



City of Phoenix

PLANNING & DEVELOPMENT DEPARTMENT

BUILDING CONSTRUCTION CODE CHANGE PROPOSAL

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

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. For sections that remain unchanged from base code, the term “see this section of the 2024 IECC” shall refer to the unchanged base code.

SECTION C101 SCOPE AND GENERAL REQUIREMENTS

C101.1 Title

This code shall be known as the 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.” These regulations are one document of the overall Phoenix Building Construction Code as defined by the adopting ordinance.

C101.2 Scope.

This code applies to the design and construction of buildings not covered by the scope of the IECC-Residential 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.

C101.2.1 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 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: ☐ YES ☒ NO

ACTION TAKEN:

2024 Code Committee Date: 01/30/2025
☒ Approved as submitted ☐ Modified and approved ☐ Denied ☐ No action taken

Development Advisory Board (DAB) Subcommittee Date: 03/06/2025
☒ Approved as submitted ☐ Modified and approved ☐ Denied ☐ No action taken

Development Advisory Board (DAB) Date: 04/22/2025
☒ 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



City of Phoenix

PLANNING & DEVELOPMENT DEPARTMENT

BUILDING CONSTRUCTION CODE CHANGE PROPOSAL

Amendment to 2024 International Energy Conservation Code (IECC) Chapter 4 [CE], Section C401.2.1

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: ☒ YES ☐ NO

ACTION TAKEN:

2024 Code Committee Date: 10/31/2024
☒ Approved as submitted ☐ Modified and approved ☐ Denied ☐ No action taken

Development Advisory Board (DAB) Subcommittee Date: 03/06/2025
☒ Approved as submitted ☐ Modified and approved ☐ Denied ☐ No action taken

Development Advisory Board (DAB) Date: 04/22/2025
☒ 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



City of Phoenix

PLANNING & DEVELOPMENT DEPARTMENT

BUILDING CONSTRUCTION CODE CHANGE PROPOSAL

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.

1. Compliance with the provisions of Section C408 are optional.

Justification: Section C401.2 of the 2024 IECC states: *Commercial buildings* shall comply with Section C401.2.1 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: 10/31/2024
☒ Approved as submitted ☐ Modified and approved ☐ Denied ☐ No action taken

Development Advisory Board (DAB) Subcommittee Date: 03/06/2025
☒ Approved as submitted ☐ Modified and approved ☐ Denied ☐ No action taken

Development Advisory Board (DAB) Date: 04/22/2025
☒ 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



BUILDING CONSTRUCTION CODE CHANGE PROPOSAL

**Amendment to 2024 International Energy Conservation Code (IECC)
Chapter 4 [CE], Section C405.12**

Submitted by: Darrel R. Miller, PE, LEED-AP, ICC Certified Electrical Plans Examiner and modified by the National Electrical Code Committee

C405.12 Reserved

This section is deleted in its entirety.

Note: The corresponding requirements in ASHRAE 90.1 8.4.2 Automatic Receptacle Control is also deleted in its entirety.

C405.12 Automatic receptacle control.

The following shall have ~~automatic~~ receptacle control complying with Section C405.12.1:

1. ~~At least 50 percent of all 125V, 15- and 20-amp receptacles installed in enclosed offices, conference rooms, rooms used primarily for copy or print functions, breakrooms, classrooms and individual workstations, including those installed in modular partitions and module office workstation systems.~~
2. ~~At least 25 percent of branch circuit feeders installed for modular furniture not shown on the construction documents.~~

C405.12.1 Automatic receptacle control function.

~~Automatic~~ receptacle controls shall comply with the following:

1. ~~Either split controlled receptacles shall be provided with the top receptacle controlled, or a controlled receptacle shall be located within 12 inches (304.8 mm) of each uncontrolled receptacle.~~
2. ~~One of the following methods shall be used to provide control:~~
 - 2.1. ~~A scheduled basis using a time-of-day operated control device that turns receptacle power off at specific programmed times and can be programmed separately for each day of the week. The control device shall be configured to provide an independent schedule for each portion of the building of not more than 5,000 square feet (464.5 m²) and not more than one floor. The occupant shall be able to manually override an area for not more than 2 hours. Any individual override switch shall control the receptacles of not more than 5,000 feet (1524 m).~~
 - 2.2. ~~An occupant sensor control that shall turn off receptacles within 20 minutes of all occupants leaving a space.~~
 - 2.3. ~~An automated signal from another control or alarm system that shall turn off receptacles within 20 minutes after determining that the area is unoccupied.~~
3. ~~All controlled receptacles shall be permanently marked in accordance with NFPA 70 and be uniformly distributed throughout the space.~~
4. ~~Plug-in devices shall not comply.~~

Exceptions: ~~Automatic~~ receptacle controls are not required for the following:

1. ~~Receptacles specifically designated for equipment requiring continuous operation (24 hours per day, 365 days per year).~~
2. ~~Spaces where an automatic control would endanger the safety or security of the room or building occupants.~~

3. ~~Within a single modular office workstation, noncontrolled receptacles are permitted to be located more than 12 inches (304.8 mm), but not more than 72 inches (1828 mm) from the controlled receptacles serving that workstation.~~

Justification: 2024 IECC C405.12 Proposed Change – A postulate against implementation.

This proposal is based on the assumption that the City of Phoenix wants to be known as a business friendly city. One way this can be achieved is by the establishment of practical building codes that focus on public safety, rather than unrelated requirements that have no benefit to the citizens of the City and add a cost burden to the conforming business or property owner.

This electrical system requirement offers an extremely low return on investment and is such an item that detracts from a business-friendly environment. If this item was assessed on a basis of payback, it would never be implemented based on the number of years it would take to recover the investment costs. It is my opinion this requirement should not be codified, rather it should be left to the conscious of the individual business as to how they spend their money.

If a business chooses to be more energy conscious the proposed code change (deletion) will not prevent implementing a more stringent requirement on themselves. For other businesses that do not have the same environmental concerns there would be no penalty.

What is this Code provision addressing? This section of the code pertains to "parasitic plug loads" which are known to be extremely small (milliwatts) and equipment "standby loads". Each represents inconsequential loads for the building power system. The management of these loads as required in the proposed 2024 IECC C405.12 language implements an additional control system previously not a part of the 2018 IECC, currently adopted. The new requirements have targeted areas of a building that are most likely to have the previously described loads, offices (enclosed and open), conference rooms, copy/print rooms, break rooms, classrooms, individual workstations (stand alone or modular type) mandating 50% of the receptacles in the space to be controlled by a system (choose one of (3) options. None of which are practical).

Implementation will introduce the following:

- 50% loss of the continuous power receptacles within the space or increase the receptacle quantity by 100% so as to maintain the original quantity available prior to implementation of this code.
- Invoke training for new space occupants as to the functionality (or dysfunctionality) of the power receptacle system in the space they will be working in. Likely inclusive of how to avoid use of the controlled receptacles to assure your tablets and phones and computer batteries are always functional when you need them.
- Specially marked receptacles identifying they are controlled. Thanks to California Energy Codes, these are available from the majority of device manufacturers.
- Dedicated wiring system from dedicated relays or panels or other type of controller.
- Control systems to provide independent control of each area up to 5,000 SF at no less than one zone of control per floor.
- Control override buttons allowing a control override for up to 2 hours separately for each of the spaces controlled by such override buttons (limited to 5,000 SF per button or no less than one per floor).
- Not specifically mentioned but certainly will be required for clarity to those using the system, each button station will need an associated placard/graphic indicating the spaces controlled by such override buttons.

- Where modular furniture is not shown specifically on the design plans, and it is commonly not shown, a mandate that 25% of the branch circuits to the identified modular furniture must be dedicated to controlled receptacles. This could be a large number of circuit additions in larger open office spaces.

Indirect effects of implementation:

- Increased Building Safety Department plan review time to assure design compliance.
- Increased Building Safety inspection time to assure actual compliance.
- Nuisance operation of the electrical system for the user of the space.

Real world issues:

Consider that your cell phone is plugged into a charger while you are out at lunch. Why? You need to have it for an out of office meeting following lunch. Your battery was low, so you plugged it in. You come back and find the charger has been off starting 20 minutes following your departure from your enclosed office. Why? Because the control system for the lighting also shuts off the controlled receptacle with the lights (one of the most cost effective ways to control these receptacles that is listed in the prescriptive choices). Yes, this is how the controlled receptacles are intended to operate.

Now consider a Police sergeant or detective in your office at the station going in for a briefing. The officer plugs in a Taser for a refresh charge. The briefing goes long. When arriving back in the office to retrieve the Taser, finds the outlet has shut off with the lights. Now it is not ready for use. Same with the cell phone, laptop, radio, or any other battery device necessary for their tour. If the lighting system turns off due to a lack of occupants in the space, the controlled receptacles also will turn off. This is one of the prescribed choices in the code, and it happens to be the most cost effective as well. The other prescribed choices do not practically work in a building such as are designed for law enforcement, and I would argue, Fire Departments as well.

This code has no occupancy type exceptions to practically apply it to Public Safety facilities. This is a problem.

Controlled receptacles for printers and copy machines – Implementing the controlled receptacle requirement for copiers and other office equipment is unnecessary and potentially harmful for the equipment. A hard restart is not a desired shut down method for the office equipment. This is effectively what the controlled receptacle is doing, an abrupt power down, equivalent to a utility power outage. Additionally, shutting off power to the equipment based on occupancy or even based on a time clock will cause a restart cycle, delaying its use. The downtime for office staff is calculable and adds to the operational costs to the business. It is in the business owner's best interest to purchase office equipment with energy star certifications. This will naturally occur just from availability and benefits. Equipment with an Energy Star certification must meet strict energy efficiency criteria set by the EPA, including features like low power consumption in sleep mode, quick transition to sleep mode after inactivity, and efficient power supplies. By definition, Energy Star Certified equipment is performing the functions the IECC mandates are attempting to provide but without the pitfalls. The IECC requirements in C405.12 are impractical. Cord and plug equipment control should be left to up to the business owner rather than a dictate from City Hall.

Recommendation:

Strike 2024 IECC C405.12 from adoption based on the above arguments.

Striking this provision for controlled receptacles has no effect on the plan review, inspections, or design community. It shows Phoenix is willing to maintain a logical approach to energy conservation while retaining a business friendly environment. It means there will be no related workload burden placed on the Electrical Plans Reviewers or Electrical Inspector. There will be no need for plan review fee increases to the public related to this issue.

Note: This proposed amendment was reviewed by the 2024 NEC Committee and recommended to be Approved as Modified.

Cost Impact: Cost Reduction

Approved in previous 2018 Code Adoption process: ☐ YES ☒ NO

ACTION TAKEN:

2024 Code Committee Date: 01/16/2025
☐ Approved as submitted ☒ Modified and approved ☐ Denied ☐ No action taken

Development Advisory Board (DAB) Subcommittee Date: 03/06/2025
☒ Approved as submitted ☐ Modified and approved ☐ Denied ☐ No action taken

Development Advisory Board (DAB) Date: 04/22/2025
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Transportation, Infrastructure and Planning Subcommittee Date:
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BUILDING CONSTRUCTION CODE CHANGE PROPOSAL

**Amendment to 2024 International Energy Conservation Code (IECC)
Chapter 4 [CE], Section C405.13**

Submitted by: Darrel R. Miller, PE, LEED-AP, ICC Certified Electrical Plans Examiner and modified by the National Electrical Code Committee

C405.13 Reserved

This section is deleted in its entirety.

Note: The corresponding requirements in ASHRAE 90.1 8.4.3 Electrical Energy Monitoring is also deleted in its entirety.

C405.13 Energy monitoring.

~~New buildings with a gross conditioned floor area of not less than 10,000 square feet (929 m²) shall be equipped to measure, monitor, record and report energy consumption in accordance with Sections C405.13.1 through C405.13.6 for load categories indicated in Table C405.13.2 and Sections C405.13.7 through C405.13.11 for end-use categories indicated in Table C405.13.8.~~

Exceptions:

- ~~1. 1.Dwelling units in R-2 occupancies.~~
- ~~2. 2.Individual tenant spaces are not required to comply with this section provided that the space has its own utility services and meters and has less than 5,000 square feet (464.5 m²) of conditioned floor area.~~

C405.13.1 Electrical energy metering.

~~For electrical energy supplied to the building and its associated site, including but not limited to site lighting, parking, recreational facilities and other areas that serve the building and its occupants, meters or other measurement devices shall be provided to collect energy consumption data for each end-use category required by Section C405.13.2.~~

C405.13.2 End-use electric metering categories.

~~Meters or other approved measurement devices shall be provided to collect energy use data for each end-use category indicated in Table C405.13.2. Where multiple meters are used to measure any end-use category, the data acquisition system shall total all of the energy used by that category. Not more than 5 percent of the design load for each of the end-use categories indicated in Table C405.13.2 shall be permitted to be from a load that is not within that category.~~

Exceptions:

- ~~1. 1.HVAC and water heating equipment serving only an individual dwelling unit shall not require end-use metering.~~
- ~~2. 2.End-use metering shall not be required for fire pumps, stairwell pressurization fans or any system that operates only during testing or emergency.~~
- ~~3. 3.End-use metering shall not be required for an individual tenant space having a floor area not greater than 2,500 square feet (232 m²) where a dedicated source meter complying with Section C405.13.3 is provided.~~

TABLE C405.13.2

ELECTRICAL ENERGY USE CATEGORIES

LOAD CATEGORY	DESCRIPTION OF ENERGY USE
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Total HVAC system	Heating, cooling and ventilation, including but not limited to fans, pumps, boilers, chillers and water heating. Energy used by 120-volt equipment, or by 208/120-volt equipment that is located in a building where the main service is 480/277-volt power, is permitted to be excluded from total HVAC system energy use.
Interior lighting	Lighting systems located within the building.
Exterior lighting	Lighting systems located on the building site but not within the building.
Plug loads	Devices, appliances and equipment connected to convenience receptacle outlets.
Process load	Any single load that is not included in an HVAC, lighting or plug load category and that exceeds 5 percent of the peak connected load of the whole building, including but not limited to data centers, manufacturing equipment and commercial kitchens.
Building operations and other miscellaneous loads	The remaining loads not included elsewhere in this table, including but not limited to vertical transportation systems, automatic doors, motorized shading systems, ornamental fountains, fireplaces, swimming pools, spas and snow melt systems.
Electric hot water heating for uses other than space conditioning	Electricity used to generate hot water. Exception: Electric water heating with design capacity that is less than 10 percent of the building service rating.

C405.13.3 Electrical meters.

Meters or other measurement devices required by this section shall be configured to automatically communicate energy consumption data to the data acquisition system required by Section C405.13.4. Source meters shall be allowed to be any digital type meter. Lighting, HVAC or other building systems that can self-monitor their energy consumption shall be permitted instead of meters. Current sensors shall be permitted, provided that they have a tested accuracy of ± 2 percent. Required metering systems and equipment shall have the capability to provide at least hourly data that is fully integrated into the data acquisition system and graphical energy report in accordance with Sections C405.13.4 and C405.13.5. Nonintrusive load monitoring (NILM) packages that extract energy consumption data from detailed electric waveform analysis shall be permitted to substitute for individual meters if the equivalent data is available for collection in Section C405.13.4 and reporting in Section C405.13.5.

C405.13.4 Electrical energy data acquisition system.

A data acquisition system shall have the capability to store the data from the required meters and other sensing devices for a minimum of 36 months. The data acquisition system shall have the capability to store real-time energy consumption data and provide hourly, daily, monthly and yearly logged data for each end-use category required by Section C405.13.2. The data acquisition system shall have the capability of providing *building* total peak electric demand and the time(s) of day and time(s) per month at which the peak occurs. Peak demand shall be integrated over the same time period as the underlying whole-building meter reading rate.

C405.13.5 Graphical energy report.

A permanent and readily available reporting mechanism shall be provided in the *building* for access by *building* operation and management personnel. The reporting mechanism shall have the capability to graphically provide the energy consumption for each end-use category required by Section C405.13.2 not less than every hour, day, month and year for the previous 36 months.

C405.13.6 Renewable energy.

On-site renewable energy sources shall be metered with no less frequency than nonrenewable energy systems in accordance with Section C405.13.3.

C405.13.7 Nonelectrical energy submetering.

For all nonelectrical energy supplied to the *building* and its associated site that serves the *building* and its occupants, submeters or other measurement devices shall be provided to collect energy consumption data for each end-use category required by Section C405.13.8.

Exceptions:

1. HVAC and water heating equipment serving only an individual *dwelling unit* shall not require end-use submetering.
2. End-use submetering shall not be required for fire pumps, stairwell pressurization fans or any system that operates only during testing or emergency.
3. End-use submetering shall not be required for an individual tenant space having a floor area not greater than 2,500 square feet (232 m²) where a dedicated source meter complying with Section C405.13.9 is provided.
4. Equipment powered primarily by solid fuels serving loads other than *building* heating and service water heating loads.

C405.13.8 End-use nonelectrical submetering categories.

Submeters or other *approved* measurement devices shall be provided to collect energy use data for each end-use category indicated in Table C405.13.8. Where multiple submeters are used to measure any end-use category, the data acquisition system shall total all of the energy used by that category. Not more than 5 percent of the design load for each of the end-use categories indicated in Table C405.13.8 shall be permitted to be from a load that is not within that category.

TABLE C405.13.8

NONELECTRICAL ENERGY USE CATEGORIES

END-USE CATEGORY	DESCRIPTION OF END-USE
Total HVAC system	Heating and cooling systems, including but not limited to boilers, chillers and furnaces. District heating and cooling energy entering the building's distribution system shall be monitored at the point of entry to the building distribution system.
Process loads	Any single load that is not included in the HVAC or service water heating categories where the rated fuel gas or fuel oil input of the load and that is not less than 5 percent of the sum of the rated fuel gas or fuel oil input of all monitored equipment, including but not limited to manufacturing equipment, process equipment, commercial kitchens, and commercial laundry equipment.
Other miscellaneous loads	The remaining loads not included elsewhere in this table, including but not limited to fireplaces, swimming pools, spas, gas lighting, and snow-melt systems.
Service water heating	Fuel used to heat potable water. Exception: Water heating with design capacity that is less than 10 percent of the sum of the rated fuel gas or fuel oil input of all monitored equipment.

C405.13.9 Nonelectrical submeters.

Submeters or other measurement devices required by this section shall be configured to automatically communicate energy consumption data to the data acquisition system required by Section C405.13.10. Source submeters shall be allowed to be any digital-type meter that can provide a digital output to the data acquisition system. Required submetering systems and equipment shall be fully integrated into the data acquisition system and graphical energy report that updates at least hourly in accordance with Sections C405.13.10 and C405.13.11.

C405.13.10 Nonelectrical energy data acquisition system.

A data acquisition system shall have the capability to store the data from the required submeters and other sensing devices for not less than 36 months. The data acquisition system shall have the capability to store real-time energy consumption data and provide hourly, daily, monthly and yearly logged data for each end-use category required by Section C405.13.8. The data acquisition system shall have the capability of providing building total nonelectrical peak demand and the time(s) of day and time(s) per month at which the peak occurs. Where applicable as determined by the authority having jurisdiction (AHJ), peak demand shall be integrated over the same time period as the underlying whole-building meter reading rate.

C405.13.11 Graphical energy report.

A permanent and readily accessible reporting mechanism shall be provided in the *building* that is accessible by building operation and management personnel. The reporting mechanism shall have the capability to graphically provide the nonelectrical energy consumption for each end-use category required by Section C405.13.8 not less than every hour, day, month and year for the previous 36 months. The graphical report shall incorporate natural gas interval data from the submeter or the ability to enter gas utility bills into the report.

Justification: 2024 IECC C405.13 Proposed Change – A postulate against implementation.

This proposal is based on the assumption that the City of Phoenix wants to be known as a business friendly city. One way this can be achieved is by the establishment of practical building codes that focus on public safety, rather than unrelated requirements that have no benefit to the citizens of the City and add a cost burden to the conforming business or property owner.

This electrical system requirement offers little benefit to unsophisticated owners uninterested in the minute detail of the energy consumption of their building. Owners that have concerns about their own energy consumption and related costs will be interested in energy monitoring already but only to a level that matches their budgets. The requirements of this section are extremely costly to the initial construction, potentially by hundreds of thousands of dollars in addition to the additional design related costs.

A Code with an implementation cost to the building owner of this magnitude unrelated to Public Safety should not be accepted without extensive debate and wide-eyed review by all effected parties. This Code section is nearly a copy of the California Energy Code (Title 24 Vol. 6) mandates which started 15 years ago.

Looking at the construction cost budget on projects I have been involved with for prisons, Highway Patrol buildings, City, County, and State government buildings, libraries, etc. have all been struggling with construction budget issues only being hampered by burdening mandates. This section of the Code is one of those mandates, reconfigured by the ICC using nearly identical language.

If a business chooses to be more energy conscious, the proposed code change (deletion) will not prevent implementing a more stringent requirement on themselves. For other businesses that do not have the same environmental concerns there would be no penalty.

I have lived and worked in Phoenix all my life and am sorry to see this level of mandate even being considered for this great town. This is effectively an anti-business proposal. We are saying, "You don't know how to run your business; we know what is best for you." It would seem a deterrent rather than an invitation to come do business here. Maybe a little less big brother and more of "Hey, we want to partner with you for your success."

If you are unaware, here are the impacts, electrically:

- Energy meters (apart from the utility meters we already have available to us doing the same thing) for the power supplied to the site and all related buildings, electrical apparatus, site lighting. The power companies do not give out free power, so there is already a meter covering all this.
- Next the energy usages are broken down into sub uses which each require sub-metering. See Table C405.13.2. This lists out “Load Categories” as follows:
 - Total HVAC Systems (so this is every AC unit, supply and exhaust fan, Energy Recovery Unit, boiler, chiller, pump, water heating for space conditioning)
 - Interior Lighting (All.)
 - Exterior Lighting (All. Interestingly enough, we could calculate this with just the electrical site plan and the fixture data and the hours of operation. What is the point of metering? Who is going to turn off the lighting to save energy over and above site security? Guarantee this will be reversed once the first crime spree occurs)
 - Plug loads (These are all the receptacle devices you plug anything into 15-60 amp receptacles throughout the building. These loads are variable in the fact the items are “plugged” in and may or may not be there from one day to the next)
 - Process Load (This is all the rest of the loads within the building that are not in the above categories, oh but exempted as long as it is below 5% of the total building peak connected load – what is this exactly? The NEC does not attempt to calculate this value and has multiple factors to increase and decrease loads to conclude what its compliance value should be. An example of this is the receptacle load that looks at each receptacle as 180 VA (watts essentially) of load and recognizes that not all receptacles are used. This metering requirement appears to introduce a new set of calculations that sums up all the loads that are in the building as the “connected load” and assumes all are on at once making up a “peak” load, certainly will never be more than that!).
 - Building Operations and other misc. loads (essentially the elevators, escalators, automatic doors, motorized shades, fountains, pools, spas, fireplaces, snow melt systems are all included, but there could be more if you have them. You will just know.)
- Electrical hot water heating for uses other than space conditioning (but only if the electric water heater is rated greater than 10% of the building service rating, otherwise not)

As is made evident by this list, there are many segregations in the system that when implemented, dictate many meters. To minimize the metering challenges, the loads are typically grouped into the above categories to be metered by a single feeder with a meter on that supply. That can get you down to a (7) sub meters. Making it a total of (8) because you still need a main system meter. Remember the utility meter is not good enough here.

This differs from normal distribution in that there are usually larger panels feeding an area with sub panels supplied out of them into subsequent smaller areas. This is beneficial for load management and voltage drop management and has been the design style since the beginning of modern electrical distributions. Westinghouse published books on these concepts starting in the 1940's and the IEEE has enshrined distribution methods in their literature as well.

To accomplish this metering requirement In C405.13 is no small feat. There will be additional panels needed to meet the required load segregation described for metering. You can't get around it. It is only a matter of how many you can avoid adding.

Looking at the only other current solution for load segregation involves metered breakers. This is a system that uses the traditional panel distribution methods and then applies a metering node to each breaker. The nodes are gathered into a common system, and each node is assigned a load type corresponding to this aforementioned table. This is a metering system and normally is standalone apart from the Building Automation System. This, as you can imagine, is a high end system with a related high end expense. Yet at some point, it is more cost effective than adding a whole lot of panels.

In C405.13.3 Electrical Meters, it mentions the use of non-intrusive Load Monitoring (NILM) technology. In researching this technology, I found various documentation on the technology but no systems. It appears the US Dept of Energy Pacific Northwest National Laboratory was compiling data on the use of the technology up until 2016 where they were attempting to establish standards for the products to meet. It is unclear what this product's availability is. If, and when this technology comes to market, it appears to use electrical impulse and wave signatures in the power system to determine the type of equipment present. It uses this information to disaggregate the loads into each respective load type. In this case, there would not be a need for dedicated meters or metered breakers; just several of these NILM devices applied at strategic points in the electrical distribution system to extract the data. This means it would be retrofittable system for any building.

Indirect effects of implementation:

- Increased Building Safety Department plan review time to assure design compliance for addressing load segregations, load calculations for limitations, added panels, metering components.
- Increased Building Safety inspection time to assure actual compliance for load segregations, additional panels, metering systems.
- Added complexity in building electrical systems creating an ongoing cost to the Owner. It is my opinion this decreases building safety by complications in power distribution.

Real world issues:

The presence of the metering systems does not mean they will be used for anything. I have seen such systems in place but when attempting to get data from the system for electrical analysis, it was unavailable, not working, or never set up to fully function or record data. These requirements to put in the sophisticated equipment are insufficient to get results hoped for without the necessary follow up and ongoing maintenance. Unless the owner intends to use the system, it will likely be set aside shortly after installation. Any benefits that might be gained will be lost.

When the building owner wants to handle this level of sophisticated building management, they will hire facilities personnel with higher skill levels to accomplish it or hire outside third parties to gather and manage the data. This is an ongoing operational cost to that building owner. As a result, it is a personal decision by that management team. Without this level of buy-in, there will be no ongoing implementation.

Rather than mandate this metering be part of the Owners program, it would be far more effective to allow the owner to do the math, determine the ROI for the particular system selected to meet their particular desired end, and implement that system. This section is full of too many mandates that drive design. This in turn drives up cost for everyone. At some point, we must ask ourselves, what is the purpose of this requirement? Can't economics drive the results instead of the City Codes?

Recommendation:

Strike 2024 IECC C405.13 from adoption based on the above arguments.

Striking this provision for metering has no effect on the plan review, inspections, or design community. It shows Phoenix is willing to maintain a logical approach to energy conservation while retaining a business friendly environment. It means there will be no related workload burden placed on the Electrical Plans Reviewers or Electrical Inspector. There will be no need for plan review fee increases to the public related to this issue.

Note: This amendment was reviewed by the 2024 National Electrical Code Committee and recommended to be Approved as Modified.

Cost Impact: Cost reduction.

Approved in previous 2018 Code Adoption process: ☐ YES ☒ NO

ACTION TAKEN:**2024 Code Committee**

Date: 1/16/2025

☐ Approved as submitted ☒ Modified and approved ☐ Denied ☐ No action taken**Development Advisory Board (DAB) Subcommittee**

Date: 03/06/2025

☒ Approved as submitted ☐ Modified and approved ☐ Denied ☐ No action taken**Development Advisory Board (DAB)**

Date: 04/22/2025

☒ 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



BUILDING CONSTRUCTION CODE CHANGE PROPOSAL

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.~~

$$\text{TRE}_{\text{off}} = (\text{REN}_{\text{off}} \times 0.75 \text{ W/sqft} \times \text{FLRA} - \text{IRE}_{\text{on}}) \times 15 \quad \text{Equation 4-11}$$

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 kilowatt-hours 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.
6. 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 = $(1.75\text{KWh/W} \times 0.75\text{W/sqft} \times \text{sqft of gross conditioned floor area} - \text{on-site installed KWh/yr}) \times 15$

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 striking 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

☒ Approved as submitted ☐ Modified and approved ☐ Denied ☐ No action taken

Development Advisory Board (DAB) Subcommittee

Date: 03/06/2025

☒ Approved as submitted ☐ Modified and approved ☐ Denied ☐ No action taken

Development Advisory Board (DAB)

Date: 04/22/2025

<input checked="" type="checkbox"/> Approved as submitted <input type="checkbox"/> Modified and approved <input type="checkbox"/> Denied <input type="checkbox"/> No action taken			
Transportation, Infrastructure and Planning Subcommittee			Date:
<input type="checkbox"/> Approved as submitted <input type="checkbox"/> Modified and approved <input type="checkbox"/> Denied <input type="checkbox"/> No action taken			
City Council Action			Date:
<input type="checkbox"/> Approved as submitted <input type="checkbox"/> Modified and approved <input type="checkbox"/> Denied <input type="checkbox"/> No action taken			



City of Phoenix

PLANNING & DEVELOPMENT DEPARTMENT

BUILDING CONSTRUCTION CODE CHANGE PROPOSAL

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. For sections that remain unchanged from base code, the term “see this section of the 2024 IECC” shall refer to the unchanged base code.

SECTION R101 - SCOPE AND GENERAL REQUIREMENTS

R101.1 Title.

This code shall be known as the 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.” These regulations are one document of the overall Phoenix Building Construction Code as defined by the adopting ordinance.

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: ☐ YES ☒ NO

ACTION TAKEN:

2024 Code Committee Date: 01/30/2025
☒ Approved as submitted ☐ Modified and approved ☐ Denied ☐ No action taken

Development Advisory Board (DAB) Subcommittee Date: 03/06/2025
☒ Approved as submitted ☐ Modified and approved ☐ Denied ☐ No action taken

Development Advisory Board (DAB) Date: 04/22/2025
☒ 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



City of Phoenix

PLANNING & DEVELOPMENT DEPARTMENT

BUILDING CONSTRUCTION CODE CHANGE PROPOSAL

Amendment to 2024 International Energy Conservation Code (IECC) Chapter 1 [RE], Section R104

Submitted by: Home Builders Association of Central Arizona

R104.1.2 RESNET testing & inspection protocol.

The Residential Energy Services Network (RESNET) Mortgage Industry National Home Energy Rating System Standard (MINHERS) for third party testing and inspections shall be deemed to meet the requirements of sections R402.5.1, R402.5.1.2 and R403.3.7 and shall meet the following conditions:

1. Third Party Testing & Inspections shall be completed by RESNET certified Raters or Rating Field Inspectors and shall be subject to RESNET Quality Assurance Field Review Procedures.
2. Sampling in accordance with Chapter 6 of the MINHERS Standards shall be performed by Raters or Rating Field Inspectors Working under a RESNET Accredited Sampling Provider.
3. Third Party Testing is required for the following items:
 - a. R402.5.1– Building Envelope – Thermal Air Barrier Checklist
 - b. R402.5.1.2 – Testing – Air Leakage Rate
 - c. R403.3.7 – Sealing – Duct Tightness
 - d. Any other testing and inspections required under the code.
4. Alternate testing and inspection programs and protocols shall be allowed when approved by the Building Code Official.

Justification: From HBACA - This amendment was developed in collaboration between the MAG Building Codes Committee Members, SRP, APS, and the HBACA and has been adopted in many municipalities throughout the region. It is also included in MAG's Building Code Amendment and Standards Manual. Note that this proposed amendment is slightly different than the amendment adopted in 2018 and 2021 to reflect changing code sections.

Staff Committee Rationale for Recommendation: Amendment carried forward. Doesn't lower standards but allows less dwelling units to be tested.

Current disallowance of MINHERS standards for sampling of single-family homes per MINHERS addendum 78i effective January 1, 2025, subject to RESNET change.

Cost Impact: Applicant did not provide any information.

Approved in previous 2018 Code Adoption process:

☒ YES

☐ NO

ACTION TAKEN:	
2024 Code Committee <input type="checkbox"/> Approved as submitted <input checked="" type="checkbox"/> Modified and approved <input type="checkbox"/> Denied	Date: 03/25/2025 <input type="checkbox"/> No action taken
Development Advisory Board (DAB) Subcommittee <input checked="" type="checkbox"/> Approved as submitted <input type="checkbox"/> Modified and approved <input type="checkbox"/> Denied	Date: 03/27/2025 <input type="checkbox"/> No action taken
Development Advisory Board (DAB) <input checked="" type="checkbox"/> Approved as submitted <input type="checkbox"/> Modified and approved <input type="checkbox"/> Denied	Date: 04/22/2025 <input type="checkbox"/> No action taken
Transportation, Infrastructure and Planning Subcommittee <input type="checkbox"/> Approved as submitted <input type="checkbox"/> Modified and approved <input type="checkbox"/> Denied	Date: <input type="checkbox"/> No action taken
City Council Action <input type="checkbox"/> Approved as submitted <input type="checkbox"/> Modified and approved <input type="checkbox"/> Denied	Date: <input type="checkbox"/> No action taken



BUILDING CONSTRUCTION CODE CHANGE PROPOSAL

**Amendment to 2024 International Energy Conservation Code (IECC)
Chapter 4 [RE], Section R402, Table R402.5.1.1**

Submitted by: Home Builders Association of Central Arizona and modified by the International Energy Conservation Code Committee

SECTION R402 BUILDING THERMAL ENVELOPE

TABLE R402.5.1.1 AIR BARRIER, AIR SEALING AND INSULATION INSTALLATION^a

COMPONENT	AIR BARRIER CRITERIA INSULATION	INSTALLATION CRITERIA
Rim joists	Rim joists shall include an air barrier. The junctions of the rim board to the sill plate and the rim board and the subfloor shall be air sealed, <u>unless the air barrier is provided elsewhere.</u>	Rim joists shall be insulated so that the insulation maintains permanent contact with the exterior rim board.

No changes to footnotes.

Justification: From NAHB - This amendment simplifies the provisions and allows the building designer the choice of selecting an air barrier based on the specific wall assembly design. Any air barrier at the rim will constitute an exterior air barrier because the rim is always located at the exterior of the structure. Having the additional word “exterior” can lead to misinterpretation that the air barrier always must be outboard of the rim joist’s exterior face. That was never the intent of the change that was approved for the 2021 and 2024 IECC as evidenced by the supporting reason statement that was included by the proponent of the change.

Examples of acceptable air barrier options that meet the intent of the code include (not an exhaustive list):

- Sealing the entire rim joist from the interior with closed-cell spray foam;
- Sealing the rim joist boundaries and joints with caulk from the interior;
- Taping or sealing the joints on the exterior face of the rim joist;
- Installing mechanically attached membrane (i.e., house wrap) taped at all seams and boundaries;
- Installing exterior rigid foam sheathing taped or sealed at all joints and boundaries;
- Installing a fluid-applied membrane on the exterior face of walls;
- Installing a peel-and-stick membrane on the exterior face of walls.

It is noted that a whole-building tightness test is required to verify the overall air tightness of the house.

Staff Committee Rationale for Recommendation: In recognition that the air barrier may be exterior to the rim board.

Cost Impact: Applicant provided no information	
Approved in previous 2018 Code Adoption process: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
ACTION TAKEN:	
2024 Code Committee <input type="checkbox"/> Approved as submitted <input checked="" type="checkbox"/> Modified and approved <input type="checkbox"/> Denied	Date: 02/18/2025 <input type="checkbox"/> No action taken
Development Advisory Board (DAB) Subcommittee <input checked="" type="checkbox"/> Approved as submitted <input type="checkbox"/> Modified and approved <input type="checkbox"/> Denied	Date: 03/06/2025 <input type="checkbox"/> No action taken
Development Advisory Board (DAB) <input checked="" type="checkbox"/> Approved as submitted <input type="checkbox"/> Modified and approved <input type="checkbox"/> Denied	Date: 04/22/2025 <input type="checkbox"/> No action taken
Transportation, Infrastructure and Planning Subcommittee <input type="checkbox"/> Approved as submitted <input type="checkbox"/> Modified and approved <input type="checkbox"/> Denied	Date: <input type="checkbox"/> No action taken
City Council Action <input type="checkbox"/> Approved as submitted <input type="checkbox"/> Modified and approved <input type="checkbox"/> Denied	Date: <input type="checkbox"/> No action taken



City of Phoenix

PLANNING & DEVELOPMENT DEPARTMENT

BUILDING CONSTRUCTION CODE CHANGE PROPOSAL

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: ☐ YES ☒ NO

ACTION TAKEN:

2024 Code Committee Date: 01/30/2025
☒ Approved as submitted ☐ Modified and approved ☐ Denied ☐ No action taken

Development Advisory Board (DAB) Subcommittee Date: 03/06/2025
☒ Approved as submitted ☐ Modified and approved ☐ Denied ☐ No action taken

Development Advisory Board (DAB) Date: 04/22/2025
☒ 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



City of Phoenix

PLANNING & DEVELOPMENT DEPARTMENT

BUILDING CONSTRUCTION CODE CHANGE PROPOSAL

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 ☒ NO

ACTION TAKEN:

2024 Code Committee	Date: 01/29/2025
<input checked="" type="checkbox"/> Approved as submitted <input type="checkbox"/> Modified and approved <input type="checkbox"/> Denied <input type="checkbox"/> No action taken	

Development Advisory Board (DAB) Subcommittee	Date: 03/06/2025
<input checked="" type="checkbox"/> Approved as submitted <input type="checkbox"/> Modified and approved <input type="checkbox"/> Denied <input type="checkbox"/> No action taken	

Development Advisory Board (DAB)	Date: 04/22/2025
<input checked="" type="checkbox"/> Approved as submitted <input type="checkbox"/> Modified and approved <input type="checkbox"/> Denied <input type="checkbox"/> No action taken	

Transportation, Infrastructure and Planning Subcommittee	Date:
<input type="checkbox"/> Approved as submitted <input type="checkbox"/> Modified and approved <input type="checkbox"/> Denied <input type="checkbox"/> No action taken	

City Council Action	Date:
<input type="checkbox"/> Approved as submitted <input type="checkbox"/> Modified and approved <input type="checkbox"/> Denied <input type="checkbox"/> No action taken	