FSEC Energy Research Center

UNIVERSITY OF CENTRAL FLORIDA

Comparison of the Residential Provisions of the 2023 Florida Building Code, Energy Conservation, 8th Edition with the 2024 IECC

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Executive Summary

This study provides a comparison between the residential provisions of the 8th Edition (2023) Florida Building Code, Energy Conservation (referred to here as the FBC-EC) and 2024 International Energy Conservation Code (IECC), based on approved 2021 to 2024 IECC changes. The commercial provision changes are addressed in a separate parallel report.

The first part of the study involved developing code change listings that identify changes that have potential energy and cost impacts. The second part of the study provides a stringency evaluation and cost-benefit analysis for those changes that impact energy use, to provide guidance for the upcoming 2023 FBC-EC to 2026 FBC-EC change cycle.

The code change listings part of the study was completed with the submission of the interim report on June 25, 2024 and presentation to the Energy Technical Advisory Committee (TAC) on the same date. The code change listing is included as the appendix to this report for reference.

This second part of the project has the following residential code subtasks:

a. Computer simulations using EnergyGauge® USA to estimate overall Prescriptive and Performance stringency differences between the 2023 FBC-EC and 2024 IECC
b. Summarizing the differences between Energy Rating Index (ERI) compliance requirements in the 2023 FBC-EC and the 2024 IECC
c. Cost benefit analysis of moving the residential Energy Code from the 2023 FBC-EC to 2024 IECC for those items that impact energy use.

The authors have reviewed the residential changes made for the 2024 IECC and evaluated whether each change is likely to have any impact or is just a clarification. For the measures that have a significant impact, energy analysis is included.

The 2024 IECC's most impactful residential changes are the revised version of its additional energy efficiency requirements for Prescriptive compliance and significantly decreased Performance compliance annual energy cost allowances. A 2024 FSEC study (Sonne and Vieira, 2024) found the 2023 FBC-EC Prescriptive and Performance paths to both be slightly more stringent than their 2021 IECC counterparts. Subsequent revised DOE analysis using its Prescriptive based analysis method also found the 2023 FBC-EC to at least be equivalent to the 2021 IECC. However, without adopting these 2024 IECC or similar changes, it will be difficult to continue to show Florida's code is equivalent to the latest I-code.

For the Prescriptive compliance path, the 2024 IECC Section R408.2 offers builders a number of credit measure options. Analysis indicates savings and costs for a typical single family home in Florida will vary greatly depending on which option is chosen. One option is to include upgraded water heating systems and those appear cost effective. Another option discussed in this report is improved fenestration, but in order to be cost effective, the incremental costs would need to be lower than those estimated by the authors. Other measure options include improved building envelope thermal conductance, improved heating/cooling systems, ductless systems or ductwork inside conditioned space, energy efficient appliances, or even on-site renewable

energy. Overall, cost and benefit of each improvement measure needs to be carefully considered, but the authors anticipate that cost effective movement of FBC-EC Prescriptive compliance to 2024 IECC levels should be possible.

The 2024 IECC Section R408 additional efficiency requirements and the 2021 IECC's previous version of these requirements are a departure from the historic methodologies. Whereas Prescriptive code in the past was all envelope related and had no options, now for the 2024 IECC, two or more efficiency measure credits will have to be included and communicated to the official and a number of these involve equipment, not just envelope. In addition, energy compliance software will need to add capabilities and outputs for new Prescriptive compliance measures.

For buildings complying with the Section R405 Total Building Performance Option (most current Florida projects) the 2021 IECC required either one of the additional Section R408.2 efficiency package options or that the proposed design of the building have an annual energy cost less than or equal to 95 percent of the annual energy cost of the standard reference design (instead of 100 percent). For 2024, the IECC has removed the additional efficiency package option for Performance compliance and instead requires the proposed design to have either an annual energy cost less than or equal to 80 percent of the annual energy cost of the standard reference design if a dwelling unit has one or more fuel-burning appliances for space heating or water heating, or for all other dwelling units, an annual energy cost less than or equal to 85 percent of the annual energy cost of the standard reference design. The 2024 IECC also requires that the annual energy cost of the dwelling unit be reduced by an additional 5 percent if living space above the grade plane is greater than 5,000 square feet. The 2023 FBC-EC reduced its allowed Performance proposed annual total normalized Modified Loads to less than or equal to 95 percent of the annual total loads of the standard reference design (from 100 percent in the 2020 FBC-EC). Matching the 2024 IECC Performance changes would require a significant increase in FBC-EC Performance stringency, but as shown in Table 14, cost effective options should be possible.

For buildings complying with the ERI methodology, for projects without on-site renewable power the 2024 IECC reduces the maximum ERI in Florida Climate Zones by one point, from 52 to 51, but since the 2023 FBC-EC only requires an ERI of 58, including this change would substantially increase stringency of FBC-EC ERI compliance. Recommended for equivalency with performance compliance.

Two other notable differences between the 2023 FBC-EC and 2024 IECC involve 2021 IECC added lighting control requirements-- one for interior lighting and one for exterior lighting. Based on anticipated cost effectiveness, the interior control requirement is recommended and the exterior control requirement is not recommended.

There are a number of other changes provided in the report and Appendix that address installation practices, some specific exceptions, and language meant to be clarifying. Of two

exceptions considered that were initially included in the 2021 IECC, one is recommended (attic hatch insulation of R-13 instead of ceiling level) and one is not (language allowing ductwork in exterior walls and floor cavities to be considered in conditioned space based on certain other parameters being in place).

Again, the biggest changes are the Section R408.2 additional efficiency requirements for Prescriptive compliance, and substantially reduced targets for Performance compliance. Without adopting these changes or a similar ones, it will be difficult to continue to show Florida's residential Energy Conservation code is equivalent to the latest I-code. The Florida Building Commission will need to determine if they want to update the code based on cost effectiveness

Contents

Introduction

This study provides a comparison between the residential provisions of the 8th Edition (2023) Florida Building Code, Energy Conservation (referred to here as the FBC-EC) and 2024 International Energy Conservation Code (IECC). The commercial provision changes are addressed in a separate parallel report. The first part of the study involved developing code change listings that identify changes that have potential energy and cost impacts. The second part of the study provides a stringency evaluation and cost-benefit analysis for those changes that impact energy use, to provide guidance for the upcoming 2023 FBC-EC to 2026 FBC-EC change cycle.

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Prescriptive and Performance compliance option stringency differences between the 2023 FBC-EC and 2024 IECC

EnergyGauge USA energy modeling software approved for 8th Edition (2023) FBC-EC compliance calculations was used to compare the overall Prescriptive and Performance compliance method stringency differences between the 2023 FBC-EC and 2024 IECC.

Prescriptive Compliance Simulations

The Prescriptive compliance method simulations compare 8th Edition (2023) FBC-EC compliant all electric 2,000 sq. ft., 1-story, single-family sample home with the same home that are 2024 IECC compliant in three Florida cities: Miami, Tampa and Jacksonville. Miami represents IECC Climate Zone (CZ) 1 and Tampa and Jacksonville are both in Climate Zone 2.

The 2024 IECC Prescriptive compliance additional efficiency requirements changed from the 2021 IECC energy efficiency package options to new table based energy credit requirements as provided in revised Section R408.2 and Table R408.2. Section R408.2 now requires Prescriptive compliance residential buildings to earn not less than 10 credits from not less than two efficiency measures specified in Table R408.2. Dwelling units with more than 5,000 sq. ft. of living space above grade plane are required to earn an additional five credits. For this analysis, three combinations of these credit measures were selected and added on individually to the 2024 IECC base Prescriptive simulations. A number of other combinations are possible, but these three provide relatively simple, Florida climate appropriate options:

- **Combination 1: Table R408.2 improved vertical fenestration measure R408.2.1.2(1) combined with high performance heat pump measure R408.2.2(10).** Climate Zone 1 vertical fenestration efficiency improved from Prescriptive code minimum 0.50 *U*-factor and 0.25 SHGC to 0.32 *U*-factor and 0.23 SHGC, and Climate Zone 2 vertical fenestration efficiency improved from Prescriptive code minimum 0.40 *U*-factor and 0.25 SHGC to 0.30 *U*-factor and 0.23 SHGC. Equipment efficiency increased from 14.3 SEER2 AC with electric strip heating in Climate Zone 1, and 14.3 SEER2 / 7.5 HSPF2 heat pump in Climate Zone 2 to 15.2 SEER2 / 7.8 HSPF2 heat pump in each Climate Zone.
- **Combination 2: Table R408.2 improved vertical fenestration measure R408.2.1.2(1) combined with gas-fired instantaneous water heaters measure R408.2.3(2)(a).** Vertical fenestration improved as in Combination 1. Natural gas water heater efficiency increased from base 0.627 UEF to 0.92 UEF.
- **Combination 3: Table R408.2 improved vertical fenestration measure R408.2.1.2(1) combined with electric heat pump water heaters (option 1) measure R408.2.3(3).** Vertical fenestration improved as in Combination 1. Electric water heater efficiency increased from base 0.93 UEF to 3.30 UEF HPWH.

Base Prescriptive comparison house characteristics (without additional efficiency combinations) are shown in Table 1.

Table 1. Base Prescriptive Comparison House Characteristics. Red type represents more stringent parameter.

	Climate Zone 1		Climate Zone 2	
Component	**2024 IECC**	**2023 FBC-EC**	**2024 IECC**	**2023 FBC-EC**
Conditioned floor area (ft^2)	2,000	2,000	2,000	2,000
Foundation type	SOG	SOG	SOG	SOG
Floor perimeter R-value	0	0	0	0
Wall type	Wood Frame	Wood Frame	Wood Frame	Wood Frame
Wall insul. R-value	13	13	13	13
Wall solar absorptance	0.75	0.75	0.75	0.75
Window area (ft^2)	300	300	300	300
Window U-factor	0.5	0.5	0.4	0.4
Window SHGC	0.25	0.25	0.25	0.25
Roofing material	Comp. Shingles	Comp. Shingles	Comp. Shingles	Comp. Shingles
Roof solar absorptance	0.92	0.92	0.92	0.92
Attic ventilation	Vented 1/300	Vented 1/300	Vented 1/300	Vented 1/300
Ceiling insul. R-value	30	30	38	38
Envelope ACH50 (air chng. / hour @ 50pa)	4.0	7	4.0	7
AC SEER2, Electric Heating System	14.3, Resistance	14.3, Resistance	14.3, Resistance	14.3, Heat Pump HSPF2 7.5
Natural gas furnace AFUE	0.80	0.80	0.80	0.80
AHU location	Garage	Garage	Garage	Garage

Duct insul. R-value	8	8	8	8
Duct location	Vented Attic	Vented Attic	Vented Attic	Vented Attic
Duct leakage	Qn_{out}= 0.04	Qn_{out}= 0.04	Qn_{out}= 0.04	Qn_{out}= 0.04
Heating & Cooling set points (°F)	72 & 75	72 & 75	72 & 75	72 & 75
# of bedrooms	3	3	3	3
Water heater size (gallons)	50	50	50	50
Water heater UEF (Electric)	0.93	0.93	0.93	0.93
Water heater UEF (Gas)	0.627	0.627	0.627	0.627
Water heater location	Garage	Garage	Garage	Garage
Water heater heat trap	No	Yes	No	Yes
High Efficacy Lighting (%)	100	100	100	100

All houses were modeled with wood frame walls. Since the 2024 IECC and 2023 FBC-EC both use the same wall reference *U*-factors, there should be no appreciable differences in results for mass walls.

After each Prescriptive minimum house was entered in EnergyGauge USA, annual simulations were run to estimate cooling, heating, and water heating energy use. Table 2 shows the simulation results for the 1-story sample homes, with electric space and water heating in each of the three modeled cities. Note that Table 2 results are *prior to* adding the required Section R408 efficiency options. Positive differences between the FBC-EC and IECC energy use values mean that the 2023 FBC-EC is less stringent than the 2024 IECC, while negative differences mean the FBC-EC is more stringent than the IECC.

Table 2. Prescriptive Comparison Annual Energy Use Estimates for 1-story sample homes with Electric Heating and Water Heating. IECC has electric resistance space heating in all climates whereas 2023 FBC-EC has heat pump in Tampa and Jacksonville. All 2024 IECC buildings are without any required efficiency packages.

CITY	Simulated Building	Cooling	Heating	Water Heating	Total	% of FBC-EC base
	Units	kWh/yr	kWh/yr	kWh/yr	kWh/yr	%
MIAMI	2023 FBC-EC	5407	313	1329	7049	
	2024 IECC	5136	256	1356	6748	
	Diff b/t FBC-EC & 2024 IECC	271	57	-27	301	4.3%
TAMPA	2023 FBC-EC	4057	497	1551	6253.4	
	2024 IECC	3863	1140	1580	6690.4	
	Diff b/t FBC-EC & 2024 IECC	194	-643	-29	-478	-7.8%
JACKSONVILLE	2023 FBC-EC	2756	1455	1794	6005	
	2024 IECC	2618	3308	1825	7971.3	
	Diff b/t FBC-EC & 2024 IECC	138	-1853	-31	-1746	-29.1%

Table 2 shows that for Prescriptive compliance, the 2023 FBC-EC is consistently somewhat less efficient for cooling than the 2024 IECC in all three cities as the 2024 IECC has stricter air exchange rates. However, the tables show that the 2023 FBC-EC uses less heat for electric heating in Climate Zone 2 as the IECC still allows electric resistance heating for all houses whereas the FBC-EC does not allow it for Prescriptive code compliance in Central and North Florida. The FBC-EC required water heating trap provides slight water heating energy savings relative to the IECC. All the prescriptive simulation runs for FBC-EC and IECC used the 2023 FBC-EC method of determining gallons per day of hot water use.

If the homes are heated with natural gas or other fossil fuel the efficiency requirement for space heating remains the same between the FBC-EC and IECC. In those cases the IECC Prescriptive combined cooling, heating and water heating energy use would be less than that of the FBC-EC as indicated in Table 3. Table 3 results are again *prior to* adding the required Section R408 efficiency options.

Table 3. Prescriptive Comparison Annual Energy Use Estimates for 1-story sample homes with Natural Gas Heating and Water Heating. Space and water heating efficiency the same for IECC and FBC-EC gas systems. All 2024 IECC buildings are without any required efficiency packages.

CITY	Simulated Building	Cooling	Heating	Water Heating	Total	% of FBC-EC base
	Units	kWh/yr	Therms/yr	Therms/yr	MBtus/yr	
MIAMI	2023 FBC-EC	5491	14.3	75.5	27.72	
	2024 IECC	5222	11.8	78.8	26.88	
	Diff b/t FBC-EC & 2024 IECC	269	2.5	-3.3	0.84	3.0%
TAMPA	2023 FBC-EC	4180	61.7	86.7	29.11	
	2024 IECC	4002	51.5	90.3	27.84	
	Diff b/t FBC-EC & 2024 IECC	178	10.2	-3.6	1.27	4.4%
JACKSONVILLE	2023 FBC-EC	2884	171.4	99.0	36.88	
	2024 IECC	2759	148.3	102.8	34.53	
	Diff b/t FBC-EC & 2024 IECC	125	23.1	-3.8	2.36	6.4%

Required IECC 2024 Efficiency Packages

As discussed above, the Prescriptive IECC for 2024 again goes beyond the simple envelope requirement table and list of mandatories by now including new table based energy credit requirements as provided in revised Section R408.2. At least two credit measures in this table must be used. Also as discussed above, three combinations of these credit measures were selected and added on to the 2024 IECC base Prescriptive simulations reported in Table 2 and simulated for Tampa. A number of other combinations are possible, but these three provide relatively simple, Florida climate appropriate options. Table 4 shows the results of these simulations which represent the 2024 IECC with additional efficiency options vs. the 2023 FBC-EC.

Table 4. 2023 FBC-EC Prescriptive homes vs. 2024 IECC Prescriptive homes with selected Section 408.2 energy credit combinations.

Tampa Single Story Prescriptive IECC includes parameters shown		Cooling (kWh/yr)	Heating	Wtr Htg	Space & WH Units	Total Mbtu	% of FBC base
1) R408.2.1.2 + R408.2.2(10)							
Improved Fenestration and	2023 FBC-EC	4057	497	1551	kWh/yr	20.8	
15.2 SEER2 and 7.8 HSPF2 HP	2024 IECC w/ Credits	3568	356	1580	kWh/yr	18.8	
	Diff b/t FBC-EC & IECC	489	141	-29	kWh/yr	2.1	9.8%
2) R408.2.1.2 + R408.2.3(2)							
Improved Fenestration and	2023 FBC-EC	4180	61.7	86.7	Therms/yr	29.1	
Gas instant. WH UEF = 0.92	2024 IECC w/ Credits	3895	44.2	52.9	Therms/yr	23.0	
	Diff b/t FBC-EC & IECC	285	17.5	33.8	Therms/yr	6.1	21.0%
3) R408.2.1.2 + R408.2.3(3)							
Improved Fenestration and	2023 FBC-EC	4057	497	1551	kWh/yr	20.8	
Heat Pump WH UEF = 3.30	2024 IECC w/ Credits	3746	976	638	kWh/yr	18.3	
	Diff b/t FBC-EC & IECC	311	-479	913	kWh/yr	2.5	12.2%

Table 5 provides the same Section R408.2 additional credit combination simulation runs as in Table 4 except in this case each combination is added to the 2023 FBC-EC "baseline" Prescriptive home to show the impact of just each credit combination instead of showing the impact of the credit combination together with the effect of other changes between the 2023 FBC-EC and 2024 IECC.

Table 5. 2023 FBC-EC Prescriptive homes with and without selected 2024 IECC Section R408.2 energy credit combinations.

Tampa Single Story Prescriptive FBC-EC includes parameters shown		Cooling (kWh/yr)	Heating	Wtr Htg	Space & WH Units	Total Mbtu	% of FBC base
1) R408.2.1.2 + R408.2.2(10)							
Improved Fenestration and	2023 FBC-EC	4057	497	1551	kWh/yr	20.8	
15.2 SEER2 and 7.8 HSPF2 HP	2023 FBC-EC w/ IECC credits	3749	431	1551	kWh/yr	19.6	
	Difference	308	66	0	kWh/yr	1.3	6.1%
2) R408.2.1.2 + R408.2.3(2)							
Improved Fenestration and	2023 FBC-EC	4180	61.7	86.7	Therms/yr	29.1	
Gas instant. WH UEF = 0.92	2023 FBC-EC w/ IECC credits	4071	54.1	52.9	Therms/yr	24.6	
	Difference	109	7.6	33.8	Therms/yr	4.5	15.5%
3) R408.2.1.2 + R408.2.3(3)							
Improved Fenestration and	2023 FBC-EC	4057	497	1551	kWh/yr	20.8	
Heat Pump WH UEF = 3.30	2023 FBC-EC w/ IECC credits	3939	444	608	kWh/yr	17.0	
	Difference	118	53	943	kWh/yr	3.8	18.2%

The Table 4 2024 IECC with Section R408.2 energy credit homes show energy savings relative to the 2023 FBC-EC in Tampa ranging from 9.8% to 21%. Any of the three options may be popular for those already complying by the prescriptive method, all requiring a straightforward window improvement upgrade with choice of established equipment upgrade. Many windows and doors sold in Florida meet the 0.30 *U*-factor and 0.23 SHGC criteria, and as discussed below, Florida alternatives may be possible.

Combining improved fenestration with one of the improved water heater options may be popular. Changing from the natural gas baseline water heater to a tankless gas water heater allows

compliance and reduces the water heating estimated energy use in the sample Tampa project by 33.8 Therms/yr. Another option is to combine improved fenestration with a heat pump water heater instead of electric resistance. Although the federal minimum requires heat pump water heaters when electric units have capacity greater than 55-gallons, most homes are installed with 50-gallon or smaller units. Savings estimated for a 50-gallon heat pump water heater were 943 kWh/yr.

If the additional Prescriptive energy credit requirements are adopted in Florida, additional compliance features will need to be verified and inspected for Prescriptive compliance as the builder will have to indicate which two (or more) Section R408.2 credits they are using. Energy compliance software will need to add capabilities/outputs for new Prescriptive compliance measures.

Estimating if the FBC-EC will meet the stringency of the IECC becomes slightly more difficult as ideally one would need to predict what percentage of builders will use which additional efficiency credits to comply.

Prescriptive Compliance Summary: 2024 IECC Prescriptive stringency increases are recommended as they save energy and will allow Florida to maintain equivalency with IECC.

Individual Code Changes

There are also a number of changes between these two codes that may apply to a very limited number of projects as opposed to the majority or typical project. It can also be useful to individually analyze some of the more widely required changes. A number of these changes that are impactful are either discussed or analyzed via individual simulations below. To determine the value of the modification via simulation, a single change was made to a base compliance all-electric Tampa single family 2,000 sq. ft., 1-story, Prescriptive house and simulated.

Individual Code Change #1: 2018 to 2021 ICC code change RE33-19 increased the 2021 IECC Prescriptive Climate Zone 2 minimum ceiling insulation requirement from R-38 to R-49. This change was reversed in the 2024 IECC, again aligning this Prescriptive ceiling insulation requirement between the FBC-EC and IECC. ***Summary: No need for change to FBC.***

Individual Code Change #2: 2021 to 2024 ICC code change REDI-204-22 reduces IECC Prescriptive compliance skylight SHGC limits from 0.30 to 0.28 in Climate Zones 1 and 2, and change RED1-199-22 and related changes reduce maximum allowed skylight *U*-factors from 0.75 to 0.60 for Climate Zone 1 and from 0.65 to 0.60 for Climate Zone 2. The 2023 FBC-EC Prescriptive skylight SHGC and *U*-factor requirements match those of the 2021 IECC. Simulation results for this change for a sample home with 32 square feet of skylights are shown in Table 6. The combined heating and cooling difference in Tampa for this sample house is 7 kWh/yr.

Table 6. Individual Code Change #2: Reduced Skylight SHGC and *U*-factor.

Reduced Skylight SHGC and *U*-factor Tampa Single Story 2000 ft^2 home	Cooling (kWh/yr)	Heating	Wtr Htg	Space & WH Units	Total Mbtu	% of FBC base
Base: 0.30 SHGC & 0.65 *U*-factor	4137	530	1551	kWh/yr	21.2	
0.28 SHGC & 0.60 *U*-factor	4132	528	1551	kWh/yr	21.2	
Dif b/t base & code change	5	2	0	kWh/yr	0.0	0.1%

Summary: Neutral. Would only slightly impact energy use.

Individual Code Change #3: previously reported 2018 to 2021 ICC code change RE44-19 adds baffle installation language to mandatory IECC Section R402.2.3 Eave Baffle to maximize space for attic insulation coverage and prevent ventilation air bypass. This change was modeled with a Tampa base code efficiency R-38 vented attic project by changing the *R*-value and area of the insulation over the eave as shown in Table 6. Simulation results are shown in Table 7. The combined heating and cooling difference in Tampa is 27 kWh/yr.

Table 7. Individual Code Change #3: Mandatory eave baffles.

R402.2.3 mandatory baffle Tampa Single Story 2000 ft^2 home	Cooling (kWh/yr)	Heating	Wtr Htg	Space & WH Units	Total Mbtu	% of FBC base
R38 1525 ft^2 and R16.3 for 475 ft^2	4214	581	1552	kWh/yr	21.7	
R38 1561 ft^2 and R18.8 for 439 ft^2	4197	571	1552	kWh/yr	21.6	
Dif b/t base & code change	17	10	0	kWh/yr	0.1	0.4%

Summary: About 0.4 % savings possible, change represents best practice.

Individual Code Change #4: previously reported 2018 to 2021 ICC code change RE47-19 provides IECC Section R402.2.4 insulation level exceptions in Climate Zones 0 through 4 for horizontal pull-down stair type access hatches that provide access from conditioned space to unconditioned space. This change was modeled by comparing an R-38 vented attic project with the same project that had 8 square feet of R-13 attic insulation to represent the attic access hatch exception. Simulation results are shown in Table 8. This small amount of attic space exception results in 1 kWh of additional cooling.

Table 8. Individual Code Change #4: R-38 vented attic vs. R-38 vented attic with 8 sq. ft. at R-13.

R402.2.4 exception for attic hatch Tampa Single Story 2000 ft^2 home	Cooling (kWh/yr)	Heating	Wtr Htg	Space & WH Units	Total Mbtu	% of FBC base
Base FBC	4156	546	1551	kWh/yr	21.3	
R38 1992 ft^2 and R13 for 8 ft^2	4157	546	1551	kWh/yr	21.3	
Dif b/t base & code change	-1	0	0	kWh/yr	0.0	0.0%

Summary: Practical exception without any real energy cost– recommend approval of exception.

Individual Code Change #5: previously reported 2018 to 2021 ICC code change RE49-19 reorganizes attic hatch and door requirements creating then new Section R402.2.4.1 which

expands requirements regarding retaining attic insulation to include "from higher to lower sections of the attic and from attics covering conditioned spaces to unconditioned spaces." This is a clarification and represents best current practice and thus was not simulated. ***Summary: Clarifying language to assure installations are as intended. Recommend approval.***

Individual Code Change #6: previously reported 2018 to 2021 ICC code change RE88-19 added an alternative air leakage limit for attached single and multifamily building dwelling units and buildings or dwelling units that are 1,500 square feet or smaller. A 2024 ICC code change, RED1-251-22, decreases the alternative leakage limit somewhat; instead of the standard 2024 IECC requirement of 4 ACH50, these homes can comply with leakage rates of 0.27 cfm/sq. ft. of dwelling unit enclosure area tested at 50 Pascals (lowered from the 2018 IECC's limit of 0.30 cfm/sq. ft.). This requirement would still be slightly more stringent than Florida's 7 ACH50 limit. ***Summary: Unless FBC-EC is changing their air leakage limit, no benefit from change. Not recommended.***

Individual Code Change #7: previously reported 2018 to 2021 ICC code change RE111-19 changes the IECC's *Ductwork located outside of conditioned space* section requirement (Section R403.3.1 in 2021 IECC and R403.3.3 in 2024 IECC) from Prescriptive to Mandatory, so combined with RE109-19, in part means ducts 3 inches in diameter and larger that are located outside of conditioned space must be insulated to R-8 for all compliance options, versus the 2018 IECC which only required Prescriptive compliance attic ducts 3 inches in diameter and larger in attics to be insulated to R-8. However, the 2023 FBC-EC already requires R-8 for attic ductwork for Prescriptive compliance, and the Performance (Section R405) standard reference design in the 2020 and 2023 FBC-EC models ductwork with a DSE in the thermal envelope, so there should be no estimated energy use change for most homes which either have ductwork in the conditioned space or in attics. Very small energy savings may be expected in homes with ductwork running in crawlspaces or basements if this change is adopted in Florida. ***Summary: Neutral. Would rarely impact a Florida home and then only slightly impact energy use.***

Individual Code Change #8: previously reported 2018 to 2021 ICC code change RE109-19 clarifies existing IECC Section R403.3.2 (now Section R403.3.4) option that allows ductwork to be considered as being inside conditioned space, and added two new options-- for ductwork in floor cavities and within exterior walls. The 2024 IECC revises the section somewhat, including adding that ductwork in these building assemblies are not to be considered as being completely inside conditioned space for Section R405 or R406 compliance. For ductwork to truly behave as being in conditioned space requires an effective air barrier on the exterior wall and floors over unconditioned space. Without specific testing of these spaces it is questionable that these locations will consistently behave like ducts in fully conditioned space. ***Summary: Not recommended as unlikely spaces will behave as proponent intends.***

Individual Code Change #9: 2021 to 2024 ICC code change RED1-285-22 revises the IECC's duct system leakage limits to table-based requirements in new Table R403.3.8, broken out by area served, number of ducted returns and equipment and duct configuration. The 2021 IECC included leakage limits on ducts and air handlers that are located entirely within the building thermal envelope; the 2024 IECC continues this requirement except changes the location from

building thermal envelope to conditioned space. The 2023 FBC-EC does not require testing for Prescriptive projects in which all ducts and air handlers are within the thermal envelope, so this change would require testing in all of these cases and would likely require additional duct sealing in some cases. ***Summary: Recommended. Would assure HVAC system was not going to cause issues by having undue leakage to inside or outside.***

Individual Code Change #10: previously discussed 2018 to 2021 ICC code change RE134-19 removes the IECC efficacy exception for air handlers that are integral to HVAC equipment used to provide whole-house mechanical ventilation and adds efficacy requirement to Table R403.6.2 for air handlers that are integral to HVAC equipment used to provide whole-house mechanical ventilation. The 2018 IECC had only required electronically commutated motors for such air handlers while the 2021 IECC and now 2024 IECC require them to have a minimum efficacy of 1.2 cfm/watt. ECM motors likely have overall efficacies of 1.2 cfm/watt or greater, so it is not expected that this change would have an energy effect. ***Summary: Recommended as it provides a limit to systems that might run often.***

Individual Code Change #11: 2021 to 2024 ICC code change REPI-89-21 increased the IECC Section R403.5.2 hot water pipe insulation requirement from R3 to 1" and made pipe insulation for the specified locations mandatory for all compliance paths. ***Summary: While the 2024 IECC 1" hot water pipe insulation requirement would result in higher R-value insulation being used, the additional energy savings would be minimal.***

Individual Code Change #12: previously reported 2018 to 2021 ICC code change RE130-19 created a new IECC Section R403.6.3 that requires that mechanical ventilation systems be tested and verified to provide the minimum ventilation flow rates required by Section R403.6, with an exception for certain kitchen range hoods. Where required by the code official, the testing must be conducted by an approved third party. The 2024 IECC retains this ventilation system testing section, adding an exception for ventilation systems with integrated diagnostic tools and an interface to communicate the airflow rate, and provides for unit sampling in specified cases.

This change would increase compliance costs slightly in applicable cases. While verification of minimum mechanical ventilation flow rates is seen by the authors as an appropriate and even needed step (see FBC sponsored ventilation study[1]), this is not something to be modeled for energy, but rather an outdoor air ventilation requirement. ***Summary: Recommended based on issues found with installed systems in previous Florida Building Commission funded research projects.***

Individual Code Change #13: previously reported 2018 to 2021 ICC code change RE145-19 changed permanent lighting high efficacy requirement in IECC Section R404.1 from 90% of lighting to all lighting. This change has almost no compliance cost due to the low price of high efficacy lighting. The 2024 IECC revises the section language and adds specialty lighting exceptions, but maintains the same general requirement. The 2023 FBC-EC increased its high

[1] https://publications.energyresearch.ucf.edu/wp-content/uploads/2018/06/FSEC-CR-2002-15.pdf

efficacy lighting requirement from 90% to 100% with an exception for kitchen appliances, so both codes are now almost fully in alignment. ***Summary: No need for change to FBC.***

Individual Code Change #14: The residential 2021 IECC references commercial Section C405.5 exterior lighting requirements with exceptions including detached one- and two-family dwellings and townhouses. The 2024 IECC replaces the reference to Section C405.5 with revised Section R404.1.1 and new Sections R401.1.2 through R404.1.4 which directly provide the requirements that are applicable to residential dwellings. Almost all power allowances are reduced, but exceptions remain for detached one- and two-family dwellings and townhouses**.** ***Summary: May save on lighting in applicable cases.***

Individual Code Change #15: previously reported 2018 to 2021 ICC code change RE145-19 created mandatory IECC Section R404.2 Interior Lighting Controls which, with exceptions for bathrooms, hallways, exterior and safety lighting, requires either a dimmer, occupant sensor or other control built into the fixture for permanently installed lighting fixtures. The 2024 IECC revises this requirement, stipulating additional control details, breaking the control requirements into *Habitable spaces* and *Specific locations* sections, and no longer excepts bathrooms and hallways. If we were to assume this code change saved 12% of the base interior lighting load of 855 kWh/yr that would represent 102.6 kWh per year of saving. We would expect about a 3 kWh proportional reduction in cooling energy use and perhaps a 0.5 kWh increase in heating for a total savings of around 106.1 kWh/year. ***Summary: Saves on lighting and cooling and is cost effective.***

Individual Code Change #16: previously reported 2018 to 2021 ICC code change RE149-19 created the IECC's Prescriptive Section R404.3 *Exterior lighting controls* that requires specified automatic shut off controls where total permanent installed exterior lighting power is greater than 30 watts. Other than a section reorganization that specifies the controls are for individual dwelling units, this section is not changed in the 2024 IECC.

A 2015 Rensselaer Polytechnic Institute Lighting Patterns for Homes site estimates average daily single-family exterior lighting on hours of 4 hours per day, and 3 on hours if dusk to dawn controllers are used.[2] RESNET methodology would indicate 65 kWh per year are used for exterior lighting on a home with 90% high efficacy fixtures. If we apply an average 25% savings to that, this measure would save 16.25 kWh per year. ***Summary: Saves on lighting energy use but likely not cost effective.***

Individual Code Change #17: 2018 to 2021 ICC code change RE151-19 to IECC Section R405.2 Performance-Based Compliance requires Performance compliance project envelope efficiency to meet or exceed residential 2009 IECC Table 402.1.1 or Table 402.1.3. Stemming from code change RED1-27-22, the 2024 IECC instead requires that the proposed total building thermal envelope thermal conductance (TC) be less than or equal to the required total building thermal envelope TC using the prescriptive *U*-factors and *F*-factors from Table R402.1.2 multiplied by 1.08 in the two Florida Climate Zones. In addition, the 2024 IECC area-weighted

[2] https://www.lrc.rpi.edu/patternbook/resources/hours_of_use.asp

maximum fenestration SHGC permitted in the Florida Climate Zones was reduced from 0.40 to 0.30.

While these minimum envelope efficiencies are largely more stringent than what the 2023 FBC-EC allows for Performance compliance, since the performance method trades off one energy feature for another there would be no change in expected energy use for a home meeting the minimum performance compliance with or without this change. There may be some persistence of the energy savings though since building envelope improvements may last for 50 years where current equipment trade-offs do not last that long. ***Summary: No short term energy impact.***

Individual Code Change #18: previously reported 2018 to 2021 ICC code change RE192-19 reduced the IECC Table R406.5 maximum Energy Rating Index (ERI) for all Climate Zones, reducing the maximum IECC Climate Zones 1 and 2 ERI from 57 to 52. That change was not adopted in Florida. Now code change REPI-126-21 reduces the 2024 IECC maximum IECC in Climate Zones 1 and 2 ERI from 52 to 51. If adopted in Florida, the maximum FBC-EC ERI would be reduced from 58 to 51. Simulation results comparing an ERI of 52 with an ERI of 51 (reduced via slightly higher efficiency heat pump), and comparing an ERI of 58 with an ERI of 51 are shown in Table 9a and 9b, respectively. The combined heating, cooling and water heating difference in Tampa is 113 kWh/yr for the ERI 52 to 51 change, and 1,777 kWh going from an ERI of 58 to 51.

Table 9a. Individual Code Change #18. Energy Rating Index = 52 to 51.

Energy Rating Index Reduction	Cooling (kWh/yr)	Heating	Wtr Htg	Space & WH Units	Total Mbtu	% of FBC base
ERI 52 (14.3 / 7.5 HP, HPWH)	3579	469	672	kWh/yr	16.1	
ERI 51 (14.8 / 7.8 HP, HPWH)	3479	456	672	kWh/yr	15.7	
Diff. ERI 52 - 51	100	13	0	kWh/yr	0.4	2.4%

Table 9b. Individual Code Change #18. Energy Rating Index = 58 to 51.

Energy Rating Index Reduction	Cooling (kWh/yr)	Heating	Wtr Htg	Space & WH Units	Total Mbtu	% of FBC base
ERI 58 (14.3 / 7.5 HP, Duct Qn_{out} = 0.08)	3937	501	1946	kWh/yr	21.8	
ERI 51 (14.8 / 7.8 HP, HPWH)	3479	456	672	kWh/yr	15.7	
Diff. ERI 58 - 51	458	45	1274	kWh/yr	6.1	27.8%

Summary: Saves energy although an ERI of 52 or 51 is likely significantly more stringent than other FBC-EC compliance options.

Individual Code Change #19: 2021 to 2024 ICC code change REPI-144-21 adds new IECC Section R502.2.5 *Additional energy efficiency credit requirements for additions* to listing of sections with which Prescriptive compliance additions must comply, requiring not less than five credits for specified additions. Exceptions include if the addition increases the total conditioned area by less than 25 percent. Table 10 shows the combined heating, cooling, and water heating energy use difference between a base efficiency 750 square foot Tampa addition and the same addition with 2024 IECC measure R408.2.2(10) (high performance heat pump with electric

resistance backup (Option 1)), which provides 12 credits in Climate Zone 2. While again only five credits are required for additions, this 12 credit heat pump option may be of the lowest cost means of attaining the 5 credits of likely to be used measures. Many additions requiring additional cooling may be cooled and heated with a mini-split system, many of which meet the required efficiency level to receive the credits.

Table 10. Individual Code Change #19. Credits for additions.

750 sq ft. Addition	Cooling (kWh/yr)	Heating	Wtr Htg	Space & WH Units	Total Mbtu	% of FBC base
Base 2023 FBC-EC	1598	170	0	kWh/yr	6.0	
With 5 Credits	1519	166	0	kWh/yr	5.8	
Diff.	79	4	0	kWh/yr	0.3	4.7%

Summary: Change will save energy in applicable cases.

Performance Compliance Simulations

The Performance compliance stringency comparison includes three sample homes: one (1) 1-story single family home, one (1) 2-story single-family home, and one (1) multi-family home. Additional runs with homes with skylights were included in the scope of work, but the 2023 FBC-EC went back to "None" for its skylight reference area, matching the 2021 and 2024 IECC. Performance comparisons were made in the same three cities as the Prescriptive comparisons: Miami, Tampa and Jacksonville. These houses vary from the ones used for the Prescriptive compliance comparison in that instead of using Prescriptive minimum component and equipment efficiencies, they use "Standard Reference Design" component and equipment efficiencies (discussed below).

For the 2023 edition, FBC-EC Performance compliance requires that annual total normalized Modified Loads be less than or equal to 95 percent of the annual total loads of the Standard Reference Design (verses equal to the total Standard Reference Design loads for the 2020 FBC-EC).

Then in a change from the 2021 IECC, 2024 IECC Performance compliance no longer provides a choice between Section R408 additional efficiency package or the proposed design to have an annual energy cost less than or equal to 95 percent of the annual energy cost of the standard reference design. Instead 2024 IECC Performance compliance requires one of the following more significant energy cost reductions:

- Dwelling units with one or more fuel-burning appliances for space heating, water heating, or both must have an annual energy cost less than or equal to 80 percent of the annual energy cost of the Standard Reference Design
- All other dwelling units must have a Proposed Design annual energy cost less than or equal to 85 percent of the annual energy cost of the Standard Reference Design.

The 2024 IECC also requires that for dwelling units with greater than 5,000 square feet of living space above grade plane, the annual energy cost of the dwelling unit be reduced by an additional 5 percent of annual energy cost of the Standard Reference Design.

The parallel FBC-EC Performance criteria to "energy cost" is "total loads"; so for Florida compliance, meeting this option's requirement would mean an e-Ratio of 0.80 or 0.85 for projects with the specified fuel-burning appliances or ones without these appliances, respectively, for dwelling units up to 5,000 square feet.

Per Section R405.2, 2024 IECC Performance compliance also requires the proposed total building thermal envelope thermal conductance (TC) be less than or equal to the required total building thermal envelope TC using the prescriptive *U*-factors and *F*-factors from Table R402.1.2 multiplied by 1.08 in the two Florida Climate Zones. In addition, the area-weighted maximum fenestration SHGC permitted in the Florida Climate Zones is 0.30. No changes to the IECC houses were required to meet these two new 2024 IECC requirements.

Performance house characteristics are shown in Table 11.

Table 11. Performance Comparison House Characteristics. Red type indicates more stringent parameter.

	Climate Zone 1		Climate Zone 2	
Component	**2024 IECC**	**2023 FBC-EC**	**2024 IECC**	**2023 FBC-EC**
Conditioned floor area (ft^2) (one story / two story / multi)	2,000 / 2,400 / 1,200	2,000 / 2,400 / 1.200	2,000 / 2,400 / 1,200	2,000 / 2,400 / 1,200
Foundation type (one and two story / multi)	SOG / Over other Space	SOG / Over other Space	SOG / Over other Space	SOG / Over other Space
Floor perimeter R-value	0	0	0	0
Wall type	Wood Frame	Wood Frame	Wood Frame	Wood Frame
Wall framing fraction	0.230	0.230	0.230	0.230
Wall *U*-factor	0.084	0.084	0.084	0.084
Wall solar absorptance	0.75	0.75	0.75	0.75
Common Wall Area (multi-family only)	720	720	720	720
Window area (ft^2) (one story / two story / multi)	300 / 360 / 72	300 / 360 / 72	300 / 360 / 72	300 / 360 / 72
Window *U*-factor	0.5	0.5	0.4	0.4
Window SHGC	0.25	0.25	0.25	0.25
Roofing material	Comp. Shingles	Comp. Shingles	Comp. Shingles	Comp. Shingles
Roof solar absorptance	0.75	0.75	0.75	0.75
Attic ventilation	Vented 1/300	Vented 1/300	Vented 1/300	Vented 1/300
Ceiling framing fraction	0.110	0.110	0.110	0.110
Ceiling *U*-factor	0.035	0.035	0.030	0.030
Envelope ACH50 (air chng/hr @ 50pa)	4.0	7	4.0	7
HP SEER2 / HSPF2	14.3 / 7.5	14.3 / 7.5	14.3 / 7.5	14.3 / 7.5
AHU location (one story and two story / multi)	Garage / Cond. Space	Cond. Space / Cond. Space	Garage / Cond. Space	Cond. Space / Cond. Space
Duct insul. R-value (supply / return)	8 / 8	6 / 6	8 / 8	6 / 6
Duct location (one story / two story and multi)	Attic / 75% Attic, 25% Cond.	Cond. Space / Cond. Space	Attic / 75% Attic, 25% Cond.	Cond. Space / Cond. Space

Duct leakage	Qn_{out}= 0.04	DSE = 0.88	Qn_{out}= 0.04	DSE = 0.88
Heating / Cooling set points (°F)	72 / 75	72 / 75	72 / 75	72 / 75
# of bedrooms (one story / two story / multi)	3 / 4 / 2	3 / 4 / 2	3 / 4 / 2	3 / 4 / 2
Water heater size (gallons)	50	50	50	50
Hot water use: 3 bdrm. / 4 / 2 bdrm. (gal/day)*	40.6 / 48.5 / 32.5	40.6 / 48.5 / 32.5	Tampa: 42.9 / 51.2 / 34.3 Jax: 45.0 / 53.7 / 36.0	Tampa: 42.9 / 51.2 / 34.3 Jax: 45.0 / 53.7 / 36.0
Water heater UEF (Elect)	0.93	0.93	0.93	0.93
Water heater location (1 and 2 story / multi)	Garage / Cond. space	Garage / Cond. space	Garage / Cond. space	Garage / Cond. space
Water heater heat trap	No	Yes	No	Yes
Hot water pipe insulation**	Yes	No	Yes	No
High efficacy lighting	100%	100%	100%	100%

* While the 2024 IECC reference hot water use is higher than that of the 2023 FBC-EC reference house, the 2023 FBC-EC values were used for both FBC-EC and IECC simulations so what is really a non-stringency difference does not affect results. Similarly, the 2024 IECC uses a reference hot water temperature of 120°F while the FBC-EC uses 125°F, but the same 125°F temperature was used for both simulations as this again is a non-stringency difference.

**R3 hot water pipe insulation was used for IECC hot water simulations; while the 2024 IECC 1" hot water pipe insulation requirement would result in higher *R*-value insulation being used, the additional energy savings would be minimal.

All houses were again modeled with wood frame walls. Since the 2024 IECC and 2023 FBC-EC both use the same wall reference *U*-factors, there should be no appreciable differences in results for mass walls.

After each house was entered in EnergyGauge USA, annual simulations were run to estimate cooling, heating and water heating energy use for the minimally compliant 2024 IECC house and minimally compliant 2023 FBC-EC house. These houses start with the reference house (a house that has the same conditioned floor, wall and ceiling areas as a proposed project house, but with other characteristics such as window area and efficiency levels stipulated by the code's rule set[3]), with modifications made to meet the minimum annual energy cost (IECC) and annual total load (FBC-EC) requirements.

In the 2021 IECC, the reference duct location was stipulated as being the same as the proposed design. The 2024 IECC varies the location of the reference duct location by foundation type and number of stories. For slab on grade floors, it stipulates reference ducts be located 100 percent in unconditioned attic for one-story buildings, and 75 percent in unconditioned attic and 25 percent inside conditioned space for all other. IECC home ducts were located accordingly, with one story homes having 100 percent ducts in the attic and two story homes and multi-family units (multi-family units being top floor units with attic space directly above), having 75 percent ducts in the attic and 25 percent ducts in conditioned space.

[3] See Section R405 and Table R405.4.2(1) of the 2024 IECC and Section R405 and Table R405.5.2(1) of the 2023 FBC-EC for more information on reference houses.

Table 12 shows the estimated space heating, cooling, water heating and total energy use for the 2,000 sq. ft. one story house in each of the three modeled cities. Table 13 shows the same results for the 2,400 sq. ft. two story house, and Table 14 for the multi-family house. Positive differences between the FBC-EC and IECC energy use values again mean that the 2023 FBC-EC is less stringent than the 2024 IECC while negative differences mean the FBC-EC is more stringent than the IECC.

Table 12. One story house Performance comparison annual energy use estimates.

City		Cooling (kWh/yr)	Heating (kWh/yr)	Wtr Htg (kWh/yr)	Total (kWh/yr)	% Diff.
Miami	2023 FBC-EC	4825	92	1606	6523	
	2024 IECC	4344	76	1463	5882	
	Diff. FBC - IECC	482	17	143	641	9.8%
Tampa	2023 FBC-EC	3631	471	1848	5950	
	2024 IECC	3346	394	1681	5421	
	Diff. FBC - IECC	285	77	166	529	8.9%
Jacksonville	2023 FBC-EC	2535	1311	2107	5953	
	2024 IECC	2311	1133	1916	5360	
	Diff. FBC - IECC	223	178	191	593	10.0%

Table 13. Two story house Performance comparison annual energy use estimates.

City		Cooling (kWh/yr)	Heating (kWh/yr)	Wtr Htg (kWh/yr)	Total (kWh/yr)	% Diff.
Miami	2023 FBC-EC	5781	132	1893	7806	
	2024 IECC	5043	101	1720	6865	
	Diff. FBC - IECC	738	31	173	942	12.1%
Tampa	2023 FBC-EC	4480	603	2179	7263	
	2024 IECC	4002	480	1978	6460	
	Diff. FBC - IECC	478	123	201	803	11.1%
Jacksonville	2023 FBC-EC	3243	1548	2487	7278	
	2024 IECC	2865	1271	2255	6391	
	Diff. FBC - IECC	378	277	232	887	12.2%

Table 14. Multi-family Performance comparison annual energy use estimates.

City		Cooling (kWh/yr)	Heating (kWh/yr)	Wtr Htg (kWh/yr)	Total (kWh/yr)	% of FBC
Miami	2023 FBC-EC	2665	34	1318	4017	
	2024 IECC	2321	24	1207	3551	
	Diff. FBC - IECC	344	10	111	465	11.6%
Tampa	2023 FBC-EC	2205	148	1504	3857	
	2024 IECC	1979	109	1374	3461	
	Diff. FBC - IECC	226	39	130	396	10.3%
Jacksonville	2023 FBC-EC	1726	360	1704	3791	
	2024 IECC	1554	275	1553	3381	
	Diff. FBC - IECC	172	86	151	409	10.8%

Tables 12-14 show that 2023 FBC-EC Performance compliance energy use is higher than 2024 IECC energy use overall, with differences for the all-electric home simulations run ranging from 8.9% to 12.2%. This is mainly due to the new 2024 IECC requirement that the annual energy cost of the Proposed Design for all electric homes be less than or equal to 85 percent of the annual energy cost of the Standard Reference Design, while the 2023 FBC-EC only requires the Proposed Design loads be 95 percent or less of the Reference Design loads. The IECC also now includes additionally increased stringencies for homes with fuel-burning appliances for space heating, water heating, or both (Proposed Design cost must be 80 percent or less of the Standard Reference Design cost instead of 85 percent), and for homes that are greater than 5,000 square feet (additional 5 percent cost reduction). Other stringency difference factors include that the IECC houses being simulated fully or largely have attic ductwork.[4] Also, the IECC continues to not require a storage water heater heat trap while the FBC-EC continues to require the heat trap, but the 2024 IECC adds a Performance compliance hot water pipe insulation requirement which the FBC-EC does not currently include for Performance compliance.

As noted above, the 2020 FBC-EC included skylight area for the Reference Design for homes with skylights while the 2021 IECC did not include Reference Design skylight area, making Performance 2020 FBC-EC compliance somewhat less stringent for homes with skylights. The 2024 IECC continues to not include Reference Design skylight area, and the 2023 FBC-EC now also does not include Reference Design skylight area. So there is now no skylight reference related difference in stringency for Performance compliance between the two codes.

Performance Compliance Summary: 2024 IECC Performance stringency increases are recommended as they save energy and will allow Florida to maintain equivalency with IECC.

[4] As discussed above, the 2024 IECC is simulated with 100% attic ducts for single story homes and 75% attic ducts for two story and multi-family homes.

Energy Rating Index

The Energy Rating Index (ERI) compliance option is not widely used in Florida,[5] so no simulations other than the maximum Index change discussed above in the Individual Code Changes section are provided in this report. Additional notable differences between the 2023 FBC-EC and 2024 IECC ERI include:

- Similar to Performance compliance, 2024 IECC ERI compliance requires that for both homes including and not including on-site renewable power, the proposed total building thermal envelope thermal conductance (TC) be less than or equal to the required total building thermal envelope TC using the prescriptive *U*-factors and *F*-factors from Table R402.1.2 multiplied by 1.08 in the two Florida Climate Zones. In addition, the area-weighted maximum fenestration SHGC permitted in the Florida Climate Zones is 0.30. ***Summary: this change is not expected to increase stringency significantly due to trade-offs.***
- The 2024 IECC breaks out maximum ERI by whether onsite renewables are installed or not, providing new maximum ERI values for projects that use onsite renewable power, and as discussed above, reduces the maximum ERI values slightly for projects that do not use on-site renewable power. It also removes the separate envelope backstop for on-site renewables, instead listing 35 (Climate Zone 1) and 34 (Climate Zone 2) as maximum ERIs with renewables. These levels of ERI are typically achieved with small rooftop PV systems in Florida and may be more agreeable to builders than the current different thermal backstop. For a sample Tampa 1 story home, the ERI at 85% of the R405 performance reference energy use, with standard new washer, dryer, refrigerator and dishwasher was 55, and with ENERGY STAR appliances the ERI was 53. ***Summary: this change only reduces the maximum 2021 IECC ERI in Florida Climate Zones without on-site renewable power by one point, from 52 to 51, but since the FBC-EC only requires an ERI of 58, would substantially increase stringency of FBC-EC ERI compliance. Recommended for equivalency to performance.***
- The 2021 IECC added Section R406.7.3 that required that where onsite renewable energy is included in the calculation of an ERI, the code official must be provided with either 1) substantiation that the associated renewable energy certificates (RECs) are owned by, or retired on behalf of, the homeowner, or 2) a contract that conveys the RECs associated with the onsite renewable energy to the homeowner, or conveys an equivalent quantity of RECs associated with other renewable energy to the homeowner. While still referenced in Section R406.7.3, this requirement has been moved to Section R404.4 and revised in the 2024 IECC, also now including energy attributable certificates (EACs). If adopted in Florida, this change would result in a slight reduction in overall community energy use for applicable ERI projects as these RECs will not be used for offsetting others. The change would also slightly increase the cost of PV systems for applicable ERI projects as utility or others cannot offset costs by

[5] In the authors' experience, the ERI compliance method in Florida has historically been somewhat more stringent than the Performance or Prescriptive methods. For the 2023 FBC-EC, ERI compliance is now more competitive with the other compliance options, but since it still requires third party verification and duct testing, it is not yet clear if it will be more widely used in the state.

selling RECs. ***Summary: Adopting the code change may keep financial benefits of clean energy production in the sunshine state and perhaps provide greater accountability.***

Cost Benefit Analysis of Moving Residential Energy Code from the 8th Edition (2023) FBC-EC to 2024 IECC for Those Items that Impact Energy Use

Economic cost and benefit analysis was performed for the impactful changes between the 2021 and 2024 IECC codes.[6] In order to isolate individual code changes, the same 2023 FBC-EC Prescriptive, 2,000 sq. ft. single story house was used for the base annual energy use for each comparison. Then the annual energy use of the same house with an individual 2024 IECC change was compared with this base house to show the impact of that one change. Cost and benefit analysis is provided for each of the additional efficiency credit combinations run and six of the Individual Code Change section changes.

The cost and benefit analysis is summarized in Table 15. Red or negative values in savings mean the change would use more energy. Negative values in costs mean the measure might save on first cost. Note that the costs used for this analysis are estimates. Lower or higher actual costs will of course affect the cost effectiveness and desirability of these code changes. Costs were determined from FSEC's Maximum Energy Efficiency Cost Effectiveness in New Home Construction report or other sources as indicated below Table 15.

Two economic values are provided. One is net present value (NPV). Any positive net present value indicates that the measure is a smart economic choice relative to not making the investment. The second indicator is the savings to investment ratio (SIR). This is a ratio of the net present value of savings to the net present value of costs. If this value is 1.0 it is neutral. The higher the value the better the value of the option.

[6] Economic assumptions for SIR calculation: Down payment 10%; Mortgage interest rate 5.02%; General inflation rate 4.20%; Energy inflation rate 2.70%; Discount rate 6.28%; Mortgage period 30 years; Analysis period 30 years.

Table 15. Cost and benefits of individual 2024 IECC changes analyzed as individual changes. Green savings to investment ratio values (above 1.0) indicate a cost effective change.

	Code Change (2023 FBC to 2023 FBC w/ Change)	Est. Energy Savings (kWh/yr)	Est. Energy Savings (Therms/yr)	Est. Energy Savings ($/yr)	Incremental Compliance Cost ($)	Est. Life (yrs.)	Net Present Value NPV	Savings/ Investment SIR
Additional Efficiency Credits Selected from Sect. R408.2	**Section R408 Additional Credit Combinations**							
	1) R408.2.1.2 + R408.2.2(10)							
	Improved Fenestration	167		$23.94	$1,456.00	30	($857.40)	0.33
	15.2 SEER2 and 7.8 HSPF2 HP	231		$33.10	$572.00	12	($661.35)	0.47
	2) R408.2.1.2 + R408.2.3(2)							
	Improved Fenestration	106	7.7	$34.41	$1,456.00	30	($669.76)	0.48
	Gas instant. WH UEF = 0.92	13	34.8	$88.86	$297.00	12	$941.84	2.45
	3) R408.2.1.2 + R408.2.3(3)							
	Improved Fenestration	167		$23.94	$1,456.00	30	($857.40)	0.33
	Heat Pump WH UEF = 3.30	965		$138.06	$1,081.00	12	$104.17	1.04
	Individual Code Changes (change # from report)							
Individual Changes	#2: REDI-204-22 Reduced Skylight SHGC and *U*-factor	7		$1.00	$1.00	30	$17.07	20.31
	#3a: 2021 RE44-19 eave baffle installation @ $70 cost	27		$3.86	$70.00	30	$7.37	1.12
	#3b: 2021 RE44-19 eave baffle installation @ $130 cost	27		$3.86	$130.00	30	($45.65)	0.60
	#4: 2021 RE47-19 Pull-down stair hatch insulation	(1)		($0.14)	($12.00)	30	$8.04	
	#15: 2021 RE145-19 interior lighting controls	106		$15.16	$88.00	15	$129.45	1.91
	#16: 2021 RE149-19 exterior lighting controls	16		$2.29	$54.90	15	($47.78)	0.46
	#19: REPI-144-21 5 additional effic. credits for addition	83		$11.87	$572.00	12	($1,041.98)	0.17
	Performance Compliance							
	0.95 e-Ratio to 0.85 via ^ effic. HPWH and HVAC	1458		$208.49	$1,292.00	12	$904.32	1.32
	0.95 e-Ratio to 0.80 via ^ effic. Gas WH and HVAC	293	45.0	$154.40	$1,144.00	12	$258.99	1.10

Note: where applicable, costs are for 2,000 sq. ft. single story new construction Tampa home.

Cost sources: Home Depot comparison for Additional Efficiency Credits 1 and 2 heat pump water heaters and gas water heaters, and for individual changes #4 and #15; Lowe's for individual lighting changes #16; FSEC estimate for individual change #3 Eave Baffle. For all other changes cost source is: https://publications.energyresearch.ucf.edu/wp-content/uploads/2018/06/FSEC-RR-584-15.pdf

Discussion

A review of the various changes discussed above shows that the 2024 IECC modifications represent a range of stringency impacts. Complicating the analysis again this year is IECC Section R408, which now requires builders complying with the Prescriptive method to obtain 10 efficiency credits via a minimum of two credit measures for compliance that goes beyond the historic Prescriptive methodology. The simulations of 2024 IECC Prescriptive homes using three credit measure combinations run in Tampa were between 9.8% and 21% more efficient than the 2023 FBC-EC Prescriptive home.

Improved fenestration was included in this report as one of the credit measures for each of the three sample homes that met Prescriptive 2024 IECC. Specifically, the improved fenestration measure requires a Climate Zone 1 vertical fenestration efficiency improvement from Prescriptive code minimum 0.50 *U*-factor and 0.25 SHGC to 0.32 *U*-factor and 0.23 SHGC, and Climate Zone 2 vertical fenestration efficiency improvement from Prescriptive code minimum 0.40 *U*-factor and 0.25 SHGC to 0.30 *U*-factor and 0.23 SHGC. The equation used to estimate

the additional cost for the improved fenestration however gave a cost increase of $1,456 for the measure, which is not cost effective. Either this measure will need to be possible for significantly lower cost or another credit option will need to be used instead. Since 0.23 SHGC windows are readily available, perhaps for Florida the credit could be modified to only require the reduced SHGC, instead of both reduced *U*-factor and SHGC. A sample calculation with a 2,000 sq. ft. Tampa base 2023 FBC-EC compliant home showed an annual energy use reduction of 77 kWh for changing from 0.25 to 0.23 SHGC windows only, vs. a 131 kWh reduction for both the SHGC improvement and a *U*-factor change from 0.40 to 0.30. Although the cost may be $0 for many builders already using 0.23 SHGC windows, using an estimate of $1 per square foot of window as a cost for a 0.23 SHGC window improvement vs. a current code 0.25 SHGC window results in a positive savings to investment ratio.

However, most homes in Florida comply using the R405 Performance methodology. As discussed above, the 2024 IECC no longer includes Section R408 additional efficiency measures as an option for Performance compliance, instead requiring a Proposed Design annual energy cost less than or equal to 80 percent (if fuel burning appliances) or 85 percent (all others) of the annual energy cost of the Standard Reference Design. For the single story, two story, and multi-family all-electric homes run, as would be anticipated, the 2024 IECC was between 8.9% and 12.2% more efficient than the 2023 Florida code with its 95 percent of Standard Reference Design loads stringency requirement.

Table 16 provides a summary of each 2024 IECC individual change evaluated with a quantifiable impact for homes that would be affected. The authors have provided a brief summary and recommendation in the right most column.

Table 16. Individual code change summary table of simulated items with costs and benefits.

Change	ICC Change #	Change Summary	Cost and Benefit Summary/ SIR	Recommendation
Individual Code Change #2	REDI-204--22 et al.	Reduces maximum skylight SHGC and *U*-factors for Prescriptive compliance.	20.31	Neutral; would only slightly impact energy use.
Individual Code Change #3a and 3b	RE44-19	Adds baffle installation language to mandatory Section R402.2.3.	0.60 @ $130 cost; 1.12 @ $70 cost	[2021 IECC change] Practical requirement to improve quality of installations. May require minimal labor cost after becoming mandatory code. Cost effective for sample 2,000 square foot single story Tampa home if cost is $78.

Individual Code Change #4	RE47-19	Provides Section R402.2.4 insulation level exceptions for horizontal pull-down stair access hatches (R-13 instead of ceiling required insulation level).	N/A (negative cost)	[2021 IECC change] Practical exception with insignificant energy penalty. Highly recommended.
Individual Code Change #15	RE145-19	Requires a dimmer, occupant sensor or other control for permanently installed lighting fixtures.	1.91	[2021 IECC change w/ 2024 revision] Saves on lighting and cooling. Recommended.
Individual Code Change #16	RE149-19	Requires automatic shut off controls where total permanent installed exterior lighting power is greater than 30 watts.	0.46	Saves on lighting energy use but not cost effective.
Individual Code Change #19	REPI-144-21	Additional energy efficiency credit requirements for Prescriptive additions	0.17	Parallels general Prescriptive new construction credit requirements, but appears cost effectiveness would be more challenging for additions.

Conclusions

The authors have reviewed changes made to the 2024 IECC and evaluated whether the changes are likely to have a significant impact or are just a clarification. For the residential measures that would likely have a significant impact, energy analysis is included.

As discussed earlier in this report, the biggest changes in the 2024 IECC are the revised version of its additional energy efficiency requirements for Prescriptive compliance and significantly decreased Performance compliance annual energy cost allowances. A 2024 FSEC study (Sonne and Vieira, 2024) found the 2023 FBC-EC Prescriptive and Performance paths to both be slightly more stringent than their 2021 IECC counterparts. Subsequent revised DOE analysis using its Prescriptive based analysis method also found the 2023 FBC-EC to at least be equivalent to the 2021 IECC. However, without adopting these 2024 IECC or similar changes, it will be difficult to continue to show Florida's code is equivalent to the latest I-code.

This report has examined several ways of complying with these stringency increases. For the Prescriptive compliance path, Section R408.2 offers builders a number of credit measure options. Analysis indicates savings and costs for a typical single family home in Florida will vary greatly depending on which option is chosen. One option is to include upgraded water heating systems and those appear cost effective. Another option discussed in this report is improved fenestration, but in order to be cost effective, the incremental costs would need to be lower than those estimated by the authors. Other measure options include improved building envelope thermal conductance, improved heating/cooling systems, ductless systems or ductwork inside

conditioned space, energy efficient appliances, or even on-site renewable energy. Overall, cost and benefit of each improvement measure needs to be carefully considered, but the authors anticipate that cost effective movement of FBC-EC Prescriptive compliance to 2024 IECC levels should be possible.

The 2024 IECC Section R408 additional efficiency requirements and the 2021 IECC's previous version of these requirements are a departure from the historic methodologies. Whereas Prescriptive code in the past was all envelope related and had no options, now for the 2024 IECC, two or more efficiency measure credits will have to be included and communicated to the official and a number of these involve equipment, not just envelope. In addition, energy compliance software will need to add capabilities and outputs for new Prescriptive compliance measures.

For buildings complying with the Section R405 Total Building Performance Option (most current Florida projects) the 2021 IECC required either one of the additional Section R408.2 efficiency package options or that the proposed design of the building have an annual energy cost less than or equal to 95 percent of the annual energy cost of the standard reference design (instead of 100 percent). For 2024, the IECC has removed the additional efficiency package option for Performance compliance and instead requires the proposed design to have either an annual energy cost less than or equal to 80 percent of the annual energy cost of the standard reference design if a dwelling unit has one or more fuel-burning appliances for space heating or water heating, or for all other dwelling units, an annual energy cost less than or equal to 85 percent of the annual energy cost of the standard reference design. The 2024 IECC also requires that the annual energy cost of the dwelling unit be reduced by an additional 5 percent if living space above the grade plane is greater than 5,000 square feet. The 2023 FBC-EC reduced its allowed Performance proposed annual total normalized Modified Loads to less than or equal to 95 percent of the annual total loads of the standard reference design (from 100 percent in the 2020 FBC-EC). Matching the 2024 IECC Performance changes would require a significant increase in FBC-EC Performance stringency, but as shown in Table 14, cost effective options should be possible.

For buildings complying with the ERI methodology, for projects without on-site renewable power the 2024 IECC reduces the maximum ERI in Florida Climate Zones by one point, from 52 to 51, but since the 2023 FBC-EC only requires an ERI of 58, including this change would substantially increase stringency of FBC-EC ERI compliance. Recommended for equivalency with performance compliance.

Two other notable differences between the 2023 FBC-EC and 2024 IECC involve 2021 IECC added lighting control requirements-- one for interior lighting and one for exterior lighting. Based on anticipated cost effectiveness, the interior control requirement is recommended and the exterior control requirement is not recommended.

There are a number of other changes provided in the report and Appendix that address installation practices, some specific exceptions, and language meant to be clarifying. Of two exceptions considered that were initially included in the 2021 IECC, one is recommended (attic hatch insulation of R-13 instead of ceiling level) and one is not (language allowing ductwork in exterior walls and floor cavities to be considered in conditioned space based on certain other parameters being in place).

Again, the biggest changes are the Section R408.2 additional efficiency requirements for Prescriptive compliance, and substantially reduced targets for Performance compliance. Without adopting these changes or a similar ones, it will be difficult to continue to show Florida's residential Energy Conservation code is equivalent to the latest I-code. The Florida Building Commission will need to determine if they want to update the code based on cost effectiveness criteria in which case some of the 2024 IECC changes should apply and some should not.

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Appendix

Residential 2024 IECC Changes Review Summary

Residential 2024 IECC changes with respect to the 2021 IECC and 2023 Florida Building Code, Energy Conservation (FBC-EC) are summarized in the table below. The table contains six columns defined as follows:

2024 IECC Section and Title: The 2024 IECC code section number and title for the code change.

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

Change Summary between 2021 IECC and 2024 IECC: Brief description of the code change between the 2021 IECC and 2024 IECC.

Change Summary between 2023 FBC-EC and 2024 IECC: Brief description of the code change between the 2023 FBC-EC and 2024 IECC.

Anticipated Energy Impact on FBC-EC if Adopted: Anticipated energy use impact from the code change if it is adopted in the FBC-EC. "None" means the code change has no or negligible anticipated impact on energy use.

Anticipated Cost Impact on FBC-EC if Adopted: Anticipated construction cost impact from the code change if it is adopted in the FBC-EC. "None" means the code change has no or negligible anticipated impact on construction cost.

Residential 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 1 [RE] Scope and Administration					
R101.2 Scope	RED1-8-22	Adds applicable dwelling and building types, a subsection noting application of appendices, and moves "design and construction" language from R101.3 to Scope section	Same as change between 2021 IECC and 2024 IECC	None	None
R101.3 Intent	RED1-9-22	Revises Intent section language, including adding optional supplemental requirements overview, non-mandatory appendices, and code update cycle discussions	Same as change between 2021 IECC and 2024 IECC	None	None
R101.4 Compliance		Renumbered from R101.5	Same as change between 2021 IECC and 2024 IECC	None	None
R101.4.1 Compliance Materials		Renumbered from R101.5.1	Same as change between 2021 IECC and 2024 IECC except for Florida, the Florida Building Commission approves the software and other materials instead of the code official	None	None
R102.1 Applicability		Renumbered from R101.4	Same as change between 2021 IECC and 2024 IECC	None	None
R102.1.1 Mixed Residential and Commercial Buildings		Renumbered from R101.4.1	Same as change between 2021 IECC and 2024 IECC	None	None
R102.2 Other Laws		Renumbered from R108.3	Same as change between 2021 IECC and 2024 IECC except renumbered from R107.3	None	None
R102.3 Application of References		Renumbered from R108.2	Same as change between 2021 IECC and 2024 IECC except renumbered from R107.2	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
R102.4 Referenced Codes and Standards		Renumbered from R108.1	Same as change between 2021 IECC and 2024 IECC except renumbered from R107.1	None	None
R102.4.1 Conflicts		Renumbered from R108.1.1	Same as change between 2021 IECC and 2024 IECC except renumbered from R107.1.1	None	None
R102.4.2 Provisions in Referenced Codes and Standards		Renumbered from R108.1.2	Same as change between 2021 IECC and 2024 IECC except renumbered from R107.1.2	None	None
R102.5 Partial Invalidity	RED1-9-22	Renumbered from R107.1 and name changed from “General” to “Partial invalidity”	Same as change between 2021 IECC and 2024 IECC, except renumber would be from R105.1	None	None
SECTION R103 CODE COMPLIANCE AGENCY	RED1-10-22	New section providing code compliance enforcement agency, appointment and deputy language	Same as change between 2021 IECC and 2024 IECC	None	None
R103.1 Creation of Enforcement Agency	RED1-10-22	Provides enforcement agency creation language	Same as change between 2021 IECC and 2024 IECC	None	None
R103.2 Appointment	RED1-10-22	Requires that the AHJ be appointed by the chief appointing authority of the jurisdiction	Same as change between 2021 IECC and 2024 IECC	None	None
R103.3 Deputies	RED1-10-22	Provides for the AHJ’s authority to appoint a deputy and other employees	Same as change between 2021 IECC and 2024 IECC	None	None
SECTION R104 ALTERNATIVE MATERIALS, DESIGN AND METHODS OF CONSTRUCTION AND EQUIPMENT		Renumbered from R102.1	Same as change between 2021 IECC and 2024 IECC	None	None
R104.1.1 Above Code Programs	RED1-186-22	Renumbered from R102.1.1 and changes the thermal envelope requirements from 2009 IECC table-based efficiencies to thermal	Same renumbering as between 2021 IECC and 2024 IECC, but the FBC-EC does not include additional table-based thermal	None because an above code program	None because an above code program

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
		conductance (TC) calculation efficiencies	envelope or thermal conductance (TC) calculation efficiency requirements		
SECTION R105 CONSTRUCTION DOCUMENTS		Renumbered from R103	Same as change between 2021 IECC and 2024 IECC	None	None
R105.1 General		Renumbered from R103.1	Same as change between 2021 IECC and 2024 IECC	None	None
R105.2 Information on Construction Documents		Renumbered from R103.2	Same as change between 2021 IECC and 2024 IECC	None	None
R105.2.1 Building Thermal Envelope Depiction		Renumbered from R103.2.1	Same as change between 2021 IECC and 2024 IECC	None	None
R105.2.2 Solar-ready System	REPI-33-21, RED1-94-22, RED1-11-22	New section stipulating that where a solar-ready zone is provided, the construction documents indicate dedicated roof area, roof and ground loads, and routing of conduit, prewiring, or plumbing	Same as change between 2021 IECC and 2024 IECC	None	None
R105.3 Examination of Documents		Renumbered from R103.3	Same as change between 2021 IECC and 2024 IECC	None	None
R105.3.1 Approval of Construction Documents		Renumbered from R103.3.1	Same as change between 2021 IECC and 2024 IECC	None	None
R105.3.2 Previous Approvals		Renumbered from R103.3.2	Same as change between 2021 IECC and 2024 IECC	None	None
R105.3.3 Phased Approval		Renumbered from R103.3.3	Same as change between 2021 IECC and 2024 IECC	None	None
R105.4 Amended Construction Documents		Renumbered from R103.4	Same as change between 2021 IECC and 2024 IECC	None	None
R105.5 Retention of Construction Documents		Renumbered from R103.5	Same as change between 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
SECTION R106 FEES		Renumbered from R104	The FBC-EC only includes a reserved Fees section R108 (without any content)	None	None
R106.1 Payment of Fees	CEPI-8-21 Part II	Renumbered from R104.1 and minor editing	Would be new section in the FBC-EC	None	None
R106.2 Schedule of Permit fees		Renumbered from R104.2	Would be new section in the FBC-EC	None	None
R106.3 Permit Valuation	CEPI-8-21 Part II	New section requiring applicant for a permit to provide an estimated value of the work at the time of application	Same as change between 2021 IECC and 2024 IECC	None	None or slightly increased cost
R106.4 Work commencing before Permit Issuance		Renumbered from R104.3	Would be new section in the FBC-EC	None	None
R106.5 Related Fees		Renumbered from R104.4	Would be new section in the FBC-EC	None	None
R106.6 Refunds		Renumbered from R104.5	Would be new section in the FBC-EC	None	None
SECTION R107 INSPECTIONS		Renumbered from R105	Same as change between 2021 IECC and 2024 IECC except renumbered from R104	None	None
R107.2 Required Inspections		Renumbered from R105.2	Same as change between 2021 IECC and 2024 IECC except renumbered from R104.2	None	None
R107.2.1 Footing and Foundation Inspection		Renumbered from R105.2.1	Same as change between 2021 IECC and 2024 IECC except renumbered from R104.2.1	None	None
R107.2.2 Framing and Air barrier Rough-in Inspection	RED1-12-22, REPI-9-21	Renumbered from R105.2.2, adds “air barrier” to title, and replaces existing insulation and fenestration inspection text with expanded air barrier inspection text (insulation and fenestration inspection text moved to new Section R107.2.6)	Same as change between 2021 IECC and 2024 IECC except renumbered from R104.2.2	None or slightly increased stringency	Slightly increased cost

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
R107.2.3 Plumbing Rough-in Inspection	REPI-33-21, RED1-14-22	Renumbered from R105.2.3 and adds inspection requirements for solar-ready zones where they are provided	Same as change between 2021 IECC and 2024 IECC except renumbered from R104.2.3	None	None or slightly increased cost in applicable solar-ready zone cases
R107.2.4 Mechanical Rough-in Inspection		Renumbered from R105.2.4	Same as change between 2021 IECC and 2024 IECC except renumbered from R104.2.4	None	None
R107.2.5 Electrical Rough-in Inspection	REPI-33-21	New section stipulating inspection requirements at electrical rough-in, including for solar-ready zones where they are provided	Same as change between 2021 IECC and 2024 IECC	None or slightly increased stringency	Slightly increased cost
R107.2.6 Insulation and Fenestration Rough-in Inspection	REPI-9-21	New section stipulating inspection requirements at insulation and fenestration rough-in (moved from Section R107.2.2 with slight rewording)	Same as change between 2021 IECC and 2024 IECC	None	None
R107.2.7 Final Inspection		Renumbered from R105.2.5	Same as change between 2021 IECC and 2024 IECC except renumbered from R104.2.5	None	None
R107.3 Reinspection		Renumbered from R105.3	Same as change between 2021 IECC and 2024 IECC except renumbered from R104.3	None	None
R107.4 Approved Third-party Inspection Agencies	RED1-16-22	Renumbered from R105.4, adds “third-party” to title, and adds requirement that third-party inspection agencies be approved prior to issuance of the building permit	Same as change between 2021 IECC and 2024 IECC except renumbered from R104.4	None	None
R107.4.1 Authorization of Approved third-Party Inspection Agency	RED1-16-22	New section requiring approved third-party inspection agency provide all requested information for the code official to determine that the agency meets the applicable requirements, and to authorize its work in the jurisdiction.	Same as change between 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
R107.4.1.1 Independence	RED1-16-22	New section requiring that an approved third-party inspection agency be an independent business identity, perform its duties in accordance with the scope of delegated responsibilities established by the code official, disclose any conflicts of interest, and acknowledge in writing that it is authorized to work only within the scope of delegated responsibilities	Same as change between 2021 IECC and 2024 IECC	None	None
R107.4.1.2 Equipment	RED1-16-22	New section that requires that an approved third-party inspection agency have adequate equipment to perform required inspections and tests and that all testing equipment be calibrated as required	Same as change between 2021 IECC and 2024 IECC	None	None
R107.4.1.3 Personnel	RED1-16-22	New section that requires that personnel assigned by an approved third-party inspection agency to perform inspections and testing be trained or credentialed, and documentation of training or credentials be available upon request	Same as change between 2021 IECC and 2024 IECC	None	None
R107.4.1.4 Delegated Authority	RED1-16-22	New section that stipulates that where approved, a third-party inspection agency has the authority to perform delegated inspections and determine compliance or noncompliance of work	Same as change between 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
R107.4.2 Approved Third-party Inspection Agency Reporting	RED1-16-22	New section that stipulates third-party inspection agencies reporting requirements	Same as change between 2021 IECC and 2024 IECC	None	None
R107.5 Inspection Requests		Renumbered from R105.5	Same as change between 2021 IECC and 2024 IECC except renumbered from R104.5	None	None
R107.6 Reinspection and testing		Renumbered from R105.6	Same as change between 2021 IECC and 2024 IECC except renumbered from R104.6	None	None
SECTION R108 NOTICE OF APPROVAL		Renumbered from R106	Same as change between 2021 IECC and 2024 IECC	None	None
R108.1 Approval		Renumbered from R106.1	Same as change between 2021 IECC and 2024 IECC	None	None
R108.2 Revocation		Renumbered from R106.2	Same as change between 2021 IECC and 2024 IECC	None	None
SECTION R109 MEANS OF APPEALS		Renumbered from R110	Would be new section in the FBC-EC (Florida already has other means of addressing appeals)	None	None
R109.1 General		Renumbered from R110.1	Would be new section in the FBC-EC (Florida already has other means of addressing appeals)	None	None
R109.2 Limitations on Authority	RED1-17-22	Renumbered from R110.2 and one edit regarding authority to interpret the administration of the code	Would be new section in the FBC-EC (Florida already has other means of addressing appeals)	None	None
R109.3 Qualifications	RED1-17-22	Renumbered from R110.3 and adds qualification clarification	Would be new section in the FBC-EC (Florida already has other means of addressing appeals)	None	None
R109.4 Administration	RED1-17-22	Renumbered from R110.4 and removes “immediate” from action requirement	Would be new section in the FBC-EC (Florida already has other means of addressing appeals)	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 R110 STOP WORK ORDER		Renumbered from R109	Same as change between 2021 IECC and 2024 IECC	None	None
R110.1 Authority		Renumbered from R109.1	Same as change between 2021 IECC and 2024 IECC	None	None
R110.2 Issuance		Renumbered from R109.2	Same as change between 2021 IECC and 2024 IECC	None	None
R110.3 Emergencies		Renumbered from R109.3	Same as change between 2021 IECC and 2024 IECC	None	None
R110.4 Failure to Comply		Renumbered from R109.4	Same as change between 2021 IECC and 2024 IECC	None	None
Chapter 2 [RE] Definitions					
R202 Air-Handling Unit	RED1-285-22	New definition	The 2023 FBC-EC already has a different but compatible definition for "air-handling unit"	None	None
R202 Approved source	RED1-268-22	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Automatic Shutoff Control	REPI-106-21	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Balanced Ventilation System	RED1-343-22	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Biodiesel Blend	RECD1-12-22	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Common Areas	RED1-360-22	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Construction Documents	REPI-150-21	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Continuous Insulation (ci)	RED1-185-22	Edit changes "building envelope" to "building thermal envelope"	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Continuous Pilot	RED1-283-22	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Damper	RED1-285-22	New definition	Same as change between 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
R202 Demand Response Signal	REPI-90-21	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Demand Responsive Control	REPI-30-21	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Distribution System Efficiency (DSE)	REPI-78-21	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Duct System	RED1-285-22	Replaces "continuous passageway" based language with new language using newly defined "ductwork" and "space conditioning equipment" terms	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Ductwork	RED1-285-22	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Emittance	RE2D-3-23	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Enclosed Reflective Airspace	REPI-11-21	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Energy Rating Index (ERI)	RECPI-11-21, RED1-65-22	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Existing Building	RED1-264-22	New definition	2023 FBC-EC already has a different but compatible definition for "existing building"	None	None
R202 F-Factor (Thermal Transmittance)	REPI-26-21	New definition	None; 2023 FBC-EC already has the same definition for "F-Factor"	None	None
R202 Fuel Gas	RECD1-12-22, REPI-155-21	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Fuel Oil	RECD1-12-22	New definition	Same as change between 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
R202 Grade Plane	REPI-33-21, RED1-3-22	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Heat Exchanger	RED1-285-22	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
[R202 High-Efficacy Light Sources]	REPI-102-21 Part I	"High-Efficacy Light Sources" term deleted	2023 FBC-EC does not include this definition	None	None
R202 Intermittent Ignition	RED1-283-22	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Interrupted Ignition	RED1-283-22	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Knee Wall	REPI-39-21	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Liquid Fuel	RECD1-12-22	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Living Space	REPI-33-21	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Low Slope	RED1-182-22	New definition	2023 FBC-EC has similar definition for "low-sloped roof"	None	None
R202 Occupiable Space	RED1-285-22	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 On-demand Pilot	RED1-283-22	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Plenum	RED1-285-22	New definition	2023 FBC-EC already has a different but compatible definition for "plenum"	None	None
R202 Proposed Design	RED1-249-22, CEPI-24-21 Part II	Replaces "building" with "dwelling unit" and "total building performance with "simulated building performance"	Same as change between 2021 IECC and 2024 IECC		
R202 Radiant Barrier	REPI-13-21	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Rated Design	RED1-65-22	Replaces "building" with "dwelling unit"	2023 FBC-EC does not include this definition	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
R202 Reflective Insulation	REPI-11-21	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Renewable Energy Certificate (REC)	REPI-158-21	Clarifies and expands definition	2023 FBC-EC does not include this definition	None	None
R202 Roof Replacement	REPI-150-21	Revises definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Simulated Building Performance	CEPI-24-21 Part II, RED1-31-22	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Sleeping Unit	REC2D-8-23	New definition	2023 FBC-EC already has a different but compatible definition for “sleeping unit”	None	None
R202 Solar-Ready Zone	REPI-33-21	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Space Conditioning	RED1-285-22	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Space Conditioning Equipment	RED1-285-22	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Steep Slope	RED1-182-22	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Substantial Improvement	RED1-263-22, RE2D-8-23	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
R202 Testing Unit Enclosure Area	REC2D-8-23	Replaces definition for “dwelling unit enclosure area” and adds newly defined “sleeping unit” to wall height measurement stipulation	2023 FBC-EC does not include definitions for “testing unit enclosure area” or “dwelling unit enclosure area”	None	None
R202 Work Area	REPI-144-21	New definition	Same as change between 2021 IECC and 2024 IECC	None	None
Chapter 3 [RE] General Requirements					

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
R303.1.1 Building Thermal Envelope Insulation	REPI-11-21, RED1-194-22	Adds requirements for what must be included on the certification for reflective insulation	Same as change between 2021 IECC and 2024 IECC	None or slightly increased stringency in applicable cases	None or slightly increased cost in applicable cases
R303.1.2 Insulation Mark Installation	CEPI-19-21 Part II	Adds insulation mark exception for roof insulation installed above roof deck	Same as change between 2021 IECC and 2024 IECC	None	None
R303.1.6 Airspaces	RED1-194-22	New section stipulates requirements for using the *R*-value of an enclosed reflective airspace or enclosed nonreflective airspace for code compliance	Same as change between 2021 IECC and 2024 IECC	None or slightly increased stringency in applicable cases	None or slightly increased cost in applicable cases
R303.2.2 Radiant Barrier	REPI-13-21, RED1-194-22	New section stipulates standard requirements for radiant barriers	2023 FBC-EC already includes standard requirements for radiant barriers	None	None
Chapter 4 [RE] Residential Energy Efficiency					
R401.2 Application [R401.2.5 Additional energy efficiency]	REPI-18-21	As part of larger revision, removes requirement for residential buildings to comply with removed Section R401.2.5, which in the 2021 IECC, provided additional energy efficiency requirements	The 2023 FBC-EC does not include the requirements of removed IECC Section R401.2.5 except for the 95% load option for Performance compliance	To be determined via analysis of combined revisions	Slightly to somewhat increased cost in applicable Prescriptive cases when replacement Section R408 "credits" based Additional Efficiency Requirements are included
R401.2.1 Prescriptive compliance option	REPI-18-21	Adds Section R408 "credits" based Additional Efficiency Requirements for the Prescriptive compliance option	An additional Efficiency Requirements option such as IECC Section R408 is not included in the FBC-EC	To be determined via analysis of combined revisions	Slightly to somewhat increased cost in applicable Prescriptive cases
R401.3 Certificate	REPI-18-21,	For the certificate that indicates listed efficiencies, in items 2 and 3 adds "thermal" to "building	2023 FBC-EC already has a comparable requirement in its	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
	RED1-185-22	envelope", in item 7 adds requirement to indicate Section R408 additional efficiency measures selected, and adds item 8 regarding solar-ready zone	Energy performance level (EPL) display card		
R402.1 General	RED1-196-22, RE2D-10-23	Revises referenced building thermal envelope compliance sections to clarify R-value vs. new (revised from Total UA) Component performance alternative Prescriptive compliance options	Same as change between 2021 IECC and 2024 IECC	None	None
R402.1.2 Insulation and fenestration criteria	REPI-26-21	Adds maximum *F-factor* requirement for applicable assemblies per new Table R402.1.2 limits	Same as change between 2021 IECC and 2024 IECC	None	None
Table R402.1.2	REPI-30-21	Flips table rows and columns	Same as change between 2021 IECC and 2024 IECC	None	None
Table R402.1.2	RED1-204-22	Changes "Fenestration *U*-Factor" column label into "Vertical Fenestration *U*-factor" (now row) label	Same as change between 2021 IECC and 2024 IECC	None	None
Table R402.1.2	RED1-204-22	Separates "Glazed Fenestration SHGC" into "Glazed Vertical Fenestration SHGC" and "Skylight SHGC," and adds new skylight SHGC limits (0.28 in Climate Zones 1 and 2 vs. 0.25 for glazed vertical fenestration in Climate Zones 1 and 2); this maximum skylight limit is lowered from 2021 IECC's (removed) footnote "d" exception for Climate Zones 1-3 which allowed skylight SHGCs up to 0.30	Equivalent FBC-EC Table R402.1.4 does not include SHGC limits	Slightly increased stringency in applicable cases	Slightly increased cost in applicable cases

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 R402.1.2	RED1-268-22	Adds "Insulation Entirely Above Roof Deck", "Unheated Slab *F*-factor," and "Heated Slab *F*-factor" assembly types	Same as change between 2021 IECC and 2024 IECC	None or slightly decreased stringency in applicable cases with insulation above roof deck	None or slightly decreased cost in applicable cases with insulation above roof deck
Table R402.1.2	RED1-199-22, REC2D-1-23, REPI-28-21	Decreases maximum allowed skylight *U*-factors from 0.75 to 0.60 for Climate Zone 1 and from 0.65 to 0.60 for Climate Zone 2	Same as change between 2021 IECC and 2024 IECC	Slightly increased stringency in applicable cases	Slightly increased cost in applicable cases
Table R402.1.2	REPI-33-21, RED1-199-22	Increases maximum allowed ceiling *U*-factor for Climate Zone 2 from 0.026 to 0.030	2023 FBC-EC already has a maximum ceiling *U*-factor of 0.030 for Climate Zone 2	Would make the two codes of equal stringency for applicable Prescriptive and Performance compliance cases	None
Table R402.1.2	REPI-28-21	Removes 2021 IECC footnote "e" which excluded Marine Zone SHGC requirements (for 2024 IECC, included in table)	Equivalent FBC-EC Table R402.1.4 does not include SHGC limits	None	None
Table R402.1.2		2024 IECC footnote "d" ("f" in 2021 IECC) reduces maximum *U*-factor in Marine Climate Zone 4 and Climate Zones 5 through 8 for vertical fenestration products in provided cases	Would be new footnote in FBC-EC, but does not apply to Florida Climate Zones	None	None
Table R402.1.2	REPI-26-21	Adds new footnote "e" that provides slab *F*-Factor details	Same as change between 2021 IECC and 2024 IECC	None	None
R402.1.3 *R*-value alternative	REPI-26-21	Adds "*F*-factor" to section, now allowing assemblies with an *R*-value of insulation materials equal to or greater than that specified in Table R402.1.3 to be an alternative to the *U*-factor or *F*-factor in Table R402.1.2	FBC-EC has different wording, but basically same as change between 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 R402.1.3	REPI-30-21	Flips table rows and columns	Same as change between 2021 IECC and 2024 IECC	None	None
Table R402.1.3	RED1-204-22	Changes "Fenestration *U*-Factor" column label into "Vertical Fenestration *U*-factor" (now row) label	Same as change between 2021 IECC and 2024 IECC	None	None
Table R402.1.3		Adds maximum vertical fenestration *U*-factor of 0.50 for Climate Zones 0 and 1	Same as change between 2021 IECC and 2024 IECC (for Climate Zone 1; FBC-EC does not include Climate Zone 0)	None	None
Table R402.1.3	RED1-204-22,	Separates "Glazed Fenestration SHGC" into "Glazed Vertical Fenestration SHGC" and "Skylight SHGC," and adds new skylight SHGC limits (0.28 in Climate Zones 1 and 2 vs. 0.25 for glazed vertical fenestration in Climate Zones 1 and 2); this maximum skylight limit is lowered from 2021 IECC's (removed) footnote "b" exception for Climate Zones 1-3 which allowed skylight SHGCs up to 0.30	Same as change between 2021 IECC and 2024 IECC	Slightly increased stringency in applicable cases	Slightly increased cost in applicable cases
Table R402.1.3	RED1-268-22	Adds "Insulation Entirely Above Roof Deck" assembly type, and breaks "Slab *R*-value & Depth" assembly type into "Unheated Slab *R*-value & Depth," and "Heated Slab *R*-value & Depth" assembly types	Same as change between 2021 IECC and 2024 IECC	None or slightly decreased stringency in applicable cases with insulation above roof deck	None or slightly decreased cost in applicable cases with insulation above roof deck
Table R402.1.3	REPI-28-21, RED1-199-22	Decreases maximum allowed skylight *U*-factors from 0.75 to 0.60 for Climate Zone 1 and from 0.65 to 0.60 for Climate Zone 2	Same as change between 2021 IECC and 2024 IECC	Slightly increased stringency in applicable cases	Slightly increased cost in applicable cases

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 R402.1.3	RED1-199-22, REPI-33-21	Decreases minimum allowed ceiling *R*-value for Climate Zone 2 from 49 to 38	2023 FBC-EC already has a minimum ceiling *R*-value of 38 for Climate Zone 2	Would make the two codes of equal stringency for applicable prescriptive compliance cases	None
Table R402.1.3		New footnote "c" requires slab insulation to be installed in accordance with Section R402.2.9.1[7], which provides requirements removed from 2021 IECC footnote "d"	Same as change between 2021 IECC and 2024 IECC (FBC-EC footnote "d" has similar language to 2021 IECC footnote "d"	None or slightly increased stringency in applicable cases	None or slightly increased cost in applicable cases
Table R402.1.3		Moves 2021 IECC footnote "f" regarding basement wall insulation in Warm Humid locations to footnote "d"	Same as change between 2021 IECC and 2024 IECC	None	None
Table R402.1.3		Moves 2021 IECC footnote "g" regarding frame wall cavity and continuous insulation to footnote "e"	Same as change between 2021 IECC and 2024 IECC (except moves from footnote "h")	None	None
Table R402.1.3		Moves 2021 IECC footnote "h" regarding mass walls to footnote "f"	Same as change between 2021 IECC and 2024 IECC (except moves from footnote "I" and the FBC-EC does not include reference to mass wall section while both IECC versions do	None	None
Table R402.1.3	RED1-199-22	Moves 2021 IECC footnote "i" regarding vertical fenestration product *U*-factor for buildings in certain locations to footnote "g", decreases the included Climate Zones from 3 – 8 to Marine 4 and 5 – 8, and reduces the maximum *U*-factor from 0.32 to 0.30	Would be new footnote in FBC-EC, but does not apply to Florida Climate Zones	None	None

[7] Appears this section should be "R402.2.10.1" (may be corrected in final version of 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
Table R402.1.3	REPI-35-21	Adds cavity + continuous and continuous only insulation options for floors, and adds footnote "h" to provide clarifications regarding these options	Cavity + continuous and continuous only insulation options for floor insulation would be new for the FBC-EC	None	None
R402.1.5 Component performance alternative	REPI-26-21, RED1-186-22	Changes title from *Total UA alternative* and replaces UA based compliance with thermal conductance (TC) based compliance which combines UA calculation with perimeter * *F*-factor calculation	Same as change between 2021 IECC and 2024 IECC, but exception makes the perimeter * *F*-factor calculation the same value for the table-based and proposed calculations for Climate Zones 0 through 2	None	None
R402.1.6 Rooms containing fuel-burning appliances	RED1-185-22	Renumbered from R402.4.4 and clarifies "building thermal envelope" term	Same as change between 2021 IECC and 2024 IECC	None	None
R402.2.1 Ceilings with attics	REC2D-6-23,	Adds exception for Section R402.1.3 requirement of R-38 insulation in the ceiling or attic wherever the full height of uncompressed R-30 insulation extends over the wall top plate at the eaves, and removes a similar exception for when R-60 insulation is required	2023 FBC-EC already has R-38 exception and does not include a R-60 exception	Would make the two codes of equal stringency for applicable Prescriptive compliance cases	None
R402.2.1 Ceilings with attics	RED1-186-22	Replaces exception reference to "Total UA" alternative with "component performance" alternative for consistency with Section R402.1.5 change	Same as change between 2021 IECC and 2024 IECC	None	None
R402.2.3 Attic knee wall	REPI-39-21, RED1-212-22	New section requires that wood attic knee wall assemblies that separate conditioned space from unconditioned attic spaces comply with Table R402.1.3 for wood-framed walls, and steel attic knee wall assemblies comply	Same as change between 2021 IECC and 2024 IECC	None or slightly decreased stringency for Prescriptive projects in applicable cases depending on typical practice (also	None or slightly decreased cost in applicable cases

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
		with Section R402.2.7; also requires that these knee walls have an air barrier between conditioned and unconditioned space		applies to Performance compliance but no anticipated impact due to tradeoffs)	
R402.2.3.1 Roof truss framing separating conditioned and unconditioned space	REPI-39-21, RED1-212-22	New section requires that where wood vertical roof truss framing members are used to separate conditioned space and unconditioned space, they must comply with Table R402.1.3 for wood-framed walls, and steel frame vertical roof truss framing members used to separate conditioned space and unconditioned space must comply with Section R402.2.7	Same as change between 2021 IECC and 2024 IECC	None or slightly decreased stringency for Prescriptive projects in applicable cases depending on typical practice (also applies to Performance compliance but no anticipated impact due to tradeoffs)	None or slightly decreased cost in applicable cases
R402.2.4 Eave baffle		Renumbered from R402.2.3	Same as change between 2021 IECC and 2024 IECC except renumbered from R402.2.3	None	None
R402.2.5 Access hatches and doors		Renumbered from R402.2.4	Same as change between 2021 IECC and 2024 IECC, except FBC-EC combines with insulation retention requirements, while 2021 and 2024 IECC have separate sub-section for these requirements	None	None
R402.2.5 Access hatches and doors	RED1-186-22	Replaces exception reference to "total UA" alternative with "component performance" alternative for consistency with Section R402.1.5 change	Same as change between 2021 IECC and 2024 IECC	None	None
R402.2.5.1 Access hatches and door insulation installation and retention		Renumbered from R402.2.4.1	FBC-EC combines insulation installation and retention requirements with other access hatch door requirements in R402.2.4	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
R402.2.6 Mass walls		Renumbered from R402.2.5	Same as change between 2021 IECC and 2024 IECC	None	None
R402.2.7 Steel-frame ceilings, walls and floors		Renumbered from R402.2.6	Same as change between 2021 IECC and 2024 IECC	None	None
R402.2.7 Steel-frame ceilings, walls and floors	RED1-185-22	Revises section, removing requirement to comply with the insulation *R*-value requirements of Table R402.2.6, keeping the *U*-factor requirements of Table R402.1.2, and revises the calculation of the *U*-factor, now requiring it to be in accordance with AISI S250 with modifications	Same as change between 2021 IECC and 2024 IECC	None	None
[Table R402.2.6 Steel-frame Ceiling, Wall and Floor Insulation R-values]	IRCEPI-1-21, REPI-40-21	Table removed as part of Section R402.2.7 revision	Same as change between 2021 IECC and 2024 IECC	None	None
R402.2.8 Floors		Renumbered from R402.2.7	FBC-EC already has same numbering as 2024 IECC	None	None
R402.2.8 Floors	RECD1-11-22	Revises and clarifies floor insulation installation section	Similar to change between 2021 IECC and 2024 IECC	Slightly increased stringency in applicable cases	Slightly increased cost in applicable cases
R402.2.9 Basement walls		Renumbered from R402.2.8	FBC-EC already has same numbering as 2024 IECC	None	None
R402.2.9 Basement walls	RED1-285-22	Minor rewording	2021 and 2024 IECC have more unconditioned basement exception requirements than 2023 FBC-EC	None from changes	None from changes
R402.2.9.1 Basement wall insulation installation		Renumbered from R402.2.8	FBC-EC already has same numbering as 2024 IECC	None	None
R402.2.9.1 Basement wall	RED1-217-22	Adds phrase “or in accordance with the proposed design or the rated design, as applicable”	Same as change between 2021 IECC and 2024 IECC	None or slight stringency impact in applicable cases	None or slight cost impact in applicable cases

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
insulation installation					
R402.2.10 Slab-on-grade floors		Renumbered from R402.2.9	FBC-EC already has same numbering as 2024 IECC	None	None
R402.2.10 Slab-on-grade floors	REPI-26-21	Changes floor surface criterion from “less than 12 inches (305 mm) below grade” to “within 24 inches (610 mm) above or below grade”	Same as change between 2021 IECC and 2024 IECC	None or slight stringency impact in applicable cases	None or slight cost impact in applicable cases
R402.2.10.1 Slab-on-grade floor insulation installation		Renumbered from R402.2.9.1	FBC-EC already has same numbering as 2024 IECC	None	None
R402.2.10.1 Slab-on-grade floor insulation installation	RED1-250-22	Makes section requirements only applicable to Prescriptive compliance (Performance and ERI requirements in separate new section); with floor penetration exceptions, requires full-slab insulation to be continuous under the entire area of the floor; and adds heated slab perimeter requirements	Same as change between 2021 IECC and 2024 IECC	None or slightly increased stringency in applicable cases	None or slightly increased cost in applicable cases
R402.2.10.2 Alternative slab-on-grade insulation configurations	RED1-250-22, REC2D-1-23	New section stipulating that for Performance or ERI compliance, slab-on-grade insulation be installed in accordance with the proposed design or rated design	Same as change between 2021 IECC and 2024 IECC	None or slight stringency impact in applicable cases	None or slight cost impact in applicable cases
R402.2.11 Crawl space walls		Renumbered from R402.2.10	FBC-EC already has same numbering as 2024 IECC	None	None
R402.2.11 Crawl space walls	RED1-250-22	Changes the crawl space wall insulation requirement from being in accordance with Table R402.1.3 to Section R402.2.11.1 or new 402.2.11.2	Same as change between 2021 IECC and 2024 IECC	None or slight stringency impact in applicable cases	None or slight cost impact in applicable cases

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
R402.2.11.1 Crawl space wall insulation installations	RED1-211-22	General rewording including changes to insulation location requirements	Same as change between 2021 IECC and 2024 IECC	None or slight stringency impact in applicable cases	None or slight cost impact in applicable cases
R402.2.11.2 Alternative crawl space wall insulation configurations	RED1-250-22, REC2D-1-23	New section stipulating that for Performance or ERI compliance, crawl space wall insulation be installed in accordance with the proposed design or rated design	Same as change between 2021 IECC and 2024 IECC	None or slight stringency impact in applicable cases	None or slight cost impact in applicable cases
R402.2.12 Masonry veneer		Renumbered from R402.2.11	FBC-EC already has same numbering as 2024 IECC	None	None
R402.2.13 Sunroom and heated garage insulation		Renumbered from R402.2.12	FBC-EC already has same numbering as 2024 IECC; FBC-EC does not include heated garage provisions	None	None
R402.3 Radiant barriers	RED1-194-22, REPI-42-21	New section requiring that where installed, radiant barriers be installed in accordance with ASTM C1743	Same as change between 2021 IECC and 2024 IECC, except the FBC-EC already includes this requirement for Performance compliance	None or slight stringency impact in applicable cases	None or slight cost impact in applicable cases
R402.4 Fenestration		Renumbered from R402.3	Same as change between 2021 IECC and 2024 IECC	None	None
R402.4.1 *U*-factor		Renumbered from R402.3.1	Same as change between 2021 IECC and 2024 IECC	None	None
R402.4.2 Glazed fenestration SHGC		Renumbered from R402.3.2	Same as change between 2021 IECC and 2024 IECC	None	None
R402.4.3 Glazed fenestration exemption	RED1-186-22	Renumbered from R402.3.3 and changes reference to "Total UA" to new "component alternative" compliance option	Same as change between 2021 IECC and 2024 IECC	None	None
R402.4.4 Opaque door exemption	RED1-186-22	Renumbered from R402.3.4 and changes reference to "Total UA" to new "component alternative" compliance option	Same as change between 2021 IECC and 2024 IECC	None	None
R402.4.5 Sunroom and heated garage fenestration		Renumbered from R402.3.5	Same as change between 2021 IECC and 2024 IECC; 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
			does not include heated garage provisions		
R402.5 Air leakage		Renumbered from R402.4	Same as change between 2021 IECC and 2024 IECC	None	None
R402.5.1 Building thermal envelope		Renumbered from R402.4.1	Same as change between 2021 IECC and 2024 IECC	None	None
R402.5.1.1 Installation		Renumbered from R402.4.1.1	Same as change between 2021 IECC and 2024 IECC	None	None
Table R402.5.1.1 Air Barrier, Air Sealing and Insulation Installation		Renumbered from Table R402.4.1.1	Same as change between 2021 IECC and 2024 IECC	None	None
Table R402.5.1.1 Air Barrier, Air Sealing and Insulation Installation: Air Barrier, Air Sealing Criteria header	RED1-32-22, RED1-235-22	Added “Air Sealing” to “Air Barrier Criteria” header	Same as change between 2021 IECC and 2024 IECC	None	None
Table R402.5.1.1 Air Barrier, Air Sealing and Insulation Installation: Ceiling/attic	REPI-47-21	Adds requirement that air barriers installed in a dropped ceiling or soffit separate it from unconditioned space; removes requirement that the air barrier be aligned with the insulation and any gaps be sealed; and requires that seals for access openings, drop down stairs or knee wall doors to unconditioned attic spaces be sealed with gasketing materials that allow for repeated entrance over time	Same as change between 2021 IECC and 2024 IECC	None or slight stringency impact in applicable cases	None or slight cost impact in applicable cases
Table R402.5.1.1 Air Barrier, Air Sealing and Insulation	REPI-47-21	Adds insulation installation requirement that access hatches and doors be installed and insulated in accordance with	Same as change between 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
Installation: Ceiling/attic		Section R402.2.5, and eave baffles be installed in accordance with Section R402.2.4			
Table R402.5.1.1 Air Barrier, Air Sealing and Insulation Installation: Walls	RED1-185-22	Adds “building” to Insulation Installation Criteria section’s “exterior thermal envelope” term as clarification.	Same as change between 2021 IECC and 2024 IECC	None	None
Table R402.5.1.1 Air Barrier, Air Sealing and Insulation Installation: Knee wall	RED1-235-22	New component entry provides Air Barrier, Air Sealing Criteria and Insulation Installation Criteria requirements for knee walls	Same as change between 2021 IECC and 2024 IECC	None or slightly decreased stringency in applicable cases depending on typical practice	None or slight cost impact in applicable cases
Table R402.5.1.1 Air Barrier, Air Sealing and Insulation Installation: Windows, skylights and doors	RECD1-3-22	Clarifies Air Barrier, Air Sealing Criteria requirements and adds that sealing must be in accordance with fenestration manufacturer's instructions	Same as change between 2021 IECC and 2024 IECC	None	None
Table R402.5.1.1 Air Barrier, Air Sealing and Insulation Installation: Windows, skylights and doors	RECD1-3-22	Adds Insulation Installation Criteria section entry that insulation is not required in the rough opening gap except as required by the fenestration manufacturer's instructions	Same as change between 2021 IECC and 2024 IECC	None or slightly decreased stringency depending on typical practice	None or slightly decreased cost in applicable cases
Table R402.5.1.1 Air Barrier, Air Sealing and Insulation Installation: Rim joists	REPI-55-21	Removes “exterior” from Air Barrier, Air Sealing Criteria section requirement: “Rim joists shall include an exterior air barrier.”	FBC-EC already has same requirement as 2024 IECC	None	None
Table R402.5.1.1 Air Barrier, Air Sealing and	RECD1-11-22,	Replaces existing Air Barrier, Air Sealing Criteria section requirement that an air barrier be	Same as change between 2021 IECC and 2024 IECC	None or slightly increased stringency in applicable cases	None or slight cost impact in applicable cases

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
Insulation Installation: Floors, including cantilevered floors and floors above garages	RED1-230-22	installed at any exposed edge of insulation with requirement that floor framing members that are part of the building thermal envelope be air sealed to maintain a continuous air barrier; also adds requirement that air permeable floor cavity insulation be enclosed		depending on typical practice	
Table R402.5.1.1 Air Barrier, Air Sealing and Insulation Installation: Floors, including cantilevered floors and floors above garages		Replaces existing floor framing cavity Insulation Installation Criteria requirements with requirement that floor insulation be installed in accordance with Section R402.2.8	Same as change between 2021 IECC and 2024 IECC	None or slight stringency impact in applicable cases depending on typical practice	None or slight cost impact in applicable cases
Table R402.5.1.1 Air Barrier, Air Sealing and Insulation Installation: Basement, crawl space and slab foundations		As clarification, puts comma between “basement” and “crawl space” in “Basement, crawl space and slab foundations” component title	FBC-EC does not include basements in this component title; instead has component title *Crawl space walls*	None (from change)	None (from change)
Table R402.5.1.1 Air Barrier, Air Sealing and Insulation Installation: Showers, tubs and fireplaces adjacent to the building thermal envelope	REPI-52-21	Changes component title from “Shower/tub on exterior wall” to “Showers, tubs and fireplaces adjacent to the building thermal envelope”	Same as change between 2021 IECC and 2024 IECC	None or slightly increased stringency in applicable cases	None or slightly increased cost in applicable cases

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 R402.5.1.1 Air Barrier, Air Sealing and Insulation Installation: Showers, tubs and fireplaces adjacent to the building thermal envelope	REPI-52-21, RED1-233-22	Revises Air Barrier, Air Sealing Criteria requirement wording and adds fireplaces	Same as change between 2021 IECC and 2024 IECC	None or slightly increased stringency in applicable cases	None or slightly increased cost in applicable cases
Table R402.5.1.1 Air Barrier, Air Sealing and Insulation Installation: Showers, tubs and fireplaces adjacent to the building thermal envelope	REPI-52-21, RED1-233-22	Revises Insulation Installation Criteria requirement wording slightly and adds fireplaces	Same as change between 2021 IECC and 2024 IECC	None or slightly increased stringency in applicable cases	None or slightly increased cost in applicable cases
Table R402.5.1.1 Air Barrier, Air Sealing and Insulation Installation: Electrical, communication and other equipment boxes, housings and enclosures	REPI-53-21	Changes component title from *Electrical/phone box on Exterior walls* to *Electrical, Communication and other equipment boxes, housings and enclosures*	FBC-EC already has 2024 IECC language	None	None
Table R402.5.1.1 Air Barrier, Air Sealing and Insulation Installation: Electrical, communication and other equipment boxes, housings and	REPI-53-21	Revises Air Barrier, Air Sealing Criteria requirement air-sealing wording, and adds concealed opening sealing requirement	FBC-EC already has this 2024 IECC language, and adds "the continuity of the air barrier shall be maintained around boxes, housings and enclosures that penetrate the air barrier"	None or slightly decreased stringency in applicable cases	None or slightly decreased cost in applicable cases

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
enclosures					
Table R402.5.1.1 Air Barrier, Air Sealing and Insulation Installation: Electrical, communication and other equipment boxes, housings and enclosures	REPI-53-21	Adds new Insulation Installation Criteria that boxes, housing and enclosures must be buried in or surrounded by insulation	FBC-EC already has this 2024 IECC language	None	None
Table R402.5.1.1 Air Barrier, Air Sealing and Insulation Installation: HVAC register boots	REPI-50-21	Removes “that penetrate building thermal envelope” from HVAC boot Air Barrier, Air Sealing Criteria requirement	Same as change between 2021 IECC and 2024 IECC	None	None
Table R402.5.1.1 Air Barrier, Air Sealing and Insulation Installation: HVAC register boots	RED1-32-22	Adds new Insulation Installation Criteria that HVAC register boots located within a building thermal envelope assembly be buried in or surrounded by insulation	Same as change between 2021 IECC and 2024 IECC	None	None
Table R402.5.1.1 Air Barrier, Air Sealing and Insulation Installation: Common walls or double walls separating attached single-family dwellings or townhouses	RED1-229-22	New component entry provides Air Barrier, Air Sealing Criteria and Insulation Installation Criteria requirements for common walls or double walls separating attached single-family dwellings or townhouses, including fire-resistance-rating related	Same as change between 2021 IECC and 2024 IECC	None or slightly increased stringency in applicable cases depending on typical practice	None or slightly increased cost in applicable cases depending on typical practice
Table R402.5.1.1 Air Barrier, Air Sealing and	REPI-55-21	Removes “air barrier” from footnote to clarify that “air barrier” is not intended to be	FBC-EC does not include this exception footnote	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
Insulation Installation: footnote "b"		included in this exception, leaving: "Insulation full enclosure is not required in unconditioned/ventilated attic spaces and at rim joists"			
R402.5.1.2 Air leakage testing	RED1-222-22	Renumbered from R402.4.1.2, and renamed from "Testing"	Same as change between 2021 IECC and 2024 IECC	None	None
R402.5.1.2 Air leakage testing	REC2D-8-23	Revises air leakage testing requirement to specify that where applicable, each dwelling unit or (newly defined) sleeping unit in the building must be tested	Same as change between 2021 IECC and 2024 IECC	None	None
R402.5.1.2 Air leakage testing	RED1-222-22	Air leakage rate limits are moved from this section to Section R402.5.1.3 and revised	Same as change between 2021 IECC and 2024 IECC, except FBC-EC limits air leakage rate to 7 ACH50 in Florida Climate Zones while the 2024 IECC limits leakage to 4 ACH50 in Florida Climate Zones (exceptions for each code)	Increased stringency in applicable cases	Increased cost in applicable cases
R402.5.1.2 Air leakage testing	REPI-43-21	Adds ASTM E3158 testing standard	Same as change between 2021 IECC and 2024 IECC	Not known	None (optional)
R402.5.1.2 Air leakage testing	REPI-57-21	Adds "differential" to clarify that air leakage testing is conducted and reported at a pressure differential of 0.2 inch water gauge (50 Pascals)	Same as change between 2021 IECC and 2024 IECC	None	None
R402.5.1.2 Air leakage testing		Moves heated, attached private garages and heated, detached private garages exception from before "During testing" items to after these items	FBC-EC does not have a heated garage testing exception	None or slightly decreased stringency in applicable cases	None or slightly decreased cost in applicable cases
R402.5.1.2 Air leakage testing	REPI-61-21	Adds dwelling and sleeping unit sampling testing exception	FBC-EC does not have a unit sampling option	None or slightly decreased stringency in applicable cases	None or slightly decreased cost in applicable cases
R402.5.1.2 Air leakage testing	RED1-222-22	Removes individual dwelling units that are 1,500 square feet	FBC-EC does not include this exception	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
		(139.4 m2) or smaller language from testing exception			
R402.5.1.2 Air leakage testing	RED1-222-22	Removes mechanical ventilation requirement from this section (but similar language remains in Section R403.6	FBC-EC does not include this language	None	None
R402.5.1.2.1 Unit sampling	REPI-61-21	New building air leakage testing sampling provision for buildings with eight or more dwelling units or sleeping units	Same as change between 2021 IECC and 2024 IECC	None or slightly decreased stringency in applicable cases depending on typical practice	Somewhat decreased cost in applicable cases
R402.5.1.3 Maximum air leakage rate	RED1-224-22 Part I &II	Renumbered section from R402.4.1.3 and renamed from "Leakage rate"	FBC-EC does not include this section	None	None
R402.5.1.3 Maximum air leakage rate	RED1-224-22 Part I & II	Air leakage rate limits are moved from R402.1.2.1 to this section and revised downward, with exceptions for attached dwelling or sleeping units or when located in an R-2 occupancy, and for buildings with 1,500 square feet (139.4 m^2) or less of conditioned floor area	FBC-EC does not include this section; as noted above, FBC-EC limits air leakage rate to 7 ACH50 in Florida Climate Zones while the 2024 IECC limits leakage to 4 ACH50 in Florida Climate Zones	Increased stringency	Increased cost in applicable cases
R402.5.2 Fireplaces		Renumbered from R402.4.2	Same as change between 2021 IECC and 2024 IECC	None	None
R402.5.3 Fenestration air leakage		Renumbered from R402.4.3	Same as change between 2021 IECC and 2024 IECC	None	None
R402.5.4 Recessed lighting		Renumbered from R402.4.5	Same as change between 2021 IECC and 2024 IECC	None	None
R402.5.5 Air-sealed and electrical and communication outlet boxes	REPI-66-21	Renumbered from R402.4.6 and renamed from "Electrical and communication outlet boxes (air-sealed boxes)"	Except FBC-EC title is *Air-sealed electrical and communication boxes*	None	None
R402.5.5 Air-sealed and electrical and	REPI-66-21	Revises wording to clarify section	Makes section language very similar to FBC-EC language	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
communication outlet boxes					
R402.6 Maximum fenestration *U*-factor and SHGC		Renumbered from R402.5	FBC-EC does not have this section, but includes (higher) fenestration SHGC limits and an overhang depth alternative for Performance compliance	None (from section number change)	None (from section number change)
R403.1.2 Heat pump supplementary heat	REPI-73-21	Revises heat pump supplementary heat section language to include fuel gas and liquid fuel heating systems, and further stipulates when supplemental heat can be used	Corresponding FBC-EC section is R403.1.3; FBC-EC has similar language to 2024 IECC but does not include supplementary fuel gas or liquid fuel heating systems	None	None
R403.2 Hot water boiler temperature reset	RECD1-12-22	Revises language including changing “oil” to “liquid fuel”	FBC-EC uses different language but includes a similar requirement	None	None
R403.3 Duct systems		Renamed from “Ducts”	Same as change between 2021 IECC and 2024 IECC	None	None
R403.3 Duct systems	RED1-285-22	2021 IECC includes a duct testing exception in Section R403.3.5 for ventilation system ducts that are not integrated with ducts serving heating or cooling systems; the 2024 IECC modifies this exception language slightly and moves it up to Section R403.3 so it now applies to duct system testing and other duct system installation sections from R403.3.3 through R403.3.9	FBC-EC does not state it, but may interpret it the same	None	None
R403.3.1 Duct system design	RED1-285-22	New section stipulating duct system design and sizing standards based on number of dwelling or sleeping units	Same as change between 2021 IECC and 2024 IECC	None or slightly increased stringency in applicable cases depending on typical practice	Slightly increased cost in applicable cases

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
R403.3.2 Building cavities		Renumbered from R403.3.7 and term "ducts" changed to "ductwork"	Same as change between 2021 IECC and 2024 IECC, except renumbered from R403.3.5	None	None
R403.3.3 Ductwork located outside conditioned space		Renumbered from R403.3.1, renamed from "Ducts located outside conditioned space", and term "ducts" changed to "ductwork"	FBC-EC does not include this section	None (from changes)	None (from changes)
R403.3.4 Duct systems located in conditioned space	RED1-285-22	Renumbered from R403.3.2, renamed from "Ducts located in conditioned space", and term "ductwork" changed to "duct systems"	FBC-EC does not include this section	None (from changes)	None (from changes)
R403.3.4 Duct systems located in conditioned space	RED1-285-22	Section language revised for clarification purposes; also adds unvented attics with vapor diffusion ports to buried ductwork option	FBC-EC does not include this section	None from changes, but adopting this IECC section would slightly decrease stringency in applicable cases	None (optional)
R403.3.5 Ductwork buried within ceiling insulation	RED1-285-22	Renumbered from R403.3.3, renamed from "Ducts buried within ceiling insulation", term "duct" changed to "ductwork", and minor additional text revisions	FBC-EC does not include this section	None (from changes; optional)	None (from changes; optional)
R403.3.5 Ductwork buried within ceiling insulation	REPI-82-21	Adds items #4 and 4.1 which add an unvented attic (with vapor diffusion port) buried R8 supply duct option for Climate Zones 0A, 1A, 2A and 3A	FBC-EC does not include this section	None (optional)	None (optional)
R403.3.5.1 Effective *R*-value of deeply buried ducts. Where complying		Renumbered from R403.3.3.1, term "duct" changed to "ductwork", and minor additional text revisions	FBC-EC does not include this section	None (optional)	None
R403.3.6 Sealing	RED1-285-22	Renumbered from R403.3.4, term "ducts" changed to "ductwork",	Corresponding FBC-EC section is 403.3.2; FBC-EC has similar general intent as 2024 IECC,	None (from changes)	None (from changes)

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
		and minor additional text revisions	and in addition references Florida statutes that provide duct tester qualifications		
R403.3.6.1 Sealed air-handling unit		Renumbered from R403.3.4.1, renamed from "Sealed air handler", and "air handlers" changed to "air-handling units" in text	Same as change between 2021 IECC and 2024 IECC, except renumbered from R403.3.2.1	None	None
R403.3.7 Duct system testing	REPI-86-21	Renumbered from R403.3.5, renamed from "Duct testing", and revised, removing "rough-in test" and "postconstruction test" based organization	Corresponding FBC-EC section is R403.3.5; FBC-EC has similar language to 2021 IECC outside of testing exceptions and overall content still somewhat similar to 2024 IECC, again outside of testing exceptions	None (from changes)	None (from changes)
R403.3.7 Duct system testing	RED1-285-22	Adds duct testing exception for 10 feet or less of total ductwork when the duct system is entirely in conditioned space and the ductwork does not include building cavity or gypsum board plenums	FBC-EC does not require duct testing for Performance compliance with default leakage or for Prescriptive compliance when ducts are within the building thermal envelope	None	None
R403.3.7 Duct system testing	RED1-285-22	Adds duct testing exception to section, allowing testing where space conditioning equipment is not installed-- in these cases, requires total supply and return duct leakage to be less than or equal to 3.0 cfm/sq. ft.; 2021 IECC had same allowance, but applied to Prescriptive only; now also applies to Performance	Same as change between 2021 IECC and 2024 IECC	None (optional)	None (optional)
R403.3.7 Duct system testing	REPI-85-21	Adds exception to section which, in conjunction with new Section R403.3.9, allows duct testing sampling for buildings with eight	Same as change between 2021 IECC and 2024 IECC	None or slightly decreased stringency in applicable cases	Slightly decreased cost in applicable cases

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
		or more dwelling units or sleeping units			
R403.3.8 Duct system leakage	RED1-285-22	Renumbered from R403.3.6, renamed from "Duct leakage", and revised, moving from "rough-in test" and "postconstruction test" duct leakage limits organization to limits shown in new Table R403.3.8, based on floor area served by the duct system, equipment and duct configuration, and number of ducted returns	Same as change between 2021 IECC and 2024 IECC (for changes)	Slightly increased or decreased stringency for Prescriptive compliance depending on area served, configuration, and number of ducted returns; somewhat increased stringency for Performance compliance	Slightly increased cost in applicable Performance cases
R403.3.9 Unit sampling	REPI-85-21	Adds duct testing unit sampling section which, in conjunction with new Section R403.3.7, allows duct testing sampling for buildings with eight or more dwelling units or sleeping units	Same as change between 2021 IECC and 2024 IECC	None or slightly decreased stringency in applicable cases	Slightly decreased cost in applicable cases
R403.4.1 Protection of piping insulation	REPI-87-21	Minor edit and new requirement that piping protection be removable no less than 6 feet (1828 mm) from the equipment for maintenance	Same as change between 2021 IECC and 2024 IECC	None	None
R403.5.1.1 Circulation systems	RED1-310-22	Reorganizes language slightly, adds gravity circulation system prohibition, and adds requirement that where a cold water supply pipe is used as the return pipe, a temperature sensor connected to the controls be located on the hot water supply not more than two feet (305 mm) from the connection to the cold water supply pipe	Same as change between 2021 IECC and 2024 IECC, except FBC-EC already includes gravity circulation system prohibition	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
R403.5.1.1.1 Demand recirculation water systems	RED1-310-22	Removes "where installed" and adds specifications on how controls must limit pump operation	Same as change between 2021 IECC and 2024 IECC except FBC-EC section is R403.5.2	Slightly increased stringency in applicable cases	Slightly increased cost in applicable cases
R403.5.2 Hot water pipe insulation Table R403.5.2 Minimum Pipe Insulation Thickness	REPI-89-21	Changes hot water pipe insulation requirements for stipulated conditions from R3 to 1.0 inch insulation thickness based on fluid operating temperature range and usage as provided in new Table R403.5.2; also removes piping serving more than one dwelling unit condition and provides exception for cold water returns in demand recirculation water systems; section now also applies to performance compliance	Same as change between 2021 IECC and 2024 IECC except FBC-EC section is R403.5.3	Slightly increased stringency in applicable cases (now including Performance compliance)	Slightly increased cost in applicable cases (now including Performance compliance)
R403.6 Mechanical ventilation	RED1-318-22	Adds "dwelling units" to the structures that must comply with this section, further changes the structures that must comply with this section by changing reference from Section R402.5.1 "Building thermal envelope" to R402.5.1.1 "Installation" and adds "mechanical" to phrase "shall be provided with mechanical ventilation…"	Same as change between 2021 IECC and 2024 IECC except FBC-EC has somewhat different wording for section	None	None
R403.6.1 Heat or energy recovery ventilation	REPI-94-21	Adds Climate Zone 6 to those included in this section's heat or energy recovery ventilation requirements and revises text to include sensible recovery efficiency (SRE) term and stipulates how SRE must be determined	FBC-EC does not include this section	None (Climate Zones do not apply to Florida)	None (Climate Zones do not apply to Florida)

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
R403.6.2 Whole-dwelling mechanical ventilation system fan efficacy Table R403.6.2 Whole-Dwelling Mechanical Ventilation System Fan Efficacy	REPI-95-21, REC2D-10-23	Fixes typos, provides minor clarifications, and references and provides revised mechanical ventilation system fan efficacy Table R403.6.2 that includes test procedure for each system type and provides additional minimum efficacies for "Balanced ventilation system without heat or energy recovery" and "other exhaust fans" with airflow rate above 200 cfm; also provides footnote with means of determining efficacy for balanced ventilation systems, HRVs, and ERVs	Same as change between 2021 IECC and 2024 IECC	None	None
R403.6.3 Testing		Changes mechanical ventilation system testing stipulation from manufacturer's instructions or code listed options to instead be in accordance with ANSI/ RESNET/ICC 380; revises existing testing exception and adds two exceptions	FBC-EC does not include this section	None for changes or if section is adopted	None for changes; slightly increased cost in applicable cases if section is adopted
R403.6.4 Unit sampling	RED1-365-22	Adds mechanical ventilation testing unit sampling section which, in conjunction with new Section R403.3.7, allows mechanical ventilation system testing sampling for buildings with eight or more dwelling units or sleeping units	FBC-EC does not include the ventilation system testing section to which this sampling section applies	None	Slightly increased cost in applicable cases
R403.6.5 Intermittent exhaust control for bathrooms and toilet rooms	RECD1-1-22	New section requires exhaust system controls for bathrooms and toilet rooms when designed for intermittent operation	Same as change between 2021 IECC and 2024 IECC	Slightly increased stringency in applicable cases	Slightly increased cost in applicable cases

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
R403.7.1 Electric-resistance space heating	REPI-99-21, RED1-325-22	New section requires detached one- and two-family dwellings and townhouses in Climate Zones 4 through 8 using electric-resistance space heating to limit the total electric resistance heating capacity to not more than 2.0 kW or requires installation of a heat pump in the largest space that is not used as a bedroom	Same as change between 2021 IECC and 2024 IECC	None (Climate Zones do not apply to Florida)	None (Climate Zones do not apply to Florida)
R403.8 Systems serving multiple dwelling units	RED1-329-22	Adds exception to Systems serving multiple dwelling units section for systems complying with new Section R403.9, which addresses mechanical systems located outside of the building thermal envelope	Same as change between 2021 IECC and 2024 IECC	None	None
R403.9 Mechanical systems located outside of the building thermal envelope	RED1-329-22	New section provides requirements for mechanical systems located outside of the building thermal envelope	Same as change between 2021 IECC and 2024 IECC	None	None
R403.9.1 Heating outside a building	RED1-329-22	New section provides type and control requirements for systems that provide heat outside of a building	Same as change between 2021 IECC and 2024 IECC	None or slightly increased stringency in applicable cases	Slightly increased cost in applicable cases
R403.9.2 Snow melt and ice system controls	RED1-329-22	Renumbered from R403.9	Same as change between 2021 IECC and 2024 IECC	None (for change)	None (for change)
R403.9.3 Roof and gutter deicing controls	CEPI-82-21 Part I	New section provides control requirements for roof and gutter deicing systems	Same as change between 2021 IECC and 2024 IECC	None or slightly increased stringency in applicable cases	Slightly increased cost in applicable cases
R403.9.4 Freeze protection system controls	RED1-329-22	New section provides control requirements for freeze protection systems	Same as change between 2021 IECC and 2024 IECC	None or slightly increased stringency in applicable cases	Slightly increased cost in applicable cases

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
R403.10.2 Time switches	RED1-299-22	Replaces pool pump control exception's use of "solar" with "on-site renewable energy"	FBC-EC already has an exception for pumps that are powered by "onsite renewable generation"	None	None
R403.13 Gas fireplaces	RED1-286-22	With an exception for gas-fired combustion safety devices, new section requires gas fireplace systems to not be equipped with a continuous pilot, and instead be equipped with an on-demand pilot, intermittent ignition or interrupted ignition	Same as change between 2021 IECC and 2024 IECC	None or slightly increased stringency in applicable cases depending on typical practice	Slightly increased cost in applicable cases
R403.13.1 Gas fireplace efficiency	RED1-286-22	New section provides vented gas fireplace heater fireplace efficiency (FE) rating and listing and labeling requirements	Same as change between 2021 IECC and 2024 IECC	None or slightly increased stringency in applicable cases	Slightly increased cost in applicable cases
SECTION R404 ELECTRICAL POWER, LIGHTING AND RENEWABLE ENERGY SYSTEMS	REPI-158-21	Adds "renewable energy" to section title	Same as change between 2021 IECC and 2024 IECC	None	None
R404.1 Lighting equipment	REPI-102-21 Part II	Replaces high efficacy lighting sources language with actual efficacy minimums and adds three exceptions	FBC-EC already has similar language as 2024 IECC, but with only one exception	None or slightly decreased stringency in applicable cases	None or slightly decreased cost in applicable cases
R404.1.1 Exterior lighting	REPI-105-21	Revisions include moving connected exterior lighting compliance requirement from Section C405.5 to new Sections R404.1.2 through R404.1.4, specifying applicability is for Group R-2, R-3 and R-4 residential buildings, and adding exception for Group R-3	FBC-EC does not include residential exterior lighting requirements	None to somewhat increased stringency combined with new Sections R404.1.2 and R404.1.3	None or slightly increased cost combined with new Sections R404.1.2 and R404.1.3

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
		buildings that do not contain more than two dwelling units			
R404.1.2 Exterior lighting power requirements	REPI-105-21, RED1-110-22	New section adds applicable exterior lighting power requirements from Section C405.5 (as part of moving requirements from commercial provisions)	FBC-EC does not include residential exterior lighting requirements	None to somewhat increased stringency	None or slightly increased cost
R404.1.3 Exterior lighting power allowance Table R404.1 Lighting Power Allowances for Building Exteriors	REPI-105-21	New section adds applicable exterior lighting power allowance from Section C405.5 including new Table R404.1 used to calculate allowed lighting power for various area types (as part of moving requirements from commercial provisions)	FBC-EC does not include residential exterior lighting requirements	None to somewhat increased stringency	None or slightly increased cost
R404.1.4 Additional exterior lighting power	REPI-105-21	New section provides for additional exterior lighting power allowances for building facades	FBC-EC does not include residential exterior lighting requirements	None or slightly increased stringency in applicable cases	None or slightly increased cost in applicable cases
R404.1.5 Gas lighting	RED1-286-22	Renumbered from R404.1.2, renamed from "Fuel gas lighting equipment", revises existing language and adds that gas-fired lighting appliances are not be equipped with a continuous pilot, and instead be equipped with an on-demand pilot, intermittent ignition or interrupted ignition	Same as change between 2021 IECC and 2024 IECC, except renumbered and renamed from "R404.1.1 Lighting equipment"	None or slightly increased stringency in applicable cases depending on typical practice	None or slightly increased cost in applicable cases
R404.2 Interior lighting controls	REPI-106-21	Revises section language to refer to new Sections R404.2.1 and R404.2.2 and removes three exception locations, leaving an exception for safety or security lighting only	FBC-EC does not include residential interior lighting controls	Slightly increased stringency combined with new Sections R404.2.1 and R404.2.2	Slightly increased cost combined with new Sections R404.2.1 and R404.2.2
R404.2.1 Habitable spaces	REPI-106-21	New section requires all permanently installed luminaires in habitable spaces to be	FBC-EC does not include residential interior lighting controls	Slightly increased stringency	Slightly increased cost

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
		controlled with a manual dimmer or automatic shutoff control; also must incorporate a manual control to allow occupants to turn the lights on or off			
R404.2.2 Specific locations	REPI-106-21	New section requires all permanently installed luminaires in garages, unfinished basements, laundry rooms and utility rooms to be controlled by an automatic shutoff control; also must incorporate a manual control to allow occupants to turn the lights on or off	FBC-EC does not include residential interior lighting controls	Slightly increased stringency	Slightly increased cost
R404.3 Exterior lighting controls R404.3.1 Controls for individual dwelling units	RED1-112-22	Revises Section R404.3 to instead of providing exterior lighting controls requirements in this section which included an exception for lighting serving multiple dwelling units, moves the existing controls requirements to new Section R404.3.1 which specifies applicability to individual dwelling units	FBC-EC does not include residential exterior lighting controls	Slightly increased stringency in applicable Prescriptive cases	Slightly increased cost in applicable Prescriptive cases
R404.4 Renewable energy certificate (REC) documentation	REPI-158-21	New section requires that where renewable energy generation is used to comply with the code, documentation be provided demonstrating that where renewable energy certificates (RECs) or energy attributable certificates (EACs) are associated with that portion of renewable energy used to comply with this code, the RECs or EACs will be retained, or retired, on behalf of the property owner	Same as change between 2021 IECC and 2024 IECC	Slight reduction in overall community energy use for applicable projects as these RECs won't be used for offsetting others	Slight increase to cost of PV system for applicable projects as utility or others cannot offset costs by buying RECs

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 R405 SIMULATED BUILDING PERFORMANCE		Changes section title from *Total Building Performance*	FBC-EC already uses new IECC title	None	None
R405.1 Scope	RED1-249-22	Revision clarifies that simulated building performance analysis is limited to dwelling units, and Spaces other than dwelling units in Group R-2, R-3 or R-4 buildings are to comply with Sections R402 through R404	Same as change between 2021 IECC and 2024 IECC	None	None
R405.2 Simulated building performance compliance		Renamed from *Performance-based compliance*	FBC-EC uses *Performance-based compliance* as title for corresponding section	None	None
Table R405.2 Requirements for Simulated Building Performance	CEPI-24-21 Part II, RED1-56-22, RED1-224-22 Part I, REPI-86-21	Revises Table R405.2 requirements for simulated building performance entries: removes Section R402.1.5 Additional Energy Efficiency, requires all of Section R403.5 Service hot water systems instead of previously just R403.5.1 Heated water circulation and temperature maintenance systems and R403.5.3 Drain water heat recovery units subsection; adds R402.1.6 Rooms containing fuel-burning appliances (for Climate Zone 3-8), new R402.2.3 Attic knee wall, R402.2.10 Slab-on grade floors, R402.5.1.3 Maximum air leakage rate, R402.5.2 Fireplaces, R402.5.3 Fenestration air leakage, R402.5.4 Recessed lighting, R402.5.5 Air-sealed electrical and	FBC-EC does not use IECC's table-based requirements format for Performance compliance and does not include a number of the IECC requirements	None to slightly increased stringency as applicable (limited due to trade-offs)	None to somewhat increased cost as applicable

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
		communication outlet boxes, R403.2 Hot water boiler temperature reset, R403.13 Gas fireplaces; also changes crawl space requirement from R402.2.11.1 to R402.2.11; also removes Section R403.3 Duct systems exceptions, also edits for Section number and name changes consistency			
R405.2 Simulated building performance compliance	RED1-27-22	Changes item #2 requirement to meet 2009 IECC thermal envelope efficiencies to new thermal conductance (TC) based requirement; also reduces the maximum weighted fenestration SHGC for Performance compliance in Climate Zones 0 through 3 to 0.30	FBC-EC Performance compliance has several thermal envelope minimum efficiency requirements but does not include either the 2009 IECC thermal envelope efficiency requirement or new thermal conductance (TC) based requirement	To be assessed via analysis of combined revisions but limited due to trade-offs	None to slightly increased cost
R405.2 Simulated building performance compliance	RED1-27-22, REPI-33-21	Changes item #3 requirement that the annual energy cost be less than or equal to that of the standard reference design to separate requirements for dwelling units that use fuel-burning appliances for space heating, water heating, or both vs. for all other dwelling units, with annual energy cost limits being 80 percent and 85 percent of that of the standard reference design, respectively; also, for each dwelling unit with greater than 5,000 square feet (465 m^2) of living space above grade plane, the annual energy cost of the dwelling unit must be reduced by	Applicable FBC-EC Section R405.3 "Performance-based compliance" requires the proposed design be shown to have annual total normalized Modified Loads that are less than or equal to 95 percent of the annual total loads of the standard reference design	Increased stringency, to be assessed via analysis	Increased cost

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
		an additional 5 percent; also adds source energy multipliers for natural gas, propane, fuel oil, and imported liquefied natural gas, and revises source energy multiplier for electricity for energy use based on source energy exception; and adds new exception for energy use based on site energy			
R405.3 Compliance documentation	RECD1-8-22	Renamed from "Documentation" and revises language, separating requirements into application and certificate of occupancy compliance reports (requirement moved up from Section R405.5.4)	Same as for IECC except renumbered from R405.4	None	None
[R405.3.1 Compliance software tools]	RECD1-8-22	Removes section, replacing it with revised language in Section R405.4.1	Renumbered from R405.4, and FBC-EC currently requires Florida Building Commission approval-- 2024 IECC added new Section R405.5.2 requirement that software vendors test software in accordance with ANSI/ASHRAE 140 Class II, Tier 1 test procedures and publish results	Slightly increased stringency	None
R405.4 Calculation procedure R405.4.1 General R405.4.2 Residence specifications R405.4.3 Input values	RECD1-8-22	Revises, reorganizes, and clarifies existing sections, including stipulating revised R405.5 software tools approval section which includes new Section R405.5.2 requirement that software vendors test software in accordance with ANSI/ASHRAE 140 Class II, Tier 1 test procedures and publish results;	Renumbered from R405.5, R405.5.1, R405.5.2, and R405.6.3, and as noted above, FBC-EC currently requires Florida Building Commission approval-- 2024 IECC added new Section R405.5.2 requirement that software vendors test software in accordance with	Slightly increased stringency	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
		also moves Input values section from R405.5.3 to R405.4.3	ANSI/ASHRAE 140 Class II, Tier 1 test procedures and publish results		
Table R405.4.2(1) Specifications for the Standard Reference and Proposed Designs: Above-grade walls	RED1-252-22	Revises Standard Reference Design solar absorptance specification to solar reflectance without changing stringency	Same as change between 2021 IECC and 2024 IECC	None	None
Table R405.4.2(1) Specifications for the Standard Reference and Proposed Designs: Roofs	RED1-252-22	Revises Standard Reference Design solar absorptance specification to solar reflectance without changing stringency	Same as change between 2021 IECC and 2024 IECC	None	None
Table R405.4.2(1) Specifications for the Standard Reference and Proposed Designs: Foundations	REC2D-4-23	Revises Standard Reference Design foundation specification, removing "area" and adding "foundation wall or slab perimeter length"	Same as change between 2021 IECC and 2024 IECC	None	None
Table R405.4.2(1) Specifications for the Standard Reference and Proposed Designs: Foundations	RED1-208-22	Adds that foundation wall Standard Reference Design *U*-factor and slab *F*-factor be as specified in Table R402.1.2	Same as change between 2021 IECC and 2024 IECC	None	None
Table R405.4.2(1) Specifications for the Standard Reference and Proposed Designs: Air leakage rate	RED1-251-22	Changes building component section title from *Air exchange rate* and revises Climate Zone 0 – 2 Standard Reference Design air leakage rate from 5.0 ACH50 to 4.0 ACH50 (applies to detached one-family dwellings > 1,500 sq. ft.); also changes Proposed Design entry from "The measured	FBC-EC currently uses 7.0 ACH50 for the Standard Reference Design	Increased stringency for applicable cases	Increased cost for applicable cases

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 exchange rate" to "The measured air leakage rate"			
Table R405.4.2(1) Specifications for the Standard Reference and Proposed Designs: Air leakage rate	RED1-251-22	Adds separate Standard Reference Design air leakage rate of 0.27 cfm/ft^2 of the testing unit enclosure area at a pressure of 0.2 inch water gauge (50 Pa) for detached one-family dwellings that are 1,500 ft^2 or smaller and attached dwelling units or sleeping units	FBC-EC currently uses 7.0 ACH50 for the Standard Reference Design for all projects	Increased stringency for applicable cases	Increased cost for applicable cases
Table R405.4.2(1) Specifications for the Standard Reference and Proposed Designs: Air leakage rate	RED1-251-22	Removes "Where required by the code official, testing shall be conducted by an approved party" from footnote "a", but per the proponent, just due to redundancy, as this language is still included in Section R402.5.1.2 Air leakage testing	FBC-EC requires duct testing be done by either individuals as defined in Section 553.993(5) or (7), Florida Statutes, or individuals licensed as set forth in Section 489.105(3)(f), (g) or (i) or an approved third party	None or slightly decreased stringency depending on typical practice	None or slightly decreased cost depending on typical practice
Table R405.4.2(1) Specifications for the Standard Reference and Proposed Designs: Mechanical ventilation rate		Breaks out Table R405.4.2(1) 2021 IECC "Mechanical ventilation" section into "Mechanical ventilation rate" and "Mechanical ventilation fan energy" sections	Same as change between 2021 IECC and 2024 IECC	None	None
Table R405.4.2(1) Specifications for the Standard Reference and Proposed Designs: Mechanical ventilation rate	RED1-251-22	Replaces Standard Reference Design annual vent fan energy use equation with specification that the mechanical ventilation rate be in addition to the air leakage rate and the same as in the proposed design, but not greater than a provided new equation based limit	Same as change between 2021 IECC and 2024 IECC	Slightly increased stringency in applicable cases	Slightly increased cost in applicable cases

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 R405.4.2(1) Specifications for the Standard Reference and Proposed Designs: Mechanical ventilation rate	RED1-251-22	Changes Proposed Design specification from "As proposed" to the measured mechanical ventilation rate (calculated according to specified ASHRAE Handbook of Fundamentals sections), and specifies it be in addition to the measured air leakage rate	Same as change between 2021 IECC and 2024 IECC	None	None
Table R405.4.2(1) Specifications for the Standard Reference and Proposed Designs: Mechanical ventilation fan energy	RED1-251-22	New section clarifies that the Standard Reference Design mechanical ventilation system type be the same as in the proposed design; also adds that heat recovery or energy recovery be modeled for mechanical ventilation where required by R403.6.1 [Climate Zones 6-8] and not be modeled where not required by R403.6.1 [includes Florida]; also modifies annual vent fan energy use equation; also specifies that the Proposed Design fan energy use is "As proposed"	Same as change between 2021 IECC and 2024 IECC	None	None
Table R405.4.2(1) Specifications for the Standard Reference and Proposed Designs: Internal mass	RED1-185-22	Adds "thermal" to "building envelope" for Proposed Design specification	Same as change between 2021 IECC and 2024 IECC	None	None
Table R405.4.2(1) Specifications for the Standard Reference and Proposed Designs:	REPI-33-21	For Standard Reference Design, removes "for other than electric heating without a heat pump: as Proposed" and "where the proposed design utilizes electric heating without a heat pump, the	FBC-EC Standard Reference Design specifies a heat pump if the proposed heating system is electric (2024 IECC does as well via new footnote "j"); otherwise "as proposed",	None; but issue with 2024 IECC capacity being adequate to allow correct simulation results; also if adopted in	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
Heating systems and footnote "j"		standard reference design shall be an air source heat pump meeting the requirements of Section C403 of the IECC—Commercial Provisions" Also removes "Capacity: sized in accordance with Section R403.7" and replaces with "Fuel Type/Capacity: Same as proposed design" Adds "Product class: Same as proposed design"	capacity in accordance with Section R403.7, and fuel type same as proposed	Florida, suggest including content of 2024 IECC footnote "j" in main section text to avoid confusion	
Table R405.4.2(1) Specifications for the Standard Reference and Proposed Designs: Heating systems and footnote "j"	REPI-33-21	2021 IECC's Standard Reference Design specifies "for other than electric heating without a heat pump: [efficiency] as Proposed" and "where the proposed design utilizes electric heating without a heat pump, the standard reference design shall be an air source heat pump meeting the requirements of Section C403 of the IECC—Commercial Provisions" vs. 2024 IECC specification that efficiency comply with 10 CFR §430.32 for heat pump, fuel gas and liquid fuel furnace, and fuel gas and liquid fuel boiler (making the 2024 IECC more like the FBC-EC, which allows equipment trade-offs) Also new footnote "j" stipulates a split system heat pump complying	FBC-EC Standard Reference Design specifies efficiency in accordance with prevailing federal minimum standards and specifies heat pump if proposed heating system is electric, so the FBC-EC and 2024 IECC would treat heating system efficiencies the same way	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
		with 10 CFR §430.32 (2021) for the Standard Reference Design if the Proposed Design has electric resistance heat			
Table R405.4.2(1) Specifications for the Standard Reference and Proposed Designs: footnote "k"		2024 IECC footnote "k" adds that for heating systems, cooling systems, or water heating systems not included in Table R405.4.2(1), the Standard Reference Design be the same as proposed design	For space heating FBC-EC Standard Reference Design specifies a heat pump if proposed heating system is electric; otherwise as proposed	None	None
Table R405.4.2(1) Specifications for the Standard Reference and Proposed Designs: Cooling systems	RED1-252-22, REPI-33-21	Changes Standard Reference Design fuel type from "as proposed" to electric, capacity from "sized in accordance with Section R403.7" to "Same as proposed design", and adds Standard Reference Design specification that efficiencies comply with 10 CFR §430.32 (making the 2024 IECC more like the FBC-EC, which allows equipment trade-offs)	FBC-EC Standard Reference Design has same Standard Reference Design as 2024 IECC except sizes in accordance with Section R403.7	None; but issue with 2024 IECC capacity being adequate to allow correct simulation results	None
Table R405.4.2(1) Specifications for the Standard Reference and Proposed Designs: Service water Heating	RED1-252-22, REPI-33-21	Replaces "As proposed" specification for Standard Reference Design with: - Fuel Type: Same as proposed design - Rated Storage Volume: Same as proposed design - Draw Pattern: Same as proposed design - Efficiencies: Uniform Energy Factor complying with 10 CFR §430.32 (making the 2024 IECC more like the FBC-EC,	FBC-EC Standard Reference Design and Proposed Design hot water fuel type and efficiency are same as 2024 IECC FBC-EC Standard Reference Design and Proposed Design hot water use is determined in accordance with ANSI/RESNET/ICC 301 while 2024 IECC Standard Reference Design and Proposed Design	Unknown	Unknown

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
		which allows equipment trade-offs) - Tank Temperature: 120°F (48.9°C) For Proposed Design, adds "As proposed" specification for Fuel Type, Rated Storage Volume, Draw Pattern, Efficiencies, and Tank Temperature	hot water use continues to use 2021 IECC equations Per ANSI/RESNET/ICC 301, FBC-EC tank temperature for both Standard Reference Design and Proposed Design is 125°F		
Table R405.4.2(1) Specifications for the Standard Reference and Proposed Designs: footnote "g"	REPI-33-21	Removes Standard Reference and Proposed Design language from this footnote regarding nonstorage type water heaters (now addressed in the table itself) 2024 IECC footnote "g" also revises assumptions for the Standard Reference and Proposed Designs for proposed designs without a water heater, but draft language unclear Footnote "g" changes also add Standard Reference Design specifications for proposed designs with heat pump water heaters; 40 gallon storage volume specification would mean that the Standard Reference Design uses a much less efficient water heater in cases where the Proposed Design's volume is over 55 gallons	For nonstorage type water heaters the FBC-EC footnote "g" specifies a 40-gallon storage-type water heater with the prevailing federal minimum energy factor for the same fuel as the predominant heating fuel type For proposed designs without a proposed water heater, FBC-EC footnote "g" specifies a 40-gallon storage-type water heater with the prevailing federal minimum efficiency for the same fuel as the predominant heating fuel type for both the proposed design and standard reference design	Unknown; language and intent unclear; as written, the 2024 IECC heat pump water heater specifications in footnote "g" would decrease efficiency in applicable situations	2024 IECC changes as provide in draft version make impacts unclear
Table R405.4.2(1) Specifications for the Standard	RED1-285-22	IECC continues to require R8 ducts for the Standard Reference Design for most cases where	FBC-EC specifies R6 for Standard Reference Design duct insulation and "as	None (for changes)	None (for changes)

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
Reference and Proposed Designs: Thermal distribution systems and footnote "m"		ducts are outside of conditioned space, and specifies duct insulation as being "as proposed" for the Proposed Design, with a 2024 IECC footnote "m" added for the Proposed Design specifying that sections of ductwork installed in accordance with Section R403.3.5.1 (deeply buried) are assumed to have an effective duct insulation R-value of R-25.	proposed" for the Proposed Design		
Table R405.4.2(1) Specifications for the Standard Reference and Proposed Designs: Thermal distribution systems	RED1-252-22, REPI-33-21	2024 IECC moved from applying a distribution system efficiency (DSE) of 0.88 to the Standard Reference Design heating and cooling system efficiencies for non-tested ducted systems and specifying 4 cfm per 100 sq. ft. for tested duct systems, to specifying 4 cfm per 100 sq. ft. of conditioned floor area for duct systems serving > 1,000 sq. ft. and 40 cfm of leakage to outside for duct systems serving ≤ 1,000 sq. ft. of conditioned floor area 2024 IECC also moved from specifying the Standard Reference Design duct location as being same as the proposed design to location based on foundation type and number of stories	FBC-EC currently specifies a DSE of 0.88 for the Standard Reference Design and as tested for the Proposed Design if tested, or if not tested, modeled as a Q_{nout} of 0.080 for ducted systems FBC-EC also specifies the Standard Reference Design duct and air handler location as being entirely within the building thermal envelope	Unknown; possibly slightly increased stringency	Unknown; possibly slightly increased cost
Table R405.4.2(1) Specifications for the Standard Reference and	RED1-285-22	2024 IECC Proposed Design duct location "as proposed" is same as 2021 IECC Proposed Design duct location, but adds footnote "l"	FBC-EC also specifies "as proposed for the duct location, but without the 2024 IECC footnote "l" text	Slightly less stringent	Slightly decreased cost

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
Proposed Designs: Thermal distribution systems and footnote "l"		which states that only sections of ductwork that are installed in accordance with Section R403.3.4, Items 1 and 2 are assumed to be located completely inside conditioned space; all other sections of ductwork are not assumed to be located completely inside conditioned space			
Table R405.4.2(1) Specifications for the Standard Reference and Proposed Designs: Thermal distribution systems	REPI-86-21	2024 IECC Proposed Design thermal distribution system efficiency was changed from "as tested" for tested duct systems to the measured total duct system leakage rate being entered as the duct system leakage to outside rate, with exceptions allowing outside leakage to instead be entered where leakage is tested in accordance with ANSI/RESNET/ ICC 380 or ASTM E1554, or where total duct system leakage is measured without space conditioning equipment installed, entry is 4 cfm per 100 sq. ft. of conditioned floor area	FBC-EC currently specifies "as tested" for the Proposed Design efficiency if tested, or if not tested, modeled as a Qn_{out} of 0.080 for ducted systems	Decreased stringency in applicable cases	Decreased stringency in applicable cases
Table R405.4.2(1) Specifications for the Standard Reference and Proposed Designs: Thermal distribution systems Table R405.4.2(2) Default Distribution System Efficiencies		Changed the Standard Reference Design distribution system efficiency (DSE) for ductless systems from 1.0 to 0.88, and made the DSE for the Proposed Design for ductless systems as specified in Table R405.4.2(2), with changes to the table	FBC-EC specifies a DSE of 0.88 for the Standard Reference Design for all duct systems and Table R405.5.2(2) DSE values for Proposed Design ductless systems; the 2024 IECC changes to the Standard Reference Design ductless system DSE and Proposed Design Table R405.4.2(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
for Proposed Designs			changes make the two codes the same for these systems		
Table R405.4.2(2) Default Distribution System Efficiencies for Proposed Designs: footnote "a"	RED1-285-22	Modifies footnote "a" which clarifies that default values in the table are for untested distribution systems, which must still "comply with Section R403", instead of 2021 IECC: must still "meet minimum requirements for duct system insulation"	Same as change between 2021 IECC and 2024 IECC	Possibly slightly increased stringency for applicable cases depending on interpretation	Possibly slightly increased cost for applicable cases depending on interpretation
Table R405.4.2(2) Default Distribution System Efficiencies for Proposed Designs: footnote "c"	REPI-86-21	Revises footnote "c", removing "including the air handler unit" from: "Entire system in conditioned space shall means that no component of the distribution system, including the air-handler unit, is located outside of the conditioned space"	Same as change between 2021 IECC and 2024 IECC	None	None
Table R405.4.2(2) Default Distribution System Efficiencies for Proposed Designs: footnote "d"	RED1-285-22	Replaces "manufacturer's air-handler enclosure" with "space conditioning equipment"	Same as change between 2021 IECC and 2024 IECC	None	None
R405.4.3 Input values		Renumbered from R405.5.3	Same as change between 2021 IECC and 2024 IECC, except renumbered from R405.6.3	None	None
R405.5 Calculation software tools [R405.5.2 Specific approval]	RECD1-8-22	Rewords section, incorporating "permitted to be approved" language from deleted Section R405.5.2	Same as change between 2021 IECC and 2024 IECC, except section number is R405.6	None	None
R405.5.1 Minimum capabilities	RECD1-8-22	Revises and updates section language including adding "approved software tools"	Same as change between 2021 IECC and 2024 IECC, except section number is R405.6.1	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
R405.5.2 Testing required by software vendors	RECD1-8-22	As also noted above in Section R405.4 discussion, new section requires that prior to approval, software tools be tested by the software vendor in accordance with ANSI/ASHRAE 140 Class II, Tier 1 test procedures	FBC-EC currently requires Florida Building Commission approval	Slightly increased stringency	None
R405.5.3 Algorithms not tested	RECD1-8-22	New section specifies that algorithms not tested in accordance with Section R405.5.2 be permitted in accordance with ANSI/RESNET/ICC 301	Same as change between 2021 IECC and 2024 IECC	None	None
R405.5.4 Compliance reports	RECD1-8-22	Renumbered from R405.3.2, title changed from "Compliance report", removes compliance report language which was moved to Section R405.3, and adds "approved" – "Approved software tools shall generate…"	Similar to changes between 2021 IECC and 2024 IECC, except section number is R405.4.2	None	None
R405.5.4.1 Compliance report for permit application		Renumbered from R405.3.2.1, and minor language revisions	FBC-EC has similar Section R405.4.2.1, but with several existing differences between it and the 2021 and 2024 IECC	None (from changes)	None (from changes)
R405.5.4.2 Compliance report for certificate of occupancy		Renumbered from R405.3.2.2, and minor language revisions	FBC-EC has similar Section R405.4.2.2, but with several existing differences between it and the 2021 and 2024 IECC	None (from changes)	None (from changes)
R406.1 Scope	RED1-65-22	Revision clarifies Energy Rating Index analysis is limited to dwelling units, and Spaces other than dwelling units in Group R-2, R-3 or R-4 buildings are to comply with Sections R402 through R404	Same as change between 2021 IECC and 2024 IECC	None	None
R406.2 ERI compliance	RED1-65-22	Several revisions including adding that the "as-built dwelling	Most similar FBC-EC section is R406.4 ERI-based compliance which requires the ERI be	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
		unit" also meet the listed requirements	determined in accordance with ANSI/RESNET/ICC 301, including Addendum A-2019		
Table R406.2 Requirements for Energy Rating Index	RED1-56-22, RED1 RED1-185-22-65-22, RED1-224-22 Part I, RED1-286-22, REPI-120-21	Revises Table R406.2 requirements for simulated building performance entries: removes Section R402.1.5 Additional Energy Efficiency, requires all of Section R403.5 Service hot water systems instead of previously just R403.5.1 Heated water circulation and temperature maintenance systems and R403.5.3 Drain water heat recovery units subsection; adds R402.1.6 Rooms containing fuel-burning appliances (for Climate Zone 3-8), R402.2.10 Slab-on grade floors, R402.5.1.3 Maximum air leakage rate, R402.5.2 Fireplaces, R402.5.3 Fenestration air leakage, R402.5.4 Recessed lighting, R402.5.5 Air-sealed electrical and communication outlet boxes, R406.3 Building thermal envelope, R403.2 Hot water boiler temperature reset, R403.13 Gas fireplaces; also changes crawl space requirement from R402.2.11.1 to R402.2.11; also removes Section R403.3 Duct systems exceptions, also edits for Section number and name changes consistency	FBC-EC does not use IECC's table-based requirements format for ERI compliance and does not include a number of the IECC requirements	None to slightly increased stringency as applicable, but limited due to trade-offs	None to somewhat increased cost as applicable
R406.3 Building thermal envelope	RED1-208-22,	Revises R406.3 and removes R406.3.1 and R406.3.2, changing	FBC-EC Performance compliance has several thermal	None to slightly increased stringency	None to slightly increased cost

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
[R406.3.1 On-site renewables are not included] [R406.3.2 On-site renewables are included]	REPI-33-21 REPI-126-21	from an on-site renewables vs. no on-site renewables based thermal envelope requirements to new thermal conductance (TC) based requirement; also reduces the maximum weighted fenestration SHGC for ERI compliance in Climate Zones 0 through 3 to 0.30	envelope minimum efficiency requirements but does not include either the 2021 IECC's UA based or 2018 IECC based thermal envelope efficiency requirement or new 2024 IECC thermal conductance (TC) based requirement	(limited due to trade-offs)	
R406.4 Energy Rating Index	REPI-126-21	Revises section, adding that "the mechanical ventilation rates used for the purpose of determining the ERI shall not be construed to establish minimum ventilation requirements for compliance with this code" and removing "except for buildings covered by the International Residential Code, the ERI reference design ventilation rate shall be in accordance with Equation 4-2" (also removing Equation 4-2); also removes limit on energy use reduction from on-site renewable energy	FBC-EC Energy Rating Index compliance does not reference mechanical ventilation specifically and does not limit energy use reduction from on-site renewable energy	None	None
R406.5 ERI-based compliance Table R406.5 Maximum Energy Rating Index	RED1-65-22, REPI-126-21	Makes several minor edits and breaks out maximum ERI by whether onsite renewables are installed or not, providing new maximum ERI values for projects that use onsite renewable power, and reducing the maximum ERI values slightly for projects that do not use on-site renewable power Also provides two new exceptions, one of which, where	Similar to change between 2021 IECC and 2024 IECC	Increased stringency (FBC-EC has substantially higher maximum ERI than either 2021 or 2024 IECC)	Increased cost (FBC-EC has substantially higher maximum ERI than either 2021 or 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
		approved by the code official, permits an Average Dwelling Unit Energy Rating Index calculated in accordance with ANSI/RESNET/ICC 301 to be used for buildings with 20 or more dwelling units			
R406.7 Documentation R406.7.1 Compliance software tools R406.7.2 Compliance report R406.7.2.1 Proposed compliance report for permit application. Compliance R406.7.2.2 Confirmed compliance report for a certificate of occupancy R406.7.3 Renewable energy certificate (REC) documentation	RED1-65-22	General changes to the ERI Documentation section and its subsections include clarification edits and section updates R406.7.1 Compliance software tools section changes include a new requirement for software vendors to publish documentation that the software has been validated using the Class II, Tier 1 test procedure in ANSI/ASHRAE 140 R406.7.3 Renewable energy certificate (REC) documentation section changes "on-site renewable energy" to "renewable energy power production", and removes its previous two documentation options, instead requiring documentation compliance with new Section R404.4	FBC-EC has same general ERI documentation requirements structure as the 2021 and 2024 IECC, but with a number of differences; the 2024 IECC's new requirement to document validation of software tools using ANSI/ASHRAE 140 the most notable change	Slightly increased stringency	None
R407.2 Tropical climate region	RE2D-32-23,	For compliance item #6, "low slope" is added to "the exterior low slope roof surface"	FBC-EC does not include a Tropical climate region 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
Table R407.2	RE2D-31-23	compliance requirement, and instead of referencing compliance options in Table C402.3, adds Table R407.2 which provides the compliance options			
SECTION R408 ADDITIONAL EFFICIENCY PACKAGE REQUIREMENTS		Changes section title from *Additional Efficiency Package Options*	FBC-EC does not include an Additional Efficiency Package Requirements section	None	None
R408.1 Scope	RED1-73-22	Scope is modified to reflect additional efficiency requirement changes	FBC-EC does not include an Additional Efficiency Package Requirements section	Increased Prescriptive stringency for Section R408 requirements, to be assessed further via analysis	Increased Prescriptive compliance cost for additional Section R408 efficiency requirements
R408.2 Additional energy efficiency credit requirements Table R408.2 Credits for Additional Energy Efficiency	REPI-18-21, RED1-73-22	Changes section title from *Additional efficiency package options* and details revised additional energy efficiency requirements which are specified in new Table R408.2	FBC-EC does not include an Additional Efficiency Package Requirements section	Increased Prescriptive stringency for Section R408 requirements, to be assessed further via analysis	Increased Prescriptive compliance cost for additional Section R408 efficiency requirements
R408.2.1 Enhanced building thermal envelope options R408.2.1.1 Enhanced building thermal envelope performance R408.2.1.2 Improved fenestration	RE2D-37-23	Changes section title from *Enhanced envelope performance option*, revises section, and adds four new subsections that provide specifications for enhanced building thermal envelope options, including enhanced building thermal envelope performance, improved fenestration, roof solar reflectance index, and reduced air leakage	FBC-EC does not include an Additional Efficiency Package Requirements section	Increased Prescriptive stringency for Section R408 requirements, to be assessed further via analysis	Increased Prescriptive compliance cost for additional Section R408 efficiency requirements

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
R408.2.1.3 Roof solar reflectance index R408.2.1.4 Reduced air leakage					
R408.2.2 More efficient HVAC equipment performance options R408.2.2.1 More efficient HVAC equipment for Climate Zone 4	RED1-351-22, RE2D-66-23	Revises section and provides revised and expanded listing of more efficient HVAC options applicable to all Climate Zones, and also by grouped Climate Zones, and specifically for Climate Zone 4	FBC-EC does not include an Additional Efficiency Package Requirements section	Increased Prescriptive stringency for Section R408 requirements, to be assessed further via analysis	Increased Prescriptive compliance cost for additional Section R408 efficiency requirements
R408.2.3 Reduced energy use in service water-heating options R408.2.3.1 Compact hot water distribution system option Table R408.2.3.1 Internal Volume of Various Water Distribution Tubing R408.2.3.1.1 Water volume determination	RE2D-37-23, RED1-73-22, RED1-313-22	Deletes existing language and hot water system efficiency options, and replaces with expanded table of options; also provides specifications for a compact hot water distribution system option	FBC-EC does not include an Additional Efficiency Package Requirements section	Increased Prescriptive stringency for Section R408 requirements, to be assessed further via analysis	Increased Prescriptive compliance cost for additional Section R408 efficiency requirements
R408.2.4 More efficient thermal	RE2D-37-23	Changes section title from *More efficient duct thermal distribution system option*, revises existing	FBC-EC does not include an Additional Efficiency Package Requirements section	Increased Prescriptive stringency for	Increased Prescriptive compliance cost for

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
distribution system options		options, and provides new ductwork located outside conditioned space option		Section R408 requirements, to be assessed further via analysis	additional Section R408 efficiency requirements
R408.2.5 Improved air sealing and efficient ventilation system options	RED1-343-22	Revises section, providing expanded list of improved air sealing and efficient ventilation system options, plus revised minimum performance requirements for measures requiring either an ERV or HRV	FBC-EC does not include an Additional Efficiency Package Requirements section	Increased Prescriptive stringency for Section R408 requirements, to be assessed further via analysis	Increased Prescriptive compliance cost for additional Section R408 efficiency requirements
R408.2.6 Energy efficient appliances Table R408.2.6 Minimum Efficiency Requirements: Appliances	RE2D-44-23, RED1-360-22	New additional energy efficiency credit compliance option provides table of efficient appliance options and related requirements	FBC-EC does not include an Additional Efficiency Package Requirements section	Increased Prescriptive stringency for Section R408 requirements, to be assessed further via analysis	Increased Prescriptive compliance cost for additional Section R408 efficiency requirements
R408.2.7 Renewable energy	REPI-18-21	New additional energy efficiency credit compliance option specifies on-site renewable energy production and renewable energy certificate (REC) documentation requirements	FBC-EC does not include an Additional Efficiency Package Requirements section	Increased Prescriptive stringency for Section R408 requirements, to be assessed further via analysis	Increased Prescriptive compliance cost for additional Section R408 efficiency requirements
R408.2.8 Demand response R408.2.8.1 Single-stage HVAC system controls R408.2.8.2 Variable-capacity and two-stage	REPI-33-21	New additional energy efficiency credit compliance option specifies thermostat demand responsive control requirements, including those for single-stage HVAC systems and variable-capacity and two-stage HVAC system	FBC-EC does not include an Additional Efficiency Package Requirements section	Increased Prescriptive stringency for Section R408 requirements, to be assessed further via analysis	Increased Prescriptive compliance cost for additional Section R408 efficiency requirements

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
HVAC system controls					
R408.2.9 Opaque walls	REPI-33-21	New additional energy efficiency credit compliance option specifies that for buildings in Climate Zones 4 and 5, the maximum *U*-factor of 0.060 is permitted for wood-framed walls for compliance with Table R402.1.2 where complying with one or more of four provided options	FBC-EC does not include an Additional Efficiency Package Requirements section, and this option would not apply in Florida Climate Zones 1 and 2	None	None
R408.2.10 Whole-home lighting control	RED1-166-22, RE2D-40-23	New additional energy efficiency credit compliance option specifies lighting controls capable of turning off all permanently installed interior lighting; includes two exceptions	FBC-EC does not include an Additional Efficiency Package Requirements section	Increased Prescriptive stringency for Section R408 requirements, to be assessed further via analysis	Increased Prescriptive compliance cost for additional Section R408 efficiency requirements
R408.2.11 Higher efficacy lighting	RED1-263-22	New additional energy efficiency credit compliance option specifies requirements for higher efficacy hardwired lighting; includes two exceptions	FBC-EC does not include an Additional Efficiency Package Requirements section	Increased Prescriptive stringency for Section R408 requirements, to be assessed further via analysis	Increased Prescriptive compliance cost for additional Section R408 efficiency requirements
Chapter 5 [RE] Existing Buildings					
R501.2 Compliance [R501.4 Compliance]	RED1-264-22	Moves additional non-energy code compliance requirements from Section R501.4 which has same title to this section	Same as change between 2021 IECC and 2024 IECC Corresponding FBC-EC sections are R501.1.1 Additions, alterations, or repairs: General and R501.4 Compliance	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
R501.4 New and replacement materials		Renumbered from R501.5	Same as change between 2021 IECC and 2024 IECC	None	None
R501.5 Historic buildings		Renumbered from R501.6	Same as change between 2021 IECC and 2024 IECC	None	None
R501.6 Change in space conditioning	REPI-143-21	New section (largely moved from 2021 IECC Section R502.2) requires that any unconditioned or low-energy space that is altered to become conditioned space be brought into full compliance with Section R502 (Additions), with Section R405 exception	FBC-EC already has this requirement in Section R503.2 (requires "full compliance with this code" and includes same Section R405 exception)	None	None
R502.1 General	REPI-143-21	Revises (Additions) General section, with removed language largely provided or implied elsewhere in Chapter 5	Similar to change between 2021 IECC and 2024 IECC	None	None
[R502.2 Change in space conditioning]	REPI-143-21	Removed and largely rewritten in Section R501.6	FBC-EC already has this requirement in Section R503.2 (requires "full compliance with this code" and includes same Section R405 exception)	None	None
R502.2 Prescriptive compliance	REPI-144-21	Renumbered from R502.3 and adds new Section R502.2.5 (*Additional energy efficiency credit requirements for additions*) to listing of sections with which Prescriptive compliance additions must comply if the addition increases the total conditioned area by 25% or more	FBC-EC does not include additional energy efficiency credit requirements for additions as has been added to the 2024 IECC	Somewhat increased Prescriptive stringency	Somewhat increased Prescriptive cost
R502.2.1 Building thermal envelope	RED1-185-22	Renumbered from R502.3.1, and "building envelope" changed to "building thermal envelope" in title and text	Similar to change between 2021 IECC and 2024 IECC, except renumbered from R502.1.1.1	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
R502.2.2 Heating and cooling systems	RED1-285-22	Renumbered from R502.3.2, "ducts" changed to "ductwork", and clarification added that testing is not required for the exception	Similar to change between 2021 IECC and 2024 IECC, except renumbered from R502.1.1.2, and FBC-EC testing exception limited to ducts less than 40 linear feet	None or slightly decreased Prescriptive stringency	None or slightly decreased Prescriptive cost
R502.2.3 Service hot water systems		Renumbered from R502.3.3	Same as change between 2021 IECC and 2024 IECC except renumbered from R502.1.1.3	None	None
R502.2.4 Lighting		Renumbered from R502.3.4	Same as change between 2021 IECC and 2024 IECC except renumbered from R502.1.1.4	None	None
R502.2.5 Additional energy efficiency credit requirements for additions	REPI-144-21, RED1-263-22	New section requires additions to, with three exceptions (including for Performance and ERI compliance), achieve not less than five additional energy efficiency credits	FBC-EC does not include additional energy efficiency credit requirements for additions as has been added to the 2024 IECC	Somewhat increased Prescriptive stringency	Somewhat increased Prescriptive cost
R503.1.1 Building thermal envelope R503.1.1.1 Fenestration alterations R503.1.1.2 Roof, ceiling and attic alterations R503.1.1.3 Above-grade wall alterations R503.1.1.4 Floor alterations	REPI-150-21, RED1-273-22, RED1-268-22	Revises Building thermal envelope section and adds five new subsections to provide more detailed requirements for building thermal envelope alterations; adds requirement for new building thermal envelope assemblies that are part of an alteration to comply with Section R402; also revises exceptions For fenestration, Section R503.1.1.1 is renamed from *Replacement fenestration* and revised to add a requirements for new fenestration area added to an existing building to comply with Section R402.4	Same as change between 2021 IECC and 2024 IECC	From none, to based on proponent's cost statement, somewhat increased stringency for some alterations	From none, to based on proponent's cost statement, somewhat increased cost for some alterations

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
R503.1.1.5 Below-grade wall alterations R503.1.1.6 Air barrier		New Section R503.1.1.2 requires roof, ceiling, and attic alteration insulation to comply with Section R402.1, with approved alternative design allowance for certain listed alterations where conditions prevent compliance with R402.1 New Section R503.1.1.3 specifies requirements for above-grade wall alterations, with separate requirements for exposed wall cavities, added exterior wall coverings, or for new interior finishes or exterior wall coverings New Section R503.1.1.4 provides requirements for when floor cavities or overhangs are exposed New Section R503.1.1.5 provides requirements for where an unconditioned below-grade space is changed to conditioned space, and for alterations to building thermal envelope walls of conditioned below-grade space New Section R503.1.1.6 provides air barrier requirements for altered building envelope assemblies			
R503.1.2 Heating and cooling systems	REPI-145-21, RED1-285-22	Revises Heating and cooling systems alterations section and adds four new subsections to provide more detailed	Same as change between 2021 IECC and 2024 IECC	From slightly decreased stringency, to based on proponent's cost	From slightly decreased stringency, to based on proponent's cost

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
R503.1.2.1 Ductwork R503.1.2.2 System sizing R503.1.2.3 Duct system leakage R503.1.2.4 Controls		requirements for new and existing heating and cooling systems and ductwork that are part of an alteration New Section R503.1.2.1 provides requirements for HVAC ductwork newly installed as part of an alteration New Section R503.1.2.2 provides sizing requirements for new heating and cooling equipment that is part of an alteration For certain listed duct system alterations, new Section R503.1.2.3 requires duct system testing and total leakage limit New Section R503.1.2.4 provides controls requirements for new heating and cooling equipment that is part of an alteration		statement, somewhat increased stringency for some alterations	statement, somewhat increased cost for some alterations
R503.1.5 Additional efficiency credit requirements for substantial improvements	RED1-263-22	New section requires that with three exceptions (including for Performance and ERI compliance), substantial improvements achieve not less than three additional energy efficiency credits	FBC-EC does not include additional energy efficiency credit requirements for additions as has been added to the 2024 IECC	Somewhat increased Prescriptive stringency	Somewhat increased Prescriptive cost
R505.1 General	RED1-264-22, CEPI-24-21 Part II	Changes “code” to “chapter” to clarify section to state that any space that is converted to a dwelling unit or portion thereof from another use or occupancy must comply with this chapter	Same as change between 2021 IECC and 2024 IECC except renumbered from R502.1.1.3	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
		(instead of "code"); also in exception, changes "simulated performance option" to "simulated building performance option"			
Appendixes					
Appendix RC Zero Net Energy Residential Building Provisions	RECPI-11-21	Extensively revises appendix which provides requirements for zero energy residential buildings based on Energy Rating Index; revisions include changes to appendix title, new definitions section, revised calculations, and decreased maximum Energy Rating Index values not including renewable energy	FBC-EC does not include a Zero Net Energy Residential Building Provisions appendix	None (not mandatory unless adopted by ordinance)	None (not mandatory unless adopted by ordinance)
Appendix RD Electric Energy Storage Provisions	REPI-33-21	New appendix provides electric energy storage readiness provision requirements, with applicability for new construction with solar-ready measures or on-site PV system requirements	Same as change between 2021 IECC and 2024 IECC	None (not mandatory unless adopted by ordinance)	None (not mandatory unless adopted by ordinance)
Appendix RE Electric Vehicle Charging Infrastructure		New appendix provides electric vehicle charging infrastructure requirements for adopting jurisdictions	Same as change between 2021 IECC and 2024 IECC	None (not mandatory unless adopted by ordinance)	None (not mandatory unless adopted by ordinance)
Resource RRA All-Electric Residential Buildings	REPI-155-21, IRCEAPP-01-24,	New resource provides code compliance pathways for residential buildings intended to result in all-electric buildings (not permit combustion equipment in buildings), with application for adopting jurisdictions or individual projects	Same as change between 2021 IECC and 2024 IECC	None (related information that is not part of the code)	None (related information that is not part of the code)

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 RF Alternative Building Thermal Envelope Insulation *R*-value Options	RED1-261-22, REPI-165-21	New appendix provides expanded *R*-value options for compliance with Section R402.1.2 *U*-factor criteria and supplements the selection of insulation conditions addressed in the Table R402.1.3 *R*-value approach	Same as change between 2021 IECC and 2024 IECC	None (not mandatory unless adopted by ordinance)	None (not mandatory unless adopted by ordinance)
Appendix RG 2024 IECC Stretch Code	RED1-27-22	New appendix provides requirements to achieve lower residential building energy consumption than adoption of the residential code provisions would otherwise provide	Same as change between 2021 IECC and 2024 IECC	None (not mandatory unless adopted by ordinance)	None (not mandatory unless adopted by ordinance)
Appendix RH Operational Carbon Rating and Energy Reporting	RED1-28-22	New appendix provides means to evaluate the greenhouse gas performance of a building according to ANSI/RESNET/ICC 301	Same as change between 2021 IECC and 2024 IECC	None (not mandatory unless adopted by ordinance)	None (not mandatory unless adopted by ordinance)
Appendix RI On-site Renewable Energy	RED1-91-22	New appendix provides requirements for prescriptive solar PV where required at the time of construction	Same as change between 2021 IECC and 2024 IECC (FBC-EC has Appendix RB Solar-Ready Provisions—Detached One- and Two- Family Dwellings, Multiple Single-Family Dwellings (Townhouses), but with significant differences between it and the new IECC On-site Renewable Energy appendix)	None (not mandatory unless adopted by ordinance)	None (not mandatory unless adopted by ordinance)
Appendix RJ Demand Responsive Controls	REPI-90-21, RED1-315-22, REAPP-01-24	New appendix provides requirements for demand responsive controls integration for water heaters	Same as change between 2021 IECC and 2024 IECC	None (not mandatory unless adopted by ordinance)	None (not mandatory unless adopted by ordinance)
Appendix RK Electric-ready	REAPP-01-24	New appendix provides electric readiness provisions for water	Same as change between 2021 IECC and 2024 IECC	None (not mandatory unless	None (not mandatory unless

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
Residential Building Provisions		heaters, household clothes dryers and cooking appliances		adopted by ordinance)	adopted by ordinance)
Appendix RL Renewable Energy Infrastructure	REPI-33-21, REAPP-01-24	New appendix provides requirements for building renewable energy infrastructure readiness	Same as change between 2021 IECC and 2024 IECC	None (not mandatory unless adopted by ordinance)	None (not mandatory unless adopted by ordinance)