

Amendment to 2024 International Energy Conservation Code (IECC) Chapter 1 [CE], Sections C101 – C110

Submitted by: International Energy Conservation Code Committee

Notes:

- 1. <u>For reserved sections herein, refer to the amendments and requirements in Chapter 1 of the International Building Code for these code requirements.</u>
- 2. <u>For sections that remain unchanged from base code, the term "see this section of the 2024 IECC" shall refer to the unchanged base code.</u>

SECTION C101 SCOPE AND GENERAL REQUIREMENTS

C101.1 Title

This code shall be known as the <u>International Energy Conservation Code as amended by the City of Phoenix of [name of jurisdiction]</u> and shall be cited as such. It is referred to herein as "this code." <u>These regulations are one document of the overall Phoenix Building Construction Code as defined by the adopting ordinance.</u>

C101.2 Scope.

This code applies to the design and construction of buildings not covered by the scope of the IECC-Residential Provisions. <u>Group R-2 when defined as a Commercial Building by section C202</u>, shall have the option of complying under the Residential Provisions of the code, regardless of height. Once defined as such on the submittal documents, all components of the Residential Provisions shall be followed.

C101.2.1 Appendices. – See this section of the 2024 IECC

C101.3 Intent. – See this section of the 2024 IECC

C101.4 Compliance.

Residential buildings shall meet the provisions of IECC—Residential Provisions. Commercial buildings shall meet the provisions of IECC—Commercial Provisions. Group R-2 when defined as a Commercial Building by section C202, shall have the option of complying under the Residential Provisions of the code, regardless of height. Once defined as such on the submittal documents, all components of the Residential Provisions shall be followed.

C101.4.1 Compliance materials – See this section of the 2024 IECC

SECTION C102 APPLICABILITY – Reserved, except as noted below

C102.1.1 Mixed residential and commercial buildings. — See this section of the 2024 IECC

SECTION C103 CODE COMPLIANCE AGENCY – Reserved

SECTION C104 ALTERNATIVE MATERIALS, DESIGN AND METHODS OF CONSTRUCTION AND EQUIPMENT — Reserved

SECTION C105 CONSTRUCTION DOCUMENTS — Reserved
SECTION C106 FEES — Reserved
SECTION C107 INSPECTIONS — Reserved
SECTION C108 NOTICE OF APPROVAL — Reserved
SECTION C109 MEANS OF APPEALS — Reserved
SECTION C110 STOP WORK ORDER – Reserved
Justification: All the adopted and amended building code documents taken together are known as the Phoenix Building Construction Code. Each code document is a separate document of the Phoenix Building Construction Code. This document is the International Energy Conservation Code as Amended by the City of Phoenix. This document is intended to apply where a code or referenced standard identifies the International Energy Conservation Code as being applicable. Allows a multi-family developer the choice between residential and commercial provisions regardless of height for multi-family construction. The reserved provisions are contained in the Phoenix Building Construction Code – Administrative Provisions (Chapter 1 of the International Building Code).
Cost Impact: No cost impact.
Approved in previous 2018 Code Adoption process: ☐ YES ☐ NO
ACTION TAKEN:
2024 Code Committee Date: January 30, 2025
Approved as submitted Modified and approved Denied No action taken
Development Advisory Board (DAB) Subcommittee
Development Advisory Board (DAB) Development Advisory Board (DAB)
Approved as submitted Modified and approved Denied No action taken
Transportation, Infrastructure and Planning Subcommittee Date:
Approved as submitted Modified and approved Denied No action taken
City Council Action Date:
Approved as submitted Modified and approved Denied No action taken



Amendment to 2024 International Energy Conservation Code (IECC) Chapter 4 [CE], Section C401.2.1 Submitted by: International Energy Conservation Code Committee
Submitted by: International Energy Conservation Code Committee
 C401.2.1 International Energy Conservation Code Commercial buildings shall comply with one of the following: 1. Prescriptive Compliance. The Prescriptive Compliance option requires compliance with Sections C402 through C406 and Sections C408. Dwelling units and sleeping units in Group R-2 buildings shall be deemed to be in compliance with this chapter, provided that they comply with Section R406. 2. Simulated Building Performance. The Simulated Building Performance option requires compliance with Section C407.
Exceptions:
1. Additions, alterations, repairs, and changes of occupancy to existing buildings complying with Chapter 5.
2. Compliance with the provisions of Section C408 is optional.
Justification: The 2024 IECC added references for mandatory compliance with Section C408 in Section C401.2.1. This amendment revises the requirements of Section C408 from mandatory to optional. While the City of Phoenix encourages compliance with Section C408 Maintenance Information and System Commissioning; this function will occur after the C of O is issued.
Cost Impact: Cost will be reduced if the Commissioning is not done.
Approved in previous 2018 Code Adoption process:
ACTION TAKEN:
2024 Code Committee Date: October 31, 2024
Approved as submitted Modified and approved Denied No action taken
Development Advisory Board (DAB) Subcommittee ☐ Approved as submitted ☐ Modified and approved ☐ Denied ☐ No action taken
Development Advisory Board (DAB) Date:
☐ Approved as submitted ☐ Modified and approved ☐ Denied ☐ No action taken
Transportation, Infrastructure and Planning Subcommittee Date:
Approved as submitted Modified and approved Denied No action taken City Council Action Date:



Amendment to 2024 International Energy Conservation Code (IECC) Chapter 4 [CE], Section C401.2.2
Submitted by: International Energy Conservation Code Committee
C401.2.2 ASHRAE 90.1. (as it relates to C401.2.1 International Conservation Code – Prescriptive Compliance) Commercial buildings shall comply with the requirements of ANSI/ASHRAE/IES 90.1.
Compliance with the provisions of Section C408 are optional.
Justification: Section C401.2 of the 2024 IECC states: <i>Commercial buildings</i> shall comply with Section C401.2.2 or C401.2.2.
The 2024 IECC Section C401.2.1 for The Prescriptive Compliance option has references for required compliance with Section C408.
This amendment revises Section C401.2.2's requirement of adherence to Section C408 to be optional.
While the City of Phoenix encourages compliance with Section C408 Maintenance Information and System Commissioning; it recommends deferring the mandatory requirement to a future code cycle to reduce the cost of this relatively new non-life safety requirement.
Cost Impact: cost reduction
Approved in previous 2018 Code Adoption process: ☐ YES ☐ NO
ACTION TAKEN:
2024 Code Committee Date: October 31, 2024
Approved as submitted Modified and approved Denied No action taken
Development Advisory Board (DAB) Subcommittee Date:
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Transportation, Infrastructure and Planning Subcommittee Date:
Approved as submitted Modified and approved Denied No action taken
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Approved as submitted Modified and approved Denied No action taken



Amendment to 2024 International Energy Conservation Code (IECC) Chapter 4 [CE], Section C405.15

Submitted by: National Electrical Code Committee

C405.15 Reserved

This section is deleted in its entirety.

Note: The corresponding requirements in ASHRAE 90.1 10.5.1 Renewable Energy Resources is also deleted in its entirety.

C405.15 Renewable energy systems.

Buildings in Climate Zones 0 through 7 shall comply with Sections C405.15.1 through C405.15.4.

C405.15.1 On-site renewable energy systems.

Buildings shall be provided with on-site renewable electricity generation systems with a direct current (DC) nameplate power rating of not less than 0.75 watts per square foot (8.1 W/m²) multiplied by the sum of the gross conditioned floor area of all floors, not to exceed the combined gross conditioned floor area of the three largest floors.

Exceptions: The following buildings or building sites shall comply with Section C405.15.2:

- 1. A building site located where an unshaded flat plate collector oriented toward the equator and tilted at an angle from horizontal equal to the latitude receives an annual daily average incident solar radiation less than 1.1 kBtu/ft² per day (3.5 kWh/m²/day).
- 2. A building where more than 80 percent of the roof area is covered by any combination of permanent obstructions such as, but not limited to, mechanical equipment, vegetated space, access pathways or occupied roof terrace.
- 3. Any building where more than 50 percent of the roof area is shaded from direct-beam sunlight by natural objects or by structures that are not part of the building for more than 2,500 annual hours between 8:00 a.m. and 4:00 p.m.
- 4. A building with gross conditioned floor area less than 5,000 square feet (465 m²).

C405.15.2 Off-site renewable energy.

Buildings that qualify for one or more of the exceptions to Section C405.15.1 or do not meet the requirements of Section C405.15.1 with an on-site renewable energy system shall procure off-site renewable electrical energy, in accordance with Sections C405.15.2.1 and C405.15.2.2, that shall be not less than the total off-site renewable electrical energy determined in accordance with Equation 4-11.

TREoff = (RENoff x 0.75W/sqft x FLRA - IREon) x 15 Equation 4-11

where:

TRE_{off} = Total off-site renewable electrical energy in kilowatt-hours (kWh) to be procured in accordance with Table C405.15.2.

REN_{off} = Annual off-site renewable electrical energy from Table C405.15.2, in units of kilowatthours per watt of array capacity.

FLRA = The sum of the gross conditioned floor area of all floors not to exceed the combined floor area of the three largest floors.

IRE on = Annual on-site renewable electrical energy generation of a new on-site renewable energy system, to be installed as part of the building project, whose rated capacity is less than the rated capacity required in Section C405.15.1.

TABLE C405.15.2

ANNUAL OFF-SITE RENEWABLE ENERGY REQUIREMENTS

CLIMATE ZONE	ANNUAL OFF-SITE RENEWABLE ELECTRICAL ENERGY (kWh/W)
1A, 2B, 3B, 3C, 4B and 5B	1.75
0A, 0B, 1B, 2A, 3A and 6B	1.55
4A, 4C, 5A, 5C, 6A and 7	1.35

C405.15.2.1 Off-site procurement.

The building owner, as defined in the International Building Code, shall procure and be credited for the total amount of off-site renewable electrical energy, not less than required in accordance with Equation 4-11, with one or more of the following:

- 1. Physical renewable energy power purchase agreement.
- 2. Financial renewable energy power purchase agreement.
- 3. Community renewable energy facility.
- 4. Off-site renewable energy system owned by the building property owner.
- 5. Renewable energy investment fund.
- Green retail tariff.

The generation source shall be located where the energy can be delivered to the building site by any of the following:

- 1. Direct connection to the off-site renewable energy facility.
- 2. The local utility or distribution entity.
- 3. An interconnected electrical network where energy delivery capacity between the generator and the building site is available.

C405.15.2.2 Off-site contract.

The renewable energy shall be delivered or credited to the building site under an energy contract with a duration of not less than 10 years. The contract shall be structured to survive a partial or full transfer of ownership of the building property.

C405.15.3 Renewable energy certificate (REC) documentation.

The property owner or owner's authorized agent shall demonstrate that where renewable energy certificates (RECs) or energy attribute certificates (EACs) are associated with on-site and off-site renewable energy production required by Sections C405.15.1 and C405.15.2, all of the following criteria for RECs and EACs shall be met:

- 1. The RECs and EACs are retained and retired by or on behalf of the property owner or tenant for a period of not less than 15 years or the duration of the contract in Section C405.15.2.2, whichever is less.
- 2. The RECs and EACs are created within a 12-month period of the use of the REC.
- 3. The RECs and EACs are from a generating asset placed in service not more than 5 years before the issuance of the certificate of occupancy.

C405.15.4 Renewable energy certificate purchase.

A building that qualifies for one or more of the exceptions to Section C405.15.1, and where it can be demonstrated to the code official that the requirements of Section C405.15.2 cannot be met, the building owner shall contract the purchase of renewable electricity products before the

certificate of occupancy is issued. The purchase of renewable electricity products shall comply with the Green e Energy National Standard for renewable electricity products equivalent to five times the amount of total off-site renewable energy calculated in accordance with Equation 4-11.

Justification: 2024 IECC C405.15 requires on-site renewable electricity generation systems to be installed on **ALL** commercial buildings. If the buildings qualify for one or more of the exceptions to Section C405.15.1 or do not meet the requirements of Section C405.15.1 with an on-site renewable energy system, the building owner is mandated to procure off-site renewable electrical energy in an amount equivalent to **15** times the on-site amount. This is illustrated in the following calculations based on the formulas stated in the respective code sections.

C405.15.1

On-site renewable energy required = $(1.75 \text{KWh/W} \times 0.75 \text{W/sqft} \times \text{sqft})$ of gross conditioned floor area)

C405.15.2

Off-site renewable energy contract required = $(1.75 \text{KWh/W} \times 0.75 \text{W/sqft} \times \text{sqft})$ of gross conditioned floor area – on-site installed KWh/yr) x 15

The owner is required to obtain the off-site renewable energy by entering into a contract with a duration of not less than 10 years. Furthermore, the contract is required to survive a partial or full transfer of ownership of the building property.

The intent of the International Energy Conservation Code is to promote the efficient **use** of energy. This is accomplished by requiring the components and systems (insulation, fenestration, heating / cooling systems, water heating, lighting, etc.) that are installed in a building to be energy efficient. Although not related to life safety, the goal of this intent is appropriate as it is applied to the items of the building that are requisite to a habitable space.

However, C405.15 goes well beyond this intent and imposes a heavy-handed mandate that the building owner must either purchase and install an on-site renewable electricity **generation** system or face a draconian penalty of procuring contracted off-site generated renewable electrical energy, sized at 15 times the on-site system size, for a minimum of 10 years. If the building owner needed to sell the building during the contract period, the building would include an encumbrance of this contract that would apply to the prospective owner that may hinder the owner's ability to sell the property. This is not an appropriate or reasonable requirement to force the building owner (current and future) to purchase a generation system product that they had no intention of installing or face a 10 year penalty.

This amendment recommends removing this requirement by strikin	g C405.15 in its entirety.
Cost Impact: Cost reduction	
Approved in previous 2018 Code Adoption process:	YES 🛛 NO
ACTION TAKEN:	
2024 Code Committee	Date: 1-29-2025
	☐ No action taken
Development Advisory Board (DAB) Subcommittee	Date:
☐ Approved as submitted ☐ Modified and approved ☐ Denied	☐ No action taken
Development Advisory Board (DAB)	Date:

☐ Approved as submitted ☐ Modified and approved ☐ Denied	☐ No action taken
Transportation, Infrastructure and Planning Subcommittee	Date:
☐ Approved as submitted ☐ Modified and approved ☐ Denied	☐ No action taken
City Council Action	Date:
Approved as submitted Modified and approved Denied	☐ No action taken



Amendment to 2024 International Energy Conservation Code (IECC) Chapter 1 [RE], Sections R101 – R110

Submitted by: International Energy Conservation Code Committee

Notes:

- 1. For reserved sections herein, refer to the amendments and requirements in Chapter 1 of the International Building Code for these code requirements.
- 2. <u>For sections that remain unchanged from base code, the term "see this section of the 2024 IECC" shall refer to the unchanged base code.</u>

SECTION R101 - SCOPE AND GENERAL REQUIREMENTS

R101.1 Title.

This code shall be known as the <u>International Energy Conservation Code as amended by the City of Phoenix of **[name of jurisdiction]** and shall be cited as such. It is referred to herein as "this code." <u>These regulations are one document of the overall Phoenix Building Construction Code as defined by the adopting ordinance.</u></u>

R101.2 Scope.

This code applies to the design and construction of detached one- and two-family dwellings and multiple single-family dwellings (townhouses) and Group R-2, R-3 and R-4 buildings three stories or less in height above *grade plane*. Group R-2, when defined as a Residential Building by section R202, shall have the option of complying under the Commercial Provisions of the code, regardless of height. Once defined as such on the submittal documents, all components of the Commercial Provisions shall be followed.

R101.2.1 Appendices. – See this section of the 2024 IECC

R101.3 Intent. – See this section of the 2024 IECC

R101.4 Compliance.

Residential buildings shall meet the provisions of IECC—Residential Provisions. Commercial buildings shall meet the provisions of IECC—Commercial Provisions. Group R-2, when defined as a Residential Building by section R202, shall have the option of complying under the Commercial Provisions of the code, regardless of height. Once defined as such on the submittal documents, all components of the Commercial Provisions shall be followed.

R101.4.1 Compliance materials. – See this section of the 2024 IECC

SECTION R102 - APPLICABILITY – Reserved, except as noted below

R102.1.1 Mixed residential and commercial buildings. – See this section of the 2024 IECC

SECTION R103 - CODE COMPLIANCE AGENCY - Reserved

SECTION R104 - ALTERNATIVE MATERIALS, DESIGN AND METHODS OF CONSTRUCTION AND EQUIPMENT — Reserved
SECTION R105 - CONSTRUCTION DOCUMENTS — Reserved
SECTION R106 - FEES - Reserved
SECTION R107 - INSPECTIONS — Reserved
SECTION R108 - NOTICE OF APPROVAL — Reserved
SECTION R109 - MEANS OF APPEALS - Reserved
SECTION R110 - STOP WORK ORDER - Reserved
Justification: All the adopted and amended building code documents taken together are known as the Phoenix Building Construction Code. Each code document is a separate document of the Phoenix Building Construction Code. This document is the International Energy Conservation Code as Amended by the City of Phoenix. This document is intended to apply where a code or referenced standard identifies the International Energy Conservation Code as being applicable. Allows a multi-family developer the choice between residential and commercial provisions regardless of height for multi-family construction.
The reserved provisions are contained in the Phoenix Building Construction Code – Administrative Provisions (Chapter 1 of the International Building Code).
Cost Impact: No cost impact.
Approved in previous 2018 Code Adoption process:
ACTION TAKEN:
2024 Code Committee Date: January 30, 2025
Approved as submitted Modified and approved Denied No action taken
Development Advisory Board (DAB) Subcommittee Date:
☐ Approved as submitted ☐ Modified and approved ☐ Denied ☐ No action taken Development Advisory Board (DAB) Date:
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Transportation, Infrastructure and Planning Subcommittee Date:
☐ Approved as submitted ☐ Modified and approved ☐ Denied ☐ No action taken
City Council Action Date:
☐ Approved as submitted ☐ Modified and approved ☐ Denied ☐ No action taken



Amendment to 2024 International Energy Conservation Code (IECC) Chapter 4 [RE], Section R404.1.5
Submitted by: International Residential Code Committee
R404.1.5 Gas lighting.
Gas-fired lighting appliances shall not be equipped with a continuous pilot and shall be equipped with an on-demand pilot, intermittent ignition or interrupted ignition as defined by ANSI Z21.20.
Justification: These products as described are not currently available. There is an alternate in the IFGC that has been readily available since at least 2012.
Cost Impact: No Cost Impact
Approved in previous 2018 Code Adoption process:
ACTION TAKEN:
ACTION TAKEN: 2024 Code Committee Date: January 30,2025
ACTION TAKEN: 2024 Code Committee Approved as submitted Modified and approved Denied No action taken
ACTION TAKEN: 2024 Code Committee Approved as submitted Modified and approved Denied Development Advisory Board (DAB) Subcommittee Date: January 30,2025 No action taken Date:
ACTION TAKEN: 2024 Code Committee Approved as submitted Modified and approved Denied Development Advisory Board (DAB) Subcommittee Approved as submitted Modified and approved Denied No action taken Date: No action taken
ACTION TAKEN: 2024 Code Committee Approved as submitted Modified and approved Denied Development Advisory Board (DAB) Subcommittee Approved as submitted Modified and approved Denied Date: No action taken Date: No action taken Development Advisory Board (DAB) Development Advisory Board (DAB) Date:
ACTION TAKEN: 2024 Code Committee
ACTION TAKEN: 2024 Code Committee Approved as submitted Modified and approved Denied Development Advisory Board (DAB) Subcommittee Approved as submitted Modified and approved Denied Development Advisory Board (DAB) Approved as submitted Modified and approved Denied Date: Approved as submitted Modified and approved Denied Transportation, Infrastructure and Planning Subcommittee Date: Date: No action taken Date: No action taken Date:
ACTION TAKEN: 2024 Code Committee



Amendment to 2024 International Energy Conservation Code (IECC) Chapter 4 [RE], Sections R404.2 – R404.3.1

Submitted by: International Residential Code Committee

R404.2 Interior lighting controls.

All permanently installed luminaires shall be controlled as required in Sections R404.2.1 and R404.2.2.

Exception: Lighting controls shall not be required for safety or security lighting.

R404.2.1 Habitable spaces.

All permanently installed luminaires in habitable spaces shall be controlled with a manual dimmer or with an automatic shutoff control that automatically turns off lights within 20 minutes after all occupants have left the space and shall incorporate a manual control to allow occupants to turn the lights on or off.

R404.2.2 Specific locations.

All permanently installed luminaires in garages, unfinished basements, laundry rooms and utility rooms shall be controlled by an automatic shutoff control that automatically turns off lights within 20 minutes after all occupants have left the space and shall incorporate a manual control to allow occupants to turn the lights on or off.

R404.3 Exterior lighting controls.

Exterior lighting controls shall comply with Section R404.3.1.

R404.3.1 Controls for individual dwelling units.

Where the total permanently installed exterior lighting power is greater than 30 watts, the permanently installed exterior lighting shall comply with the following:

- 1.Lighting shall be controlled by a manual on and off switch which permits automatic shut-off actions.
- 2.Lighting shall be automatically shut off when daylight is present and satisfies the lighting needs.
- 3. Controls that override automatic shut-off actions shall not be allowed unless the override automatically returns automatic control to its normal operation within 24 hours.

Justification: Coordinates with the 2024 amendment to N1104.2 – N1104.3.1 submitted by the International Residential Code Committee

Not all commercially available residential lights are dimmable and installing motion sensors poses safety concerns with lights going off unexpectedly, such as in bathrooms, garages, laundry rooms etc. This is typical with motion sensors if they are not installed with a high level of detailed attention paid. To achieve full range of motion sensor functionality, additional ceiling mounted sensors would be required to mitigate safety concerns especially in large spaces. These additional sensors are not readily available for residential applications, are expensive,

difficult to install in a residential application, and can be finicky at best for the intended function of this code. The exterior lighting requirements are difficult to achieve as these control products are not readily available in the current market. Systems that do exist are expensive and complicated to install, driving up costs overall. Most commercially available residential exterior lights are already equipped with photocells, which shut the light off when daylight is sensed automatically, meeting most of the intent of this section of this code already. Additionally, most commercially available security lights contain photocells AND motion sensor capabilities. Manufacturing incandescent lighting has not been allowed for some time now, and new/old stocks are dwindling by the day, if one can even source them anymore. The other portions of this code make the installation of incandescent lighting next to impossible to install and comply. With the code requirements for high efficiency lighting, combined with required high efficiency lighting manufacturing requirements, the market is saturated with these efficient products vastly reducing energy consumption on a large scale in alignment with the intent of this code. Implementing these code requirements proposed to strike, will not drastically increase the desired consumption reduction in any measurable way. The increased safety hazards posed do not outweigh any potential energy savings which will be minimal at best while increasing costs significantly. This section of the code, as written, is not a building safety concern and should be optional for any homeowner/builder to pursue to their heart and pocketbook's content. **Cost Impact:** Cost Reduction Approved in previous 2018 Code Adoption process: ☐ YES \boxtimes NO **ACTION TAKEN: 2024 Code Committee** Date: January 29, 2025 Approved as submitted Modified and approved ☐ No action taken **Development Advisory Board (DAB) Subcommittee** Date: Approved as submitted Modified and approved Denied ☐ No action taken **Development Advisory Board (DAB)** Date: Approved as submitted Modified and approved Denied No action taken **Transportation, Infrastructure and Planning Subcommittee** Date: ☐ Approved as submitted ☐ Modified and approved ☐ Denied □ No action taken **City Council Action** Date:

No action taken

☐ Approved as submitted ☐ Modified and approved ☐ Denied