	Adds new Table C407.2(2) for source energy conversion factors by fuel types.	Same as the change between the 2021 IECC and the 2024 IECC.	None	None
Table C407.4.1(1) Specifications for The Standard Reference and Proposed Designs	CECPI-2-21, CECPI-4-21, CEPI-211-21, CEPI-212, 21, CED1-197-22	Updates Table C407.4(1). Replaces the solar absorptance requirement with solar reflectance for roofs and above-grade walls. Updates the roof's emittance requirement. Adds thermal bridge requirement but climate zones 0 through 3 are exempted. Replaces "*Mechanical ventilation*" with "*Outdoor airflow*" and revises the standard reference design mechanical ventilation air requirements based on the system type. If the proposed building has natural ventilation, then use the same for the standard reference design. Adds "*Energy recovery*" as a new building component characteristic. If the proposed design specifies ventilation airflow, then use the same as the proposed; otherwise, if the proposed design has mechanical ventilation, use the same but with the standard reference design airflow.	Same as the change between the 2021 IECC and the 2024 IECC.	Decrease	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
		Adds "*Fan power*" as a new building component characteristic and requires modeling per Section C403.8. Adds "*On-site renewable energy*" as a new building component characteristic and has requirements.			
C407.5 Calculation software tools	CECD1-8-22, CE2D-10-23 CEPI-24-21 Part I	Revises and reorganizes Section C407.5. Moves the software capability requirement under new subsection C407.5.1.1.	Same as the change between the 2021 IECC and 2024 IECC. The 2023 FBCEC equivalent section is C407.6.	None	None
C407.5.1 Software tool approval		Renames the "Specific approval" section and edits the code language for clarity.	Same as the change between the 2021 IECC and 2024 IECC. The 2023 FBCEC equivalent section is C407.6.1.	None	None
C407.5.1.1 Software tool capabilities		Created a new subsection by moving the software capability requirements from Section C407.5.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C407.5.1.2 Testing required by software vendors		Created new subsection C407.5.1.2. Requires compliance software vendors to test their software per ASHRAE Standard 140 and publish the results in publicly accessibly web-site. No impact on construction cost.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C407.5.2 Algorithms not tested		Creates new subsection C407.5.2.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C407.5.3 Input values		Renumbers Section C407.5.2.	Same as the change between the 2021 IECC and 2024 IECC. The 2023 FBCEC equivalent section is C407.6.2.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C407.5.4 Exceptional calculation methods		Renumbers Section C407.5.3. Replaces the text "*building performance*" with "*simulated building performance*" in two places.	Same as the change between the 2021 IECC and 2024 IECC. The 2023 FBCEC equivalent section is C407.6.3.	None	None
SECTION C408 MAINTENANCE INFORMATION AND SYSTEM COMMISSIONING					
C408.2 Mechanical systems and service water-heating systems commissioning and completion requirements	CEPI-215-21, CED1-177-22	Revises exceptions items #1 and #2. Exception #1 is now based upon a gross conditioned floor area of less than 10,000 ft^2 and a combined cooling, heating, and service water heating capacity of less than 960 kBtu/h, instead of a capacity limit only. Exception item #2 is now based on the HVAC system type and single-zone thermostat serving sleeping and dwelling units. We believe the code changes are mostly less stringent.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C408.3 Functional testing of lighting and receptacle controls	CED1-84-22	Renames the section title by adding the text "*and receptacle*." Now, this section includes a functional testing requirement for receptacle controls. It slightly increases construction costs due to additional code verification efforts.	Same as the change between the 2021 IECC and 2024 IECC. The 2023 FBCEC Section C408.3 title is slightly different. The energy and construction costs impact are reflected in the subsections.	None	None
C408.3.1.2 Time-switch controls		Revised Section C408.3.1.2 time-switch control requirements to include receptacle controls. It slightly increases construction costs due to additional code verification efforts.	Same as the change between the 2021 IECC and 2024 IECC.	None	Increase

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C408.3.1.4 High-end trim controls	CEPI-156-21, CECD1-4-22, CE2D-66-23	Adds new Section C408.3.1.4. Lighting control verification requirement for High-end trim.	Same as the change between the 2021 IECC and 2024 IECC.	None	Increase
C408.3.1.5 High-end trim lighting control verification for L02 Additional Efficiency Credit	CECD1-4-22, CE2D-66-23	Adds new Section C408.3.1.5. This section is used with additional efficiency credits. It may slightly increase construction cost due to the additional verification and testing requirement.	Same as the change between the 2021 IECC and 2024 IECC.	None	Increase
C408.3.1.6 Demand responsive lighting controls G01	CEPI-156-21, CECD1-5-22, CE2D-67-23	Adds new Section C408.3.1.6. This section is used with additional efficiency credits. It may slightly increase construction cost due to the additional verification and testing requirement.	Same as the change between the 2021 IECC and 2024 IECC.	None	Increase
SECTION C409 CALCULATION OF THE HVAC TOTAL SYSTEM PERFORMANCE RATIO (New Section)					
C409 Calculation of the HVAC Total System Performance Ratio (TSPR)	CEPI-76-21	Adds new Section C409. The TRSP method is an alternative to the prescriptive or performance compliance method and allowed in office, retail, hotel, motel, multifamily, dormitory, school, and library building use types only. The compliance method excludes system types listed in the new subsection C409.2.1. TRSP is an optional compliance path; hence has no construction cost impact but provides compliance method flexibility.	Same as the change between the 2021 IECC and 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C409.1 Applicability	CEPI-76-21, CED1-198-22	Adds new Section C409.1 that defines when the TRSP method is used.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.2 Permitted use	CEPI-76-21, CED1-198-22	Adds new Section C409.2 that defines the HVAC system type, building occupancy group and other limits of the method.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.2.1 Systems not permitted	CEPI-76-21, CED1-198-22	Adds new Section C409.2.1 that specifies the HVAC system types not permitted to use the TRSP method. Check the reference to Section C403.1. Is it Section C409.3?	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.3 HVAC TSPR compliance	CEPI-76-21, CED1-182-22, CED1-198-22	It adds a new Section C409.3 that lists HVAC systems types required to comply with the TSPR method in addition to the requirements of Section C409.4.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.4 Performance target	CEPI-76-21, CED1-198-22	It adds a new Section C409.4 that introduces a procedure for calculating the target HVAC total system performance ratio (TSPR) based on the standard reference building design TSPR and Mechanical Performance Factor (MPF) from a new Table C409.4.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
Table C409.4 Mechanical Performance Factors	CEPI-76-21, CED1-198-22	Adds new Table C409.4.	Same as the change between the 2021 IECC and 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C409.5 General	CEPI-76-21, CED1-198-22	Adds new Section C409.5 that defines the calculation procedure for the TSPR method.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.5.1 Simulation program	CEPI-76-21, CED1-198-22	Adds new subsection C409.5.1 that specifies the simulation program capability requirements for TSPR method.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.5.2 Climatic data	CEPI-76-21, CED1-198-22	Adds a new Section C409.5.2 that specifies the hourly 8760 climatic data requirements for the simulation.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.5.3 Documentation	CEPI-76-21, CED1-182-22, CED1-198-22	Adds a new Section C409.5.3 that specifies the submittal documentation requirements.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.5.3.1 Compliance report	CEPI-76-21, CED1-198-22	Adds a new subsection, C409.5.3.1, that specifies the building permit compliance report submittal requirements.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6 Calculation procedures	CEPI-76-21, CED1-198-22	Adds a new Section C409.6. Prescribes how the standard reference design and proposed design building models must be configured and analyzed.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.1 Simulation of the proposed building design	CEPI-76-21, CED1-182-22, CED1-198-22	Adds a new subsection C409.6.1. Defines how the proposed design must be configured and analyzed.	Same as the change between the 2021 IECC and 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C409.6.1.1 Thermal block geometry	CEPI-76-21, CED1-182-22, CED1-198-22	Adds a new subsection C409.6.1.1 that prescribes how the geometry of buildings must be configured using one or more thermal blocks.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.1.1.1 Number of thermal blocks	CEPI-76-21, CED1-198-22	Adds a new subsection C409.6.1.1.1.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.1.2 Thermal zoning	CEPI-76-21, CED1-182-22, CED1-198-22	Adds a new subsection C409.6.1.2.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.1.2.1 Core and shell, build-out and future system construction analysis	CEPI-76-12, CED1-198-22	Adds a new subsection C409.6.1.2.1.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.1.3 Occupancy	CEPI-76-12, CED1-198-22	Adds a new subsection C409.6.1.3.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.1.3.1 Occupancy type	CEPI-76-21, CED1-182-22, CED1-198-22	Adds a new subsection C409.6.1.3.1.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.1.3.2 Occupancy schedule, density and heat gain	CEPI-76-21, CED1-198-22	Adds a new subsection C409.6.1.3.2.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.1.4 Building thermal envelope components	CEPI-76-21, CED1-92-22, CED1-198-22	Adds a new subsection C409.6.1.4.	Same as the change between the 2021 IECC and 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C409.6.1.4.1 Roofs	CEPI-76-21, CED1-182-22, CED1-197-22, CED1-198-22, CED1-209-22	Adds a new subsection C409.6.1.4.1.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.1.4.2 Above-grade walls	CEPI-76-21, CED1-182-22, CED1-198-22	Adds a new subsection C409.6.1.4.2.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.1.4.3 Below-grade walls	CEPI-76-21, CED1-182-22, CED1-198-22	Adds a new subsection C409.6.1.4.3.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.1.4.4 Above-grade exterior floors	CEPI-76-21, CED1-182-22, CED1-198-22	Adds a new subsection C409.6.1.4.4.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.1.4.5 Slab-on-grade floors	CEPI-76-21, CED1-182-22, CED1-198-22	Adds a new subsection C409.6.1.4.5.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.1.4.6 Vertical fenestration	CEPI-76-21, CED1-182-22, CED1-198-22	Adds a new subsection C409.6.1.4.6.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.1.4.7 Skylights	CEPI-76-21, CED1-198-22	Adds a new subsection C409.6.1.4.7.	Same as the change between the 2021 IECC and 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C409.6.1.4.8 Exterior shading	CEPI-76-21, CED1-198-22	Adds a new subsection C409.6.1.4.8.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.1.5 Lighting	CEPI-76-21, CED1-198-22	Adds a new subsection C409.6.1.5.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.1.6 Miscellaneous equipment	CEPI-76-21, CED1-198-22	Adds a new subsection C409.6.1.6.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.1.7 Elevators	CEPI-76-21	Adds a new subsection C409.6.1.7.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.1.8 Service water heating equipment	CEPI-76-21	Adds a new subsection C409.6.1.8.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.1.9 On-site renewable energy systems	CEPI-76-21	Adds a new subsection C409.6.1.9.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.1.10 HVAC equipment	CEPI-76-21, CED1-198-22	Adds a new subsection C409.6.1.10.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.1.10.1 Supported HVAC systems	CEPI-76-21, CED1-198-22	Adds a new subsection C409.6.1.10.1.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
Table C409.6.1.10.1 Proposed Building HVAC Systems Supported by HVAC TSRP Simulation Software	CEPI-76-21	Adds a new Table C409.6.1.10.1.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.1.10.2 Proposed building HVAC system simulation	CEPI-76-21, CED1-198-22	Adds a new subsection C409.6.1.10.2.	Same as the change between the 2021 IECC and 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
Table C409.6.1.10.2(1) Proposed Building System Parameters	CEPI-76-21, CED1-198-22	Adds a new Table C409.6.1.10.2(1).	Same as the change between the 2021 IECC and 2024 IECC.	None	None
Table C409.6.1.10.2(2) Fan and Pump Power Curve Coefficients	CEPI-76-21	Adds a new Table C409.6.1.10.2(2).	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.1.10.3 Demand control ventilation	CEPI-76-21	Adds a new subsection C409.6.1.10.3.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
Table C409.6.1.10.3 DCV Outdoor Air Reduction Curve Coefficients	CEPI-76-21	Adds a new Table C409.6.1.10.3.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.2 Simulation of the standard reference design	CEPI-76-21	Adds a new subsection C409.6.2.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.2.1 Utility rates	CEPI-76-21	Adds a new subsection C409.6.2.1.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.2.2 Thermal blocks	CEPI-76-21, CED1-198-22	Adds a new subsection C409.6.2.2.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.2.3 Thermal zoning	CEPI-76-21	Adds a new subsection C409.6.2.3.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.2.4 Occupancy type, schedule, density and heat gain	CEPI-76-21	Adds a new subsection C409.6.2.4.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.2.5 Envelope components	CEPI-76-21	Adds a new subsection C409.6.2.5.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.2.6 Lighting	CEPI-76-21	Adds a new subsection C409.6.2.6.	Same as the change between the 2021 IECC and 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C409.6.2.7 Miscellaneous equipment	CEPI-76-21	Adds a new subsection C409.6.2.7.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.2.8 Elevators	CEPI-76-21	Adds a new subsection C409.6.2.8.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.2.9 Service water heating equipment	CEPI-76-21	Adds a new subsection C409.6.2.9.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.2.10 On-site renewable energy systems	CEPI-76-21	Adds a new subsection C409.6.2.10.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.6.2.11 HVAC equipment	CEPI-76-21	Adds a new subsection C409.6.2.11.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
Table C409.6.2.11(1) Reference Building Design HVAC Complex Systems	CEPI-76-21	Adds a new Table C409.6.2.11(1).	Same as the change between the 2021 IECC and 2024 IECC.	None	None
Table C409.6.2.11(2) TSPR Reference Building Design HVAC Simple Systems	CEPI-76-21	Adds a new Table C409.6.2.11(2). Systems types for office and retail building occupancy groups.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
Table C409.6.2.11(3) TSPR Reference Building Design HVAC Simple Systems	CEPI-76-21	Adds a new Table C409.6.2.11(3). System types for hotel and multifamily building occupancy groups.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C409.7 Target design HVAC systems	CEPI-76-21	Adds new Section C409.7. Defines the target systems are used for developing MPF values.	Same as the change between the 2021 IECC and 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
Table C409.7(1) Target Building Design Criteria HVAC Complex Systems	CEPI-76-21	Adds a new Table C409.7(1). Target system types for large office and school building occupancy groups. These system types are used to develop mechanical performance factors (MPF) but not directly used with TSPR compliance procedure.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
Table C409.7(2) Target Building Design Criteria HVAC Complex Systems	CEPI-76-21	Adds a new Table C409.7(2). Target system types for medium and small office and retail building occupancy groups. These system types are used to develop mechanical performance factors (MPF) but not directly used with TSPR compliance procedure.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
Table C409.7(3) Target Building Design Criteria HVAC Complex Systems	CEPI-76-21	Adds a new Table C409.7(3). Target system types for hotel and multifamily building occupancy groups. These system types are used to develop mechanical performance factors (MPF) but not directly used with TSPR compliance procedure.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
Chapter C5: Existing Buildings					
SECTION C502 ADDITIONS					
C502.2 Change in space conditioning	CEPI-24-21 Part I	Replaced the text "*total building performance*" with "*simulated building performance.*"	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C502.3.7 Additional energy efficiency credit requirements	CEPI-217-21, CE2D-51-23	Adds new Section C502.3.7.	Same as the change between the 2021 IECC and 2024 IECC.	Decrease	Increase

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
		Additional energy efficiency credit requirement for building additions. There are five exceptions to this requirement based on building occupancy group, additions gross floor size less than 1000 ft^2 and less than 50% of existing conditioned floor size, HVAC equipment type, additions that don't increase the conditioned floor area, and compliance with Section C407.			
C502.3.8 Renewable energy systems	CECPI-2-21	Adds new Section C502.3.8. Additions must comply with renewable energy system requirements of new Section C405.15.	Same as the change between the 2021 IECC and 2024 IECC.	Decrease	Increase
SECTION C503 ALTERATIONS					
C503.1 General	CED1-92-22, CEPI-221-21	Revised of Section C503.1. Removes exception items #3 and #4 and adds two new exceptions.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C503.2 Building thermal envelope	CEPI-221, CED1-92-22	Renames the section title by adding the text "*thermal*." Revises and clarifies the building thermal envelope *U-value* requirement for *alterations* and edits the exceptions. This change requires walls and floors alteration to meet the requirements of Section C402.1 and air barriers to meet the requirements of Section C402.6.1. It may slightly increase the stringency for walls, floors and air barrier alterations.	Same as the change between the 2021 IECC and 2024 IECC. The energy and construction cost impacts are indicated under the specific subsections.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C503.2.1 Roof, ceiling, and attic alterations	CED1-144-22, CED1-147-22, CED1-145-22, CED1-146-22, CEPI-225-21, CEPI-221-21, CEPI-226-21, CE2D-69-23	Renames the Section title and revises the code provisions for clarity of applicability.	Same as the change between the 2021 IECC and 2024 IECC.	Decrease	Increase
C503.2.4 Above-grade wall alterations	CEPI-221-21	Adds new Section C503.2.4.	Same as the change between the 2021 IECC and 2024 IECC.	Decrease	Increase
C503.2.5 Floor alterations		Adds new Section C503.2.5.	Same as the change between the 2021 IECC and 2024 IECC.	Decrease	Increase
C503.2.6 Below-grade wall alterations		Adds new Section C503.2.6.	Same as the change between the 2021 IECC and 2024 IECC.	Decrease	Increase
C503.2.7 Air barrier		Adds new Section C503.2.7.	Same as the change between the 2021 IECC and 2024 IECC.	Decrease	Increase
C503.3 Heating and cooling systems	CEPI-229-21	Removes reference to Section C408 and moves it to the new subsection C503.3.2 for clarity.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C503.3.2 Mechanical system acceptance testing		Adds new Section C503.3.2. Adds compliance requirement with relevant specific subsections C408.2.2, C408.2.3, and C408.2.5. This section has exceptions based on building size and type. The testing requirement may increase the stringency since it requires testing the unaltered portions of	Same as the change between the 2021 IECC and 2024 IECC.	Decrease	Increase

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
		mechanical systems in existing buildings.			
C503.3.3 Duct testing	CEPI-219-21	Adds new Section C503.3.3. It requires existing ductwork serving new equipment, and additions and alterations must be tested.	Same as the change between the 2021 IECC and 2024 IECC.	Decrease	Increase
C503.3.4 Controls	CEPI-227-21	Adds new Section C503.3.4. Requires that thermostatic controls comply with current control requirements when equipment is replaced. This change is cost-effective.	Same as the change between the 2021 IECC and 2024 IECC.	Decrease	Increase
C503.3.5 System sizing	CEPI-228-21	Adds new Section C503.3.5. Right-sized equipment, often smaller, generally has lower construction costs and saves operating energy costs.	Same as the change between the 2021 IECC and 2024 IECC.	Decrease	Decrease
C503.3.6 Replacement or added roof-mounted mechanical equipment	CED1-148-22	Adds new Section C503.3.6.	Same as the change between the 2021 IECC and 2024 IECC.	None	Increase
Table C503.3.6 Roof-Mounted Mechanical Equipment Curb Heights		Adds new Table C503.3.6.	Same as the change between the 2021 IECC and 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C503.4 Service hot water systems	CEPI-229-21	Removes reference to Section C408 and moves the requirement to the new subsection C503.4.1.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C503.4.1 Service hot water system acceptance testing		Adds new subsection C503.4.1. Adds compliance requirement with specific subsections C408.2.3 and C408.2.5. This change my increase the stringency of the SHW testing requirements since it requires testing the unaltered portions of hot water systems in existing buildings.	Same as the change between the 2021 IECC and 2024 IECC.	Decrease	Increase
C503.5 Lighting systems	CECD1-2-22	Removes the exception. Improves lighting alteration code clarity and enforceability. No change in stringency.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C503.5.1 Interior lighting and controls	CECD1-2-22, CE2D-70-23	Adds new subsection C503.5.1.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C503.5.2 Exterior lighting and controls	CECD1-2-22, CE2D-71-23, CE2D-71-23	Adds new subsection C503.5.2.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C503.6 Additional energy efficiency credit requirements for alterations	CED1-92-22, CED1-149-22, CED1-203-22, CEPI-217-21	Adds new Section C503.6. Alterations that are substantial improvements must comply with efficiency measures from Sections C406.2, C406.3, or both to achieve the required energy credits specified in Table C406.1.1(1). There are four exceptions to the requirements of this section. This change increases the stringency but is cost-effective.	Same as the change between the 2021 IECC and 2024 IECC.	Decrease	Increase

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
SECTION C504 REPAIRS					
C504.2 Application	CED1-92-22	Replaced the text "*building envelope*" with "*building thermal envelope*."	Same as the change between the 2021 IECC and 2024 IECC.	None	None
SECTION C505 CHANGE OF OCCUPANCY OR USE					
C505.1 General	CED1-12-22, CEPI-232-21, CEPI-24-21 Part I	Revises the code language that spaces undergoing a change in occupancy from Group F, H, S, or U occupancy classification group must comply with Section C503 Alterations. Also removes exception item #1, which provides exemptions based on the component performance alternative method, and edits exception item #2 by replacing the text "*total"* with "*simulated*."	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C505.1.1 Alterations and change of occupancy	CEPI-232-21	Adds new subsection C505.1.1. Created by moving existing provisions from Section C505.1 for alterations and occupancy changes. No change in stringency.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C505.1.2 Portions of buildings	CEPI-232-21	Adds new subsection C505.1.2. Created by moving existing provisions from Section C505.1 for buildings going alterations and occupancy changes for a portions of an existing buildings. No change in stringency.	Same as the change between the 2021 IECC and 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
C505.2 Energy use intensities	CEPI-232-21, CED1-92-22	Adds new Section C505.2. Created compliance requirement for thermal envelope, mechanical systems, service water heating system, and lighting under separate new subsections for an existing buildings without alterations.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C505.2.1 Building thermal envelope	CEPI-232-21, CED1-92-22, CED1-110-22	Adds new subsection C505.2.1. Created by moving from Section C505.1. No change in stringency.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C505.2.2 Building mechanical systems	CEPI-232-21	Adds new subsection C505.2.2. Where a change of occupancy results in the same or increased energy use intensity, the systems serving the building or space undergoing the change must comply with Section C403. No change in stringency. *It is not clear what the reference EUI is prior to the change.*	Same as the change between the 2021 IECC and 2024 IECC.	None	None
Table C505.2.2 Building Mechanical Systems		Adds new Table C505.2.2.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C505.2.3 Service water heating		Adds new subsection C505.2.3. Where a change of occupancy results in the same or increased energy use intensity, the SWH systems serving the building or space undergoing the change must comply with Section C404. No change in stringency.	Same as the change between the 2021 IECC and 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
Table C505.2.3 Service Water Heating		Adds new Table C505.2.3.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
C505.2.4 Lighting		Adds new subsection C505.2.4. Where a change of occupancy results in the same or increased energy use intensity, the lighting systems serving the building or space undergoing the change must comply with Section C405 with the exception of Sections C405.2.6 and C405.4. No change in stringency.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
Table C505.2.4 Lighting		Adds new Table C505.2.4.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
APPENDIX CB: Solar-Ready Zone – Commercial					
APPENDIX CC: Zero Energy Commercial Building Provisions					
Section CC101 General	CECPI-5-21, CED1-204-22	Replaces the "*net zero carbon*" text with "*net zero operational energy*."	Same as the change between the 2021 IECC and 2024 IECC. The 2023 FBCEC equivalent section is CE101.	None	None
SECTION CC102 DEFINITIONS					
CC102 Direct Access To Wholesale Market	CECPI-5-21	New Definition.	Same as the change between the 2021 IECC and 2024 IECC. The 2023 FBCEC equivalent section is CE102.	None	None
CC102 Direct Ownership	CECPI-5-21	Adds new Definition.	Same as the change between the 2021 IECC and 2024 IECC. The 2023 FBCEC equivalent section is CE102.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
CC102 Energy Utilization Intensity (EUI)	CECPI-5-21	Deleted existing definition.	Same as the change between the 2021 IECC and 2024 IECC. The 2023 FBCEC equivalent section is CE102.	None	None
CC102 Green Retail Pricing	CECPI-5-21	Adds new Definition.	Same as the change between the 2021 IECC and 2024 IECC. The 2023 FBCEC equivalent section is CE102.	None	None
CC102 Minimum Renewable Energy Requirement	CECPI-5-21	Adds new Definition.	Same as the change between the 2021 IECC and 2024 IECC. The 2023 FBCEC equivalent section is CE102.	None	None
CC102 Off-Site Renewable Energy System	CECPI-5-21	Modifies an existing definition.	Same as the change between the 2021 IECC and 2024 IECC. The 2023 FBCEC equivalent section is CE102.	None	None
CC102 On-Site Renewable Energy System	CECPI-5-21	Modifies an existing definition.	Same as the change between the 2021 IECC and 2024 IECC. The 2023 FBCEC equivalent section is CE102.	None	None
CC102 Renewable Energy Investment Fund (REIF)	CECPI-5-21	Adds new Definition.	Same as the change between the 2021 IECC and 2024 IECC. The 2023 FBCEC equivalent section is CE102.	None	None
CC102 Renewable Energy System	CECPI-5-21	Modifies an existing definition.	Same as the change between the 2021 IECC and 2024 IECC. The 2023 FBCEC equivalent section is CE102.	None	None
CC102 Zero Energy Performance Index (ZEPI PB/EE)	CECPI-5-21	Deletes an existing definition.	Same as the change between the 2021 IECC and 2024 IECC. The 2023 FBCEC equivalent section is CE102.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
SECTION CC103 MINIMUM RENEWABLE ENERGY					
CC103.1 Renewable energy	CECPI-5-21, CED1-204-22	Revises the code language for clarification and updates referenced code sections.	Same as the change between the 2021 IECC and 2024 IECC. The 2023 FBCEC equivalent section is CE103.	None	None
Table CC103.1 Prescriptive Renewable Energy Requirements for Building Type and Climates (kWh/ft^2-yr)	CECPI-5-21	Renames the table title and updates the values.	Same as the change between the 2021 IECC and 2024 IECC. The 2023 FBCEC equivalent section is CE103.	None	None
CC103.2 Calculation of on-site renewable energy	CECPI-5-21, CED1-204-22	Modifies the on-site renewable energy calculation software requirement.	Same as the change between the 2021 IECC and 2024 IECC. The 2023 FBCEC equivalent section is CE103.	None	None
Table CC103.2 Procurement Factors for Renewable Energy System Compliance Alternatives	CED1-204-22	Adds new Table CC103.2.	Same as the change between the 2021 IECC and 2024 IECC. The 2023 FBCEC equivalent section is CE103.	None	None
CC103.2.1 Renewable energy certificates	CECPI-5-21, CED1-204-22	Adds new subsection CC103.2.1.	Same as the change between the 2021 IECC and 2024 IECC. The 2023 FBCEC equivalent section is CE103.	None	None
CC103.3.1 Off-site procurement methods	CECPI-5-21, CED1-204-22	Renames the section title and revises the provision for clarity.	Same as the change between the 2021 IECC and 2024 IECC. The 2023 FBCEC equivalent section is CE103.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
CC103.3.2 Requirements for all procurement methods	CECPI-5-21, CED1-204-22	Revises the code provision for clarity.	Same as the change between the 2021 IECC and 2024 IECC. The 2023 FBCEC equivalent section is CE103.	None	None
CC103.3.3 Adjusted off-site renewable energy	CECPI-5-21, CED1-204-22	Edits the off-site renewable calculation equation and updates definition of the variables.	Same as the change between the 2021 IECC and 2024 IECC. The 2023 FBCEC equivalent section is CE103.	None	None
CC103.3.3.1 Procurement factors	CECPI-5-21, CED1-204-22	Adds new Section CC103.3.3.1.	Same as the change between the 2021 IECC and 2024 IECC. The 2023 FBCEC equivalent section is CE103.	None	None
Table CC103.3.3 Default Off-Site Renewable Energy Procurement Methods, Classes and Coefficients	CECPI-5-21	Deletes Table CC103.3.3.	Same as the change between the 2021 IECC and 2024 IECC. The 2023 FBCEC equivalent section is CE103.	None	None
APPENDIX CD THE 2030 GLIDE PATH					
Appendix CD The 2030 Glide Path	CEPI-257-21	Adds new Appendix CD.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
APPENDIX CE REQUIRED HVAC TOTAL SYSTEM PERFORMANCE RATIO (TSPR)					
Appendix CE Required HVAC Total System Performance Ratio (TSPR)	CEPI76-21	New Appendix CE. It is not mandatory unless specifically referenced in the adopting ordinance.	Same as the change between the 2021 IECC and 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
APPENDIX CF ENERGY CREDITS					
Appendix CF Energy Credits	CEPI-193-21	Ads new Appendix CF. It is not mandatory unless specifically referenced in the adopting ordinance.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
APPENDIX CG ELECTRIC VEHICLE CHARGING INFRASTRUCTURE					
Appendix CG Electric Vehicle Charging Infrastructure	CED1-15-22	Adds new Appendix CG. It is not mandatory unless specifically referenced in the adopting ordinance.	The 2023 FBCEC has an almost identical provision in Appendix CC, which may require an update to make it equivalent.	None	None
APPENDIX CH ELECTRIC-READY COMMERCIAL BUILDING PROVISIONS					
Appendix CH Electric-Ready Commercial Building Provisions	CECD1-28-22	Adds new Appendix CH. It is not mandatory unless specifically referenced in the adopting ordinance.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
APPENDIX CI DEMAND RESPONSIVE CONTROLS					
Appendix CI Demand Responsive Controls	CEAPP-01-24	Adds new Appendix CI. It is not mandatory unless specifically referenced in the adopting ordinance.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
APPENDIX CJ ELECTRICAL ENERGY STORAGE SYSTEM					
Appendix CJ Electrical Energy Storage System	CEPI-7-21	Adds new Appendix CJ. It is not mandatory unless specifically referenced in the adopting ordinance.	Same as the change between the 2021 IECC and 2024 IECC.	None	None

2024 IECC Section and Title	ICC Code Change No.	Change Summary b/t 2021 IECC and 2024 IECC	Change Summary b/t 2023 FBC-EC and 2024 IECC	Anticipated Energy Impact on FBC-EC if Adopted*	Anticipated Cost Impact on FBC-EC if Adopted*
RESOURCES					
RESOURCE CRB THE 2030 GLIDE PATH (PRESCRIPTIVE)					
Resource CRB The 2030 Glide Path (Prescriptive)		Adds new Resource CRB.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
RESOURCE CRA ALL-ELECTRIC COMMERCIAL BUILDING PROVISIONS					
Resource CRA All-Electric Commercial Building Provisions		Adds new Resource CRA.	Same as the change between the 2021 IECC and 2024 IECC.	None	None
Chapter C6: Referenced Standards					

* FSEC assessment of energy and cost impacts is consistent with those in the 2024 I-Codes Revision History unless otherwise noted.

Appendix-B: The ASHRAE 90.1–2022 Code Changes

Table A-1 summarizes the 2022 ASHRAE 90.1 changes with respect to ASHRAE Standard 90.1-2019. The summary briefly describes the code modification, energy impact, and whether it is included in the quantitative analysis. This table has six columns, and the headers are defined as follows:

Addendum: This is the code change addenda for the ASHRAE Standard 90.1-2022.

Code Sections Affected: This is the ID of the proposed code change defined in the 2019 ASHRAE 90.1 addenda. This code number is used to identify the history of the code change.

Code Change Summary b/t ASHRAE 90.1-2019 and ASHRAE 90.1-2022: This briefly describes the code change between the 2019 ASHRAE Standard 90.1 and the 2022 ASHRAE Standard 90.1.

Anticipated Energy Impact on FBCEC if Adopted: Energy use impact from the code change. This is usually a decrease in energy use, an increase in energy use, or none. None means the code change has no or negligible impact on energy use.

Included in Quantitative Analysis: This describes whether the energy impact can be predicted using whole building simulation programs and DOE reference prototype buildings. This is "Yes" or "No." "Yes" means the energy impact can be analyzed using a building energy simulation program. "No" means a simulation program cannot determine the effect on energy use.

Discussion: This describes how the change impacts the implementation in the quantitative analysis, how the prototype buildings are impacted, and why the quantitative analysis is included.

Table A-1: Commercial Code Change Summary between ASHRAE 90.1-2019 vs. ASHRAE 90.1-2022

Addendum	Code Sections Affected	Code Change Summary b/t ASHRAE 90.1-2019 and ASHRAE 90.1-2022	Anticipated Energy Impact on FBCEC if Adopted*	Include in quantitative Analysis	Discussion
1. PURPOSE and 2. SCOPE					
cb	1.1, 2.1, 2.2, 2.3, 3.2, 4.1.1.6, 4.2.1.4, 4.1.2.5, 10.4.6, Table G3.1	This amendment revises the 90.1 Purpose and Scope to apply to areas outside of the physical building that qualify under the new definition of "site."	None	No	Has no direct impact on energy use.
3. DEFINITIONS, ABBREVIATIONS, AND ACRONYMS					
ab	3.2, 3.3, G3	It clarifies the process for selecting baseline HVAC systems using the Appendix G Performance Rating Method (PRM); it includes new acronyms for HVAC systems and a new definition for "residential associated HVAC zone."	None	No	This change is for clarification only.
ag	3.2, 3.3, 6.2.26.6, Appendix K	Introduces an optional Mechanical System Performance Path that allows HVAC system efficiency trade-offs based on a new metric—total system performance ratio (TSPR)—to ensure that equivalent energy savings are maintained compared to the prescriptive approach.	None	No	Adds new optional compliance method called TSPR. Provides compliance method flexibility.
4. ADMINISTRATION AND ENFORCEMENT					
cp	4.2.1.1, G2.2, Table G3.1	This change explains Appendix G modeling requirements for proposed designs that utilize a trade-off for the renewable energy requirements in Section 10.5.1.	None	No	This change is for clarification only.
h	4.2.1.1	Clarifies that the gross floor area should be used when calculating the area-weighted building performance factor (BPF).	None	No	This change is for clarification only.

Addendum	Code Sections Affected	Code Change Summary b/t ASHRAE 90.1-2019 and ASHRAE 90.1-2022	Anticipated Energy Impact on FBCEC if Adopted*	Include in quantitative Analysis	Discussion
co	4.2.1.1, 4.2.1.3, G3.1, G3.2, G3.3	Adds new performance requirements for alterations, allowing larger retrofit projects a 5% increase in Building Performance Factor (BPF) relative to new construction vs. smaller retrofit projects, which are subject to a new Section G3.3.	None	No	Impacts existing buildings during alterations and relaxes stringency.
as	4.2.4, 5.9, 6.9, 7.9, 8.9, 9.9, 10.9	Rearrange envelope inspection requirements and improve commissioning language throughout.	None	No	This change is for clarification only.
5. BUILDING ENVELOPE					
bi	3.2, 5.1.3, 5.5.3.1	Creates specific provisions to distinguish roof replacements from other types of alterations.	None	No	This change is for clarification only.
bj	5.5.3, A1, A9, Appendix E	Reformats and clarifies Normative Appendix A requirements for thermal performance calculations to demonstrate compliance with Section 5.5	None	No	This change is for clarification only.
ao	5.4.3.3.3, 6.4.3.9, 10.4.5, Table H-3	Revises the requirements for air curtain units and controls and indicates that installation is to be performed following the manufacturer's instructions.	None	No	Code enforcement clarification.
s	3.2, 5.5.3.1.1, 5.5.3.2, 5.5.4.5, Table 12.5.1, C3.6, Table G3.1	Replaces the term *solar reflectance index (SRI)* with *solar reflectance* (for walls only) and establishes a minimum solar reflectance requirement for east-, south-, and west-oriented walls in Climate Zone 0.	None	No	It does not increase the stringency.
t	3.2, 4.2.5, 5.1.3, 5.4.3, 5.7.2, 5.7.3.1, 5.8, 5.9.1.2, 6.4.4.2.1, 6.4.5, 6.5.1, Table 12.5.1 (5),	This amendment adds a requirement to perform whole-building air leakage testing and measurement on buildings less than 10,000 ft^2, specifies performance requirements for compliance, references the applicable ASTM standard, and modifies relevant Section 3 terminology.	Decreases	Yes	Adds whole-building air leakage and measurement requirements. Increases stringency for buildings less than 25,000 ft^2 floor area.

Addendum	Code Sections Affected	Code Change Summary b/t ASHRAE 90.1-2019 and ASHRAE 90.1-2022	Anticipated Energy Impact on FBCEC if Adopted*	Include in quantitative Analysis	Discussion
	12.5.3, 13, C1.5, C3.5.5.3, C3.6, C3.1.1.4, Table G3.1 (5), Table H-3				
av	3.2, 3.3, 5.5.3.2, 5.5.5, 5.6.1.1, 5.7.2, 5.8.2.3, Table 12.5.1 (5), 13, A1, A10, C1.2.7, C2.9, C3.5.5.4, C3.6, Appendix E, Table G3.1 (5), Appendix J	Adds requirements to address the impacts of thermal bridges in the building envelope.	Decreases	No	It adds a prescriptive requirement for thermal bridging in the exterior envelope. This change will not be included in the quantitative analysis because it impacts climate zones 4 through 8.
6. Heating, Ventilating, and Air Conditioning					
bc	6.5.4.8	It requires condensing boilers for new construction to achieve condensing-level efficiency (i.e., 90% Et) for large boiler systems (i.e., between 1 and 10 million Btuh) and, to ensure condensing occurs, requires the boiler entering water to be within the prescribed limits for temperature or flow rate.	Decrease	Yes	It increases efficiency requirements for large boilers in new construction. It may impact large prototype buildings.
cd	6.5.6.1.2	Establishes a minimum enthalpy recovery ratio for energy recovery systems and specifies how bypass or control of the energy recovery system must operate to ensure proper economizer performance.	None	No	This change is intended to clarify that a heat recovery bypass and control allow economizer operation.
a	6.5.3.7, 6.5.3.8, 13	Establish minimum fan efficacy requirements for low-power ventilation fans and reference Standard 62.2 to determine the minimum ventilation rates for nontransient dwelling units.	Decrease	Yes	This change adds minimum fan efficiency requirements for smaller ventilation fans not covered by section 6.5.3.6. It impacts apartment and outpatient healthcare

Addendum	Code Sections Affected	Code Change Summary b/t ASHRAE 90.1-2019 and ASHRAE 90.1-2022	Anticipated Energy Impact on FBCEC if Adopted*	Include in quantitative Analysis	Discussion
					prototype buildings.
b	6.4.3.8	Revises demand control ventilation parameters to be determined based on climate zone and Standard 62.1 airflow requirements.	Decrease	Yes	For cost-effectiveness, the DCV requirement is based on occupancy, floor-area size, and climate zone. As needed, depending on the prototype building design.
c	6.3.2, 6.4.3.3	Requires residential HVAC systems greater than 2.1 kW to be equipped with start/stop and setback controls.	Decreases	Yes	Adds advanced HVAC controls in dwelling units. These control features impact apartment prototype buildings.
d	3.2, 6.4.3.4.5	Adds new term to define parking garage section so that fan requirements can be refined for different configurations. It requires fans to be able to modulate airflow and power as specified.	Decreases	No	It improves contaminant control and requires a lower fan flow and power threshold. It also replaces the exception limit from a 3000 ft^2 parking garage floor size to a ventilation fan system power of 5 hp. The prototype building models do not have an interior parking garage, so the analysis will not include it.
f	Table 6.5.1-2	Clarifies the efficiency improvement required to eliminate an economizer.	None	No	This change is for clarification only.
g	6.5.1.1.5	It adds more specific language about relieving excess outdoor air during air economizer operation through fans or dampers.	None	No	This change clarified excess air relief requirements.
m	6.4.3.4.1	This change clarifies the requirements for motorized dampers on vents in elevator shafts and stairwells and adds an exception to allow non-motorized dampers in mild climates and low-rise buildings.	None	No	This change is for clarification only.

Addendum	Code Sections Affected	Code Change Summary b/t ASHRAE 90.1-2019 and ASHRAE 90.1-2022	Anticipated Energy Impact on FBCEC if Adopted*	Include in quantitative Analysis	Discussion
n	6.5.2.6	This adds an exception to Section 6.5.2.6, which allows units to heat the ventilation airstream above 60°F if they exclusively use series energy recovery.	None	No	The impact of the heat recovery on the cooling system compressor offsets the increased reheating load.
r	6.4.3.3.3	Clarifies that residential spaces are not required to have optimal start controls.	None	No	This change is for clarification only.
x	6.4.1.2, Table 6.8.1-3	Updates the cooling efficiency adjustment for centrifugal chillers and the requirements for chillers utilizing freeze protection. Replaces “fluid” and “water” with “liquid” throughout.	None	No	This change is for clarification only.
y	Table 6.8.1-16	This change modifies the minimum efficiency requirements for air-source heat pumps, updates the related AHRI rating standards, and introduces a new metric (COP_{HR}) for units that perform heat recovery during chiller operation.	None	No	This change clarifies new efficiency metrics for heat pumps.
aq	6.8.3, Table 6.8.3-1, Table 6.8.3-2, 7.4.3, Table 7-4	Introduces requirements for service water heating pipe insulation based on typical operating conditions.	None	No	This change is for clarification of the enforcement without changing the standard stringency.
bk	6.3.2, 6.4.3.3.2, 6.4.3.3.5, 6.4.5, 6.4.6, 12.4.1.1, 12.5.2, G2.2.1	Updates humidity control requirements following the latest Standard 62.1-2019.	None	No	This change aligns this standard with changes in Standard 62.1-2019.

Addendum	Code Sections Affected	Code Change Summary b/t ASHRAE 90.1-2019 and ASHRAE 90.1-2022	Anticipated Energy Impact on FBCEC if Adopted*	Include in quantitative Analysis	Discussion
bm	6.5.3.8	This change modifies occupied standby controls from multiple-zone systems to explicitly require an outdoor air reset when ventilation is reduced to zero.	Decrease	No	Reduces the amount of outdoor air at the air handler, saving energy for outdoor air treatment. This change impacts the control device but does not impact the prototype building energy model since the model has already correctly interpreted it.
bv	Table 4.2.1.1	This update provides the building performance factors (BPFs) used to determine compliance with Normative Appendix G based on energy-efficiency improvements in the 2022 standard.	None	No	This change impacts an optional performance path in the standard designed to provide increased flexibility. It does not affect the prototype building energy code models; hence, it will not be included in the quantitative analysis.
bw	6.5.3.1.3	Clarifies that the fan efficiency metric must be applied at the highest design airflow rate.	None	No	This change is for clarification only.
bx	Table 6.8.1-5	This amendment to Table 6.8.1-5 for warm air furnace efficiency requirements will more accurately distinguish between different products and test procedures based on their locations and status as DOE or non-DOE-covered products.	None	No	This change is for clarification only.
bz	6.5.6	Adds language to specify the sensible energy recovery ratio requirement for systems that require only sensible heating energy recovery.	None	No	This change has no impact on the Florida code.
ce	A2.5, A3.3, A9.2, 13	It adds new references and requirements for steel-framed walls aligned with ANSI/AISI S250, which provides additional options for wall framing and insulation placement.	None	No	Provides design flexibility.

Addendum	Code Sections Affected	Code Change Summary b/t ASHRAE 90.1-2019 and ASHRAE 90.1-2022	Anticipated Energy Impact on FBCEC if Adopted*	Include in quantitative Analysis	Discussion
cg	5.5.3, A9.4.7	This section adds a definition for insulated metal panels (IMPs) and a new section explaining how the U-factor of a given IMP is determined.	None	No	Provides design flexibility.
ci	Table 6.5.1-1	Fan cooling units outside the building must have an economizer at the indicated capacity range.	Decrease	Yes	It extends the economizer requirements to 33 kBtu/h from the 54 kBtu/h threshold for the cooling unit installed outside the building. This change may impact the small hotel prototype building.
cj	Table 6.8.1-16	Corrects numerical errors in the centrifugal chiller category when it was updated in Addendum y.	None	No	This change is a correction only.
at	3.2, 4, 5, 6, 7, 8, 10	Establishes a consistent numbering system for each standard section and revises the definition for alteration.	None	No	This change is editorial only.
au	6.2, 6.3.2	Heating and cooling equipment, under the simplified compliance approach, must meet the requirements of Section 6.4.1.5.	None	No	An alternative simplified compliance option for the HVAC System provides compliance flexibility. This change compliance option is not used in the prototype buildings.
aw	3.2, 3.3, 6.4.1.1, Table 6.8.1-21, Table F-6, 13	This amendment adds the minimum energy efficiency requirements (and new CFEI metric) for large-diameter ceiling fans from 10 CFR 430.	Decrease	No	Minimum efficiency requirement for large-diameter ceiling fans. It is not a typical design; hence, it is not included in the prototype buildings.

Addendum	Code Sections Affected	Code Change Summary b/t ASHRAE 90.1-2019 and ASHRAE 90.1-2022	Anticipated Energy Impact on FBCEC if Adopted*	Include in quantitative Analysis	Discussion
ay		Updates Tables 6.8.1-8 and 6.8.1-9 for variable refrigerant flow (VRF) equipment efficiency based on the new AHRI 1230-2021 test procedure, which required an EER and IEER values adjustment.	Decrease	No	Federal minimum efficiency requirements and none of the prototype buildings use a VRF HVAC system.
cu	6.5.6.3	This specifies that the return water from a heat pump chiller is the heat source for heat recovery, as most acute inpatient hospitals require.	None	No	This change is a clarification of an existing requirement.
7. SERVICE WATER HEATING					
ah	7.5.3	Increases the thermal efficiency required for high-capacity gas-fired service water-heating equipment and provides the U.S. DOE criteria for defining high-capacity water heaters.	Decrease	Yes	A single high-capacity water heater supplies a system, or if multiple high-efficiency water heaters provide a single system, the minimum efficiency increases to 92 %. This change may impact large hotel prototype buildings.
8. Power					
bg	3.2, 8.1, 8.7.3.2, 9.1.1, 9.4.1, 9.6.3, 10.1.1, Table 12.5.1 (12), G1.2.2, Table G3.1	Updates Sections 8, 9, 10, 12, and Appendix G to reflect the new purpose and scope (Addendum cb), utilizing the new site definition.	None	No	This change is for clarification only. It has no impact on the prototype buildings.
bq	8.4.3	Adds a requirement to perform electrical energy monitoring with separate metering for refrigeration systems where refrigeration accounts for 10% or more of the building load.	None	No	This is an instrument for making operational decisions. It does not impact the prototype building models; hence, it will not be included in the analysis. 2023 FBCEC excludes Section 8.4.3.

Addendum	Code Sections Affected	Code Change Summary b/t ASHRAE 90.1-2019 and ASHRAE 90.1-2022	Anticipated Energy Impact on FBCEC if Adopted*	Include in quantitative Analysis	Discussion
ae	8.4.4	This update includes exceptions and footnotes regarding Section 8.4.4's requirements for the minimum efficiency of low-voltage dry-type transformers in commercial buildings.	None	No	This change updates the footnotes to Table 8.4.4 to clarify the language needed to show no requirements for transformers below the minimum or above maximum kVA ratings.
9. Lighting					
ad	9	Reorganizes Section 9, "Lighting," to better parallel the structure of the other main sections.	None	No	This change is for clarification only.
p	9.1.2, 9.1.4	Modifies portions of Section 9 about alterations to ensure that such projects meet all applicable lighting requirements.	Decrease	No	All alterations, regardless of size, must meet all of the requirements of Section 9.
z	9.1.4	Lowers the wattage assigned for track lighting to reflect the predominant use of higher-efficiency LED technology.	Decrease	No	LED technology reduces the track lighting requirement from 30 to 10 W per linear foot. Track lighting is not part of the prototype building, so the analysis does not include this change.
ac	3.2, 9.4.1.2, Table 9.2.3.1, Table 9.6.1, Appendix E	This update to interior lighting power and minimum control requirements adds a power exception for the germicidal function in luminaires and sources, removes exceptions for casinos and parking garage daylight transition zone lighting, and defines the latter item.	Decrease	No	It updates interior LPD values for casinos and parking garage space types, removes control requirements for germicidal function, and defines a "parking garage daylight transition zone." It is not a typical design or part of a *prototype building; hence, it is not included in the quantitative analysis*.

Addendum	Code Sections Affected	Code Change Summary b/t ASHRAE 90.1-2019 and ASHRAE 90.1-2022	Anticipated Energy Impact on FBCEC if Adopted*	Include in quantitative Analysis	Discussion
ar	3.2, Table 9.2.3.1, 9.4.4, Appendix E	Adds requirements for indoor horticultural lighting based on a new metric, photosynthetic photon efficacy (PPE), developed in ANSI/ASABE S640.	Decrease	No	Adds minimum luminaire efficiency requirements depending on the building function. It is not a typical building, and none of the prototype buildings has such space; hence, it will not be included in the analysis.
am	9.2.3.2, Table 9.2.3.2, 9.4.1.4, 9.4.2, Table 9.4.2-1, Table 9.4.2-2	Updates exterior lighting power and control requirements based on technological improvements and revised lighting practices; restructure portions of Section 9 to better communicate exceptions to those requirements.	Decrease	Yes	Reduces the exterior lighting power allowances and adds control requirements based on specific applications.
bs	9.3.1, 9.3.2	Updates the lighting power allowances (LPA) in the Simplified Building Method Compliance Path to maintain alignment with the established method (0.9x the Building Area Method LPA values). Removes an exception for alterations that had incentivized the use of LEDs before they became commonplace.	Decrease	No	It provides simplified compliance options and design flexibility. Since it is not part of the prototype building model, it will not be included in the analysis.
o	9.4.1.1	This change reduces the minimum connected load that triggers daylighting responsive control requirements for sidelighting and toplighting.	Decrease	Yes	Reduces the minimum connected load for daylighting responsive controls for side-lighting and top-lighting from 150 to 75 W and 300 W to 150 W due to improved LED technology. Determine prototype building impacted.

Addendum	Code Sections Affected	Code Change Summary b/t ASHRAE 90.1-2019 and ASHRAE 90.1-2022	Anticipated Energy Impact on FBCEC if Adopted*	Include in quantitative Analysis	Discussion
bp	9.4.1.3	Removes the exception for captive card-key controls in the hotel guestrooms	Decrease	No	Removes the exception for captive card critical controls for hotel guests since they are easily and often bypassed, negating potential energy savings.
br	9.4.3	Increases the efficacy threshold for lamps and luminaires in dwelling units and specifies interior and exterior lighting control requirements.	Decrease	Yes	Increased lighting efficacy and added control requirements for interior and exterior lighting. This change also reMoves the exception due to permanent control requirements.
ba	9.4.1.1 and Table 9.5.2.1	Updates space-by-space lighting power density (LPD) values and interior control requirements in Section 9.4.1.1 and Table 9.5.2.1.	Decrease	Yes	Increased lighting efficacy and added control requirements for interior lighting.
bb	9.5.1	Updates the lighting power density values for the Building Area Method compliance path based on manufacturer-reported improvements in lighting performance.	Decrease	No	Reduced lighting power density (LPD) values but not used in prototype buildings.
bf	9.5.2.2	This change updates the decorative and retail lighting power allowances, adds allowance for videoconferencing, and moves the additional power allowances and required controls to a table for easy reference.	Decrease	Yes	Reduces decorative and retail lighting power allowances. Impacts retail prototype buildings.
10. OTHER EQUIPMENT					

Addendum	Code Sections Affected	Code Change Summary b/t ASHRAE 90.1-2019 and ASHRAE 90.1-2022	Anticipated Energy Impact on FBCEC if Adopted*	Include in quantitative Analysis	Discussion
by	3.2, 10.2.1, 10.5.1	Adds a minimum prescriptive requirement for on-site renewable energy.	Decrease	Yes	The building site must have equipment for on-site renewable energy with a rated capacity >= 0.5W/ft² multiplied by the sum of the gross conditioned floor area for all floors up to the three largest floors. Five conditions may exempt this requirement. This change may impact all except small office and restaurant prototype buildings.
az	3.2, 10.4.6	Introduces compressed air system requirements with measures for reducing common sources of energy waste.	Decrease	No	This change enforces best design practices. However, the analysis will not include this change because prototype buildings don't have compressed air systems in the model.
cf	10.4.3, 10.9.3	Introduces provisions that improve elevator fan, lighting, and movement efficiency.	Decrease	Yes	This change increased elevator fan efficiency, reduced the lighting allowance, and improved standby mode energy use.
11. ADDITIONAL EFFICIENCY REQUIREMENTS					
ap	3.2, 3.3, 4.2.1, 4.2.2, 9.9.1, 12.2, 13, Section 11	This section introduces a new section to Standard 90.1, enabling energy credits to save approximately 4% to 5% of energy costs. There are 32 individual measures from which users can earn the required number of credits for their building type and climate zone.	Decrease	Yes	A new Section 11 includes 33 cost-effective energy credit prescriptive requirements. It supports eight building use types (office, restaurant, retail, education, warehouse, healthcare, hotel/motel, multifamily, dormitory, and all others) in all climate zones.
12. ENERGY COST BUDGET METHOD					

Addendum	Code Sections Affected	Code Change Summary b/t ASHRAE 90.1-2019 and ASHRAE 90.1-2022	Anticipated Energy Impact on FBCEC if Adopted*	Include in quantitative Analysis	Discussion
cy	Section 12	Updates the normative references to include the latest published addenda to 90.4-2019	None	No	Reference update.
cr	12.2, G1.2.1	Adds language to limit the extent that envelope trade-offs can be used for compliance with Section 12 and Appendix G based on the amount that a proposed envelope performance factor is permitted to exceed the base value (i.e., envelope "backstop").	Decrease	No	Increases the stringency of the envelope by limiting the envelope trade-off amount allowed with the performance compliance methods. Not part of the prototype building. Hence, it is not included in the quantitative analysis.
ck	12.4.1, 12.4.3, Table 12.5.1	This section explains Section 12 modeling requirements for proposed designs that utilize a trade-off for the renewable energy requirements in Section 10.5.1.	None	No	This change impacts the proposed building design. It does not affect the prototype building model energy code, so it will not be included in the analysis.
be	12.4.1.4, 12, C3.1.4, G2.2.4	This change updates references to the latest ANSI/ASHRAE Standard 140-2020 and specifies which simulation program tests are required for compliance with Appendix C and G of Standard 90.1.	None	No	Reference update.
cs	12.5.2	Clarifies efficiency requirements for HVAC and service water-heating equipment in the Section 12 budget building design.	None	No	This change is for clarification only.
bh	Table 12.5.1	Revises the default PV system in the budget building design so that the temperature coefficient of power is aligned with the PV Watts input for a 19% panel efficiency as required by Addendum ck.	None	No	Documentation update.

Addendum	Code Sections Affected	Code Change Summary b/t ASHRAE 90.1-2019 and ASHRAE 90.1-2022	Anticipated Energy Impact on FBCEC if Adopted*	Include in quantitative Analysis	Discussion
u	12.5.2	Specifies the use of air economizers for budget building systems and clarifies the method for determining prescriptive HVAC requirements based on the budget system type and capacity.	None	No	This change is for clarification only.
k	12.5.2	Adjusts Section 12 budget building fan requirements to avoid creating a fan power credit for energy recovery.	None	No	This change adds an exception to avoid taking fan power credit when energy recovery is not required in the budget building while the proposed design has an energy recovery.
bd	12.5.2, Table 12.5.1, G3.1.2, Table G3.1, Table G3.5.3, Appendix L	This change provides performance curves for modeling chillers in the budget (Section 12), baseline designs (Appendix G), and default performance curves that can be used for chillers in the proposed design.	None	No	It adds two sets of chiller performance curves for the budget and baseline building design to ensure consistency of modeling results rather than relying on software defaults.
v	12.7.2, G1.3.2	This clarifies the documentation that projects must submit to the rating authority or jurisdiction following Section 12 and Appendix G, including simulation files upon request.	None	No	This change is for clarification only.
NORMATIVE APPENDIX G PERFORMANCE RATING METHOD					
af	G3.1, G3.6	This amendment modifies the lighting modeling requirements in Appendix G with more specific guidance on determining lighting power in the baseline compared to the proposed building.	None	No	Provides the standard design with increased flexibility.
db	G3.1, G3.4-9	This document clarifies how to establish the Normative Appendix G baseline space conditioning categories that must be used with Tables G3.4-1 through G3.4-8 so that the baseline envelope will remain consistent should Section 3 undergo changes.	None	No	Provides the standard design with increased flexibility.

Addendum	Code Sections Affected	Code Change Summary b/t ASHRAE 90.1-2019 and ASHRAE 90.1-2022	Anticipated Energy Impact on FBCEC if Adopted*	Include in quantitative Analysis	Discussion
i	G3.1.2.10	Reinstates exception to Appendix G exhaust air energy recovery requirements for laboratory HVAC systems.	None	No	This is a correction and impacts laboratory buildings only.
l	G3.1	Revises Appendix G language describing how to calculate and assign vertical fenestration in the baseline design.	None	No	This change clarifies how the vertical fenestration is distributed in the baseline design in Appendix G.
q	Table G3.7	Corrects Table G3.7 to maintain equivalent space type requirements per the established 2004 baseline.	None	No	Removes duplicate interior LPD values.
w	G3.1.3.7	This indicates that chillers (type and number) shall be modeled in the baseline building design based on the baseline HVAC system's total peak coincident cooling load using chilled water.	None	No	This change clarifies the intent and provides design flexibility for sizing the chilled water cooling system in the baseline.
aa	G3.1.2.9, Table G3.1	Corrects the SI fan power values in Appendix G to make them consistent with the rest of the standard.	None	No	This change is a correction to make SI and IP versions of fan power values calculation in Appendix G.
aj	Table G-1	Updates Appendix G to align with Addendum ae clarifications related to baseline transformer performance.	None	No	This change is for clarification only.
ak	G3.1.1	This section provides criteria for determining when an HVAC zone should be isolated from a multi-zone system in the baseline building model.	None	No	Impacts the process of isolating an HVAC zone attached to a multi-zone system in the baseline building.
bt	G3.1.3.5, G3.1.3.10, G3.1.3.19	This change indicates that baseline system pumps are to be modeled based on the presence of a load, and preheat coil temperature is to be modeled compared to the zone with the highest set point.	None	No	This change allows intermittent hot and chilled water loop pump operation modeling in the baseline.

Addendum	Code Sections Affected	Code Change Summary b/t ASHRAE 90.1-2019 and ASHRAE 90.1-2022	Anticipated Energy Impact on FBCEC if Adopted*	Include in quantitative Analysis	Discussion
cq	G3.1.2.1, Table G3.1 (10), Table G3.1.3.7, Table G3.5.3	Modifies Appendix G to align with Section 6 updates (e.g., removes outdated references, corrects instructions for determining equipment efficiency, converts "water" to "liquid" in the descriptions for chiller equipment.)	None	No	This update is for clarity and consistency with various sections.
ct	Table G3.1 (5)	Provides additional details about the envelope modeling requirements for Appendix G baseline buildings.	None	No	This change details the envelope modeling requirements for Appendix G baseline buildings.
da	G1.3.2, G2.2, G2.3, G2.4.2, G2.5, Table G3.1	Aligns Appendix G requirements for documentation, simulation programs, climactic data, and exceptions with the corresponding portions of Section 12.	None	No	Documentation update.
an	Table G3.1	This change clarifies baseline HVAC fan schedule requirements for projects that rely on ventilation via operable windows that the occupants manually open.	None	No	This change clarifies the baseline HVAC fan operating schedule requirements in Appendix G.
References used in the standard					
cm	13	Updates the normative references used in the standard to the latest applicable versions.	None	No	References update.

Appendix-C: Florida Energy Rates

A representative standard energy rate structure shown in Table C-1 through C-3 was used for energy cost calculation. The three energy rates represent electric demand under 20 kW, between 20 kW and 500 kW, and between 500 kW and 2000 kW, respectively.

Table C-1 Natural Gas Rate and Standard Electricity Rate for Demand under 25kW

Charges Type	Charge Items	Units	Rate
Customer and Demand Charge			
Customer Charge		$/Month	12.68
Demand Charges	Base Demand Charge	$/kW	0.00
	Capacity Payment Charge	$/kW	0.00
	Conservation Charge	$/kW	0.00
Total Demand Charge		$/kW	12.68
Electric Energy Charges			
Non-Fuel Energy Charges	Base Energy Charge		
	Base Energy Charge	cents /kWh	7.180
	Base Energy Charge	cents /kWh	0
	Conservation Charge	cents /kWh	0.125
	Capacity Payment Charge	cents /kWh	0.220
	Environmental Charge	cents /kWh	0.323
Fuel and Additional Charges	GSLM Program		
	Fuel Charge	cents /kWh	0.0
	Levelized Fuel Charge	cents /kWh	3.151
		cents /kWh	0
		cents /kWh	0
		cents /kWh	0
	Storm Charge	cents /kWh	0.346
	Franchise Fee	cents /kWh	0
	Tax clause	cents /kWh	0
Total Energy Rate	Levelized Energy Rate	cents /kWh	11.345
		cents /kWh	
		cents /kWh	
		cents /kWh	
Natural Gas Energy Rates			
Customer Charge		$/Month	31.0
Distribution Charge	GS-1 Range	$/Therm	0.57949
Total Natural Gas Energy Rate		$/Therm	0.57949

Table C-2 Natural Gas Rate and Standard Electricity Rate for Demand 25 kW - 500 kW

Charges Type	Charge Items	Units	Rate
Customer and Demand Charge			
Customer Charge		$/Month	29.98
Demand Charges	Base Demand Charge	$/kW	11.29
	Capacity Payment Charge	$/kW	0.72
	Conservation Charge	$/kW	0.43
	Storm Protection	$/kW	0.70
Total Demand Charge		$/kW	13.14
Electric Energy Charges			
Non-Fuel Energy Charges	Base Energy Charge		
	Base Energy Charge	cents /kWh	2.513
	Base Energy Charge	cents /kWh	2.513
	Conservation Charge	cents /kWh	0
	Capacity Payment Charge	cents /kWh	0
	Environmental Charge	cents /kWh	0.279
Fuel and Additional Charges	GSLM Program		
	Fuel Charge	cents /kWh	0.0
	(Jan-May) Levelized Fuel Charge	cents /kWh	3.151
	(Oct-Dec) Levelized Fuel Charge	cents /kWh	3.151
	Jun-Sep, On-Peak Fuel Charge	cents /kWh	4.476
	Jun-Sep, Off-Peak Fuel Charge	cents /kWh	2.981
	Storm Charge	cents /kWh	0
	Franchise Fee	cents /kWh	0
	Tax clause	cents /kWh	0
Total Energy Rate	Jan-May, Oct-Dec, On-Peak Rate	cents /kWh	3.151
	Jan-May, Oct-Dec, Off-Peak Rate	cents /kWh	3.151
	Jun-Sep, On-Peak Energy Rate	cents /kWh	4.476
	Jun-Sep, Off-Peak Energy Rate	cents /kWh	2.981
Natural Gas Energy Rates			
Customer Charge		$/Month	188.0
Distribution Charge	GS-25K Range	$/Therm	0.44046
Total Natural Gas Energy Rate		$/Therm	0.44046

Table C-3 Natural Gas Rate and Standard Electricity Rate for Demand 500 kW - 2000 kW

Charges Type	Charge Items	Units	Rate
Customer and Demand Charge			
Customer Charge		$/Month	88.00
Demand Charges	Base Demand Charge	$/kW	13.49
	Capacity Payment Charge	$/kW	0.80
	Conservation Charge	$/kW	0.47
	Storm Protection	$/kW	0.73
Total Demand Charge		$/kW	15.49
Electric Energy Charges			
Non-Fuel Energy Charges	Base Energy Charge		
	Base Energy Charge	cents /kWh	1.943
	Base Energy Charge	cents /kWh	1.943
	Conservation Charge	cents /kWh	0
	Capacity Payment Charge	cents /kWh	0
	Environmental Charge	cents /kWh	0.281
Fuel and Additional Charges	GSLM Program		
	Fuel Charge	cents /kWh	0.0
	(Jan-May) Levelized Fuel Charge	cents /kWh	3.147
	(Oct-Dec) Levelized Fuel Charge	cents /kWh	3.147
	Jun-Sep, On-Peak Fuel Charge	cents /kWh	4.471
	Jun-Sep, Off-Peak Fuel Charge	cents /kWh	2.978
	Storm Charge	cents /kWh	0
	Franchise Fee	cents /kWh	0
	Tax clause	cents /kWh	0
Total Energy Rate	Jan-May, Oct-Dec, On-Peak Rate	cents /kWh	5.371
	Jan-May, Oct-Dec, Off-Peak Rate	cents /kWh	5.371
	Jun-Sep, On-Peak Energy Rate	cents /kWh	6.695
	Jun-Sep, Off-Peak Energy Rate	cents /kWh	5.202
Natural Gas Energy Rates			
Customer Charge		$/Month	188.0
Distribution Charge	GS-25K Range	$/Therm	0.44046
Total Natural Gas Energy Rate		$/Therm	0.44046

Appendix-D: Florida Commercial Building Floor Area Distribution

Floor Area Weighting Factors Determination

The conditioned floor area weighting factors used in this study were generated by processing building stock information obtained from a PNNL latest report (Lei et al., 2020). The information obtained includes total floor areas by building type for Florida and national average building weighting factors by climate zones. The Florida average weighting factors by building type and climate zones 1A and 2A were obtained directly from the PNNL report. Two sets of weighting factors were generated for this investigation: weighting factors for the two Florida climate zones for each prototype building type and the state's average weighting factors by building type and climate zone. The former weighting factors for climate zones 1A and 2A were used to estimate the EUI for each of the sixteen prototype buildings in Florida. The later weighting factors were used to determine an aggregate EUI across the sixteen commercial prototype buildings for the state of Florida. Table D-1 summarizes commercial buildings' total floor area stock distribution by prototype building in Florida.

Table D-1 Commercial Prototype Buildings Floor Area Distribution in Florida

Building Type	Prototype Building	Prototype Building Floor Area, ft^2	Sample Total Building Floor Area, 1000 ft^2	Floor Area Weighting Factors, %
Office	Small Office	5,502	60,118	4.27
	Medium Office	53,628	59,533	4.27
	Large Office	498,588	28,515	2.06
Retail	Stand-Alone Retail	24,692	132,725	9.57
	Strip Mall	22,500	64,402	4.71
Education	Primary School	73,959	55,681	3.98
	Secondary School	210,887	95,221	6.77
HealthCare	Outpatient Health Care	40,946	36,318	2.65
	Hospital	241,501	51,718	3.68
Lodging	Small Hotel	43,202	16,958	1.33
	Large Hotel	122,120	64,988	4.57
Warehouse	Non-Refrigerated Warehouse	52,045	235,608	16.94
Food Service	Full Service Restaurant	2,501	12,756	1.03
	Quick Service Restaurant	5,502	4,850	0.29
Apartment	Mid-Rise Apartment	33,741	181,057	12.96
	High-Rise Apartment	84,360	292,976	20.91
Total		1,515,674	1393,424	100.00

Floor Area Weighting Factors by Florida Climate Zones

Figure D-1 shows Florida's weighting factors by climate zones and prototype building type. The weighting factors for each prototype building type sum to 1.0. These weighting factors split the total floor area stock of each prototype building in the state into climate zone 1A and 2A fractions. For instance, for High Rise Apartments, 68.3% of the total floor area in Florida is in climate zone 1A, and the remaining 31.7% is in climate zone 2A.

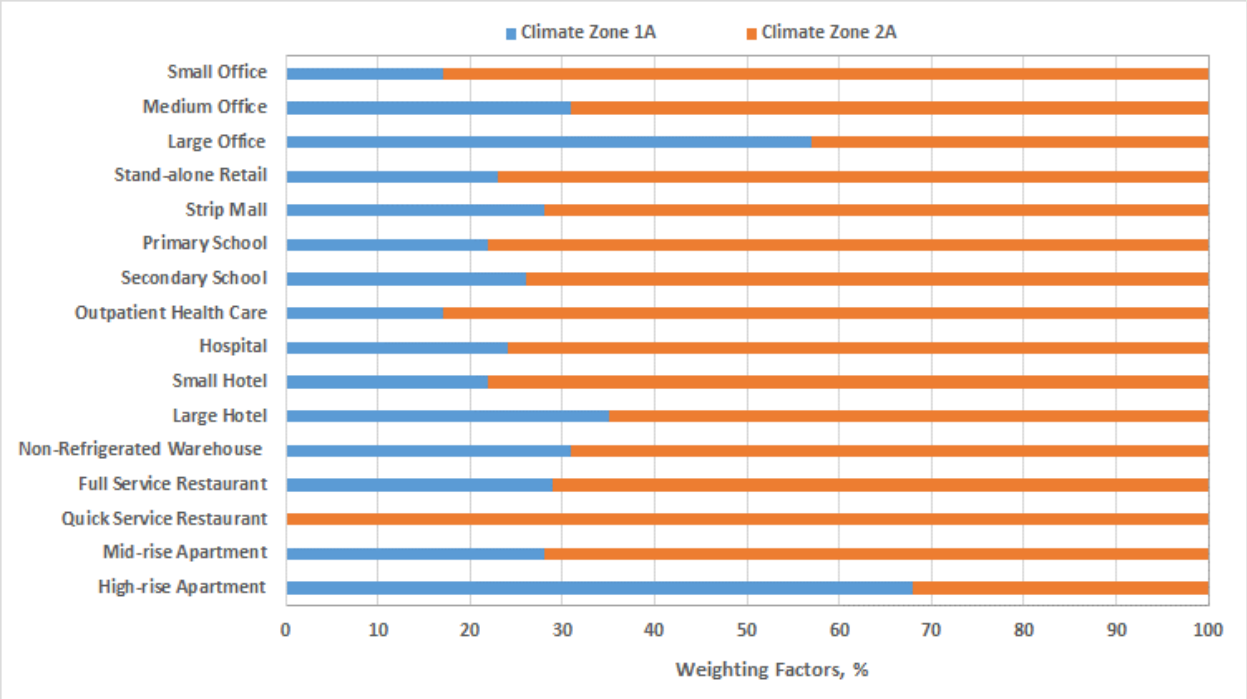

Figure D-1 Florida Floor Area Weighting Factors by Climate Zone and Building Type

Average Floor Area Weighting Factors by Building Type

The average weighting factors were used to determine an aggregate EUI across the sixteen prototype building types for the State. The weighting factors across the sixteen prototype buildings and the two climate zones sum to 1. Figure D-2 shows Florida's average weighting factors by building type (sum of climate zones 1A and 2A). The High-Rise Apartment building type represents the highest fraction of total floor area stock in Florida, and it is 20.91% of Florida commercial buildings' entire floor area stock. Warehouse and Mid-Rise apartment commercial prototype buildings are the State's second and third largest by floor area, respectively.

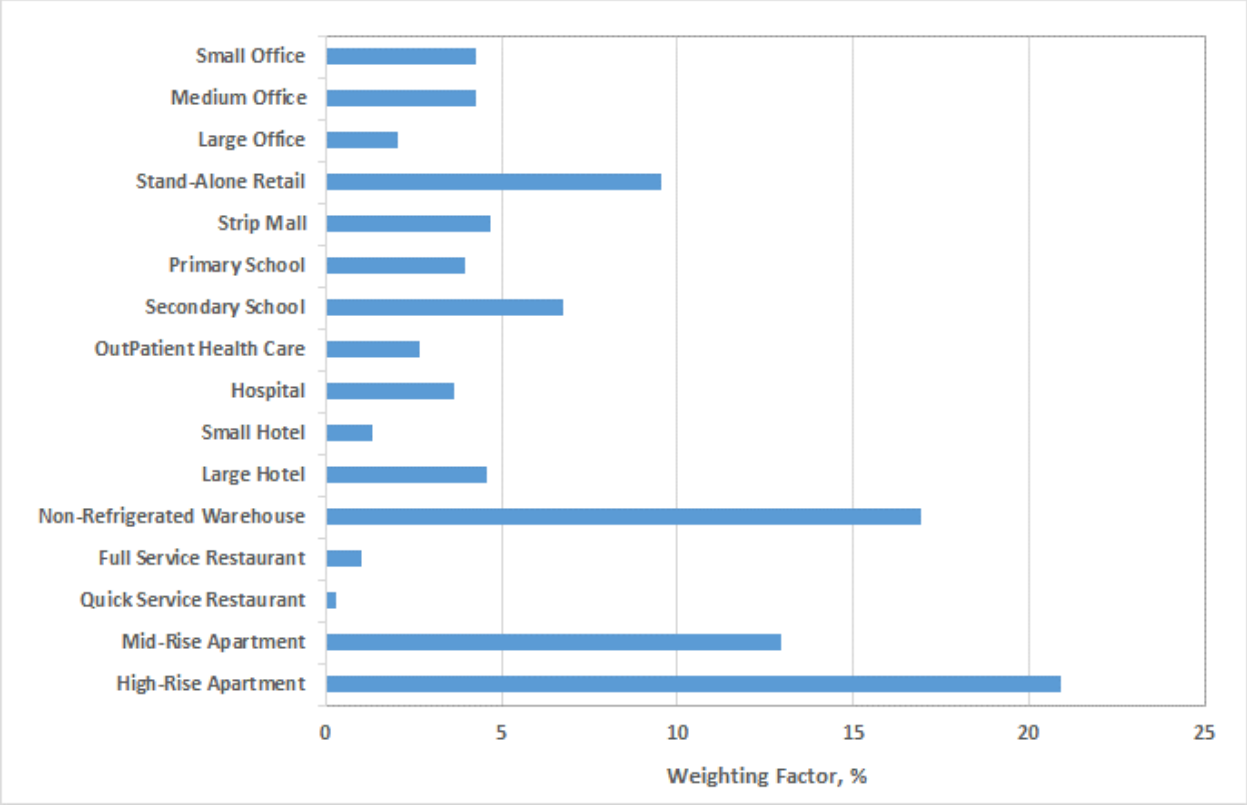

Figure D-2 Commercial Buildings Floor Area Weighting Factors by Prototype Building

The commercial building conditioned floor area distribution for the State of Florida presented here was obtained from data published by PNNL (Lei et al., 2020). Florida commercial building conditioned floor area distribution by climate zones and building type needs to be determined from recent new building construction records in the State.