



PHOENIX BUILDING CONSTRUCTION CODE

**Amendment to 2018 International Energy Conservation Code (IECC)
Commercial Chapter 1**

Submitted by: 2018 International Energy Conservation Code Committee

C101 SCOPE AND GENERAL REQUIREMENTS

C101.1 Title.

This code shall be known as the Energy Conservation Code for the City of Phoenix, as amended by the Phoenix Building Construction Code of ~~[NAME OF JURISDICTION]~~, and shall be cited as such. It is referred to herein as “this code.”

C101.2 Scope.

This code applies to *commercial buildings* and the buildings’ sites and associated systems and equipment.

C101.3 Intent.

This code shall regulate the design and construction of buildings for the effective use and conservation of energy over the useful life of each building. This code is intended to provide flexibility to permit the use of innovative approaches and techniques to achieve this objective. This code is not intended to abridge safety, health or environmental requirements contained in other applicable codes or ordinances.

C101.4 Applicability.

Where in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern.

C101.4.1 Mixed residential and commercial buildings.

Where a building includes both *residential building* and *commercial building* portions, each portion shall be separately considered and meet the applicable provisions of IECC—Commercial Provisions or IECC—Residential Provisions.

C101.5 Compliance.

Residential buildings shall meet the provisions of IECC—Residential Provisions. *Commercial buildings* shall meet the provisions of IECC—Commercial Provisions.

C101.5.1 Compliance materials.

The *code official* shall be permitted to approve specific computer software, worksheets, compliance manuals and other similar materials that meet the intent of this code.

C102 ALTERNATIVE MATERIALS, DESIGN AND METHODS OF CONSTRUCTION AND EQUIPMENT – Reserved.

PART 2 – ADMINISTRATION AND ENFORCEMENT

C103 CONSTRUCTION DOCUMENTS

C103.1 General.

Construction documents and other supporting data shall be submitted in one or more sets with each application for a permit. The construction documents shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed. Where special conditions exist, the *code official* is authorized to require necessary construction documents to be prepared by a registered design professional.

Exception: The *code official* is authorized to waive the requirements for construction documents or other supporting data if the *code official* determines they are not necessary to confirm compliance with this code.

C103.2 Information on construction documents.

Construction documents shall be drawn to scale on suitable material. Electronic media documents are permitted to be submitted where *approved* by the *code official*. Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed, and show in sufficient detail pertinent data and features of the building, systems and equipment as herein governed. Details shall include, but are not limited to, the following as applicable:

1. Insulation materials and their *R*-values.
2. Fenestration *U*-factors and solar heat gain coefficients (SHGCs).
3. Area-weighted *U*-factor and solar heat gain coefficient (SHGC) calculations.
4. Mechanical system design criteria.
5. Mechanical and service water heating systems and equipment types, sizes and efficiencies.
6. Economizer description.
7. Equipment and system controls.
8. Fan motor horsepower (hp) and controls.
9. Duct sealing, duct and pipe insulation and location.
10. Lighting fixture schedule with wattage and control narrative.
11. Location of *daylight* zones on floor plans.
12. Air sealing details.

C103.2.1 Building thermal envelope depiction.

The *building thermal envelope* shall be represented on the construction drawings.

C103.3 Examination of documents. – Reserved.

C103.3.1 Approval of construction documents. – Reserved.

C103.3.2 Previous approvals. – Reserved.

C103.3.3 Phased approval. – Reserved.

C103.4 Amended construction documents. – Reserved.

C103.5 Retention of construction documents. – Reserved.

C103.6 Building documentation and closeout submittal.

The construction documents shall specify that the documents described in this section be provided to the building owner or owner's authorized agent within 90 days of the date of receipt of the certificate of occupancy.

C103.6.1 Record documents.

Construction documents shall be updated to convey a record of the completed work. Such updates shall include mechanical, electrical and control drawings that indicate all changes to size, type and location of components, equipment and assemblies.

C103.6.2 Compliance documentation.

Energy code compliance documentation and supporting calculations shall be delivered in one document to the building owner as part of the project record documents or manuals, or as a standalone document. This document shall include the specific energy code edition utilized for compliance determination for each system, documentation demonstrating compliance with Section C303.1.3 for each fenestration product installed, and the interior lighting power compliance path, building area, or space-by-space used to calculate the lighting power allowance.

For projects complying with Item 2 of Section C401.2, the documentation shall include:

1. The envelope insulation compliance path.
2. All compliance calculations including those required by Sections C402.1.5, C403.8.1, C405.3 and C405.4.

For projects complying with Section C407, the documentation shall include that required by Sections C407.4.1 and C407.4.2.

C103.6.3 Systems operation control.

Training shall be provided to those responsible for maintaining and operating equipment included in the manuals required by Section C103.6.2. The training shall include:

1. Review of manuals and permanent certificate.
2. Hands-on demonstration of all normal maintenance procedures, normal operating modes, and all emergency shutdown and startup procedures.
3. Training completion report.

C104 FEES – Reserved.

C105 INSPECTIONS – Reserved.

C106 VALIDITY – Reserved.

C107 REFERENCE STANDARDS

C107.1 Referenced codes and standards.

The codes and standards referenced in this code shall be those listed in Chapter 6, and such codes and standards shall be considered as part of the requirements of this code to the prescribed extent of each such reference, and as further regulated in Sections C107.1.1 and C107.1.2.

C107.1.1 Conflicts.

Where conflicts occur between provisions of this code and referenced codes and standards, the provisions of this code shall apply.

C107.1.2 Provisions in referenced codes and standards.

Where the extent of the reference to a referenced code or standard includes subject matter that is within the scope of this code, the provisions of this code, as applicable, shall take precedence over the provisions in the referenced code or standard.

C107.2 Application of references.

References to chapter or section numbers, or to provisions not specifically identified by number, shall be construed to refer to such chapter, section or provision of this code.

C107.3 Other laws.

The provisions of this code shall not be deemed to nullify any provisions of local, state or federal law.

C108 STOP WORK ORDER – Reserved.

C109 BOARD OF APPEALS – Reserved.

Reasons:

The deleted provisions are contained in the Phoenix Building Construction Code IBC, which is being used as a centralized location for the administrative provisions. These provisions may conflict with the adopted administrative code sections and retaining them is redundant.

Cost Impact: No cost impact.

Approved in previous 2012 Code Adoption process: **YES** **NO**

ACTION TAKEN:

2018 Code Committee Date: January 8, 2018

Approved as submitted Modified and approved Denied No action taken

Development Advisory Board (DAB) Technical Subcommittee Date: March 8, 2018

Approved as submitted Modified and approved Denied No action taken

Development Advisory Board (DAB) Date: March 15, 2018

Approved as submitted Modified and approved Denied No action taken

Downtown, Aviation, Economy, and Innovation Subcommittee Date: May 2, 2018

Approved as submitted Modified and approved Denied No action taken

City Council Action Date: June 6, 2018

Approved as submitted Modified and approved Denied No action taken

Adopted by City of Phoenix Ordinance G-6463 effective July 6, 2018



PHOENIX BUILDING CONSTRUCTION CODE

**Amendment to 2018 International Energy Conservation Code (IECC)
Residential Chapter 1, Part 2**

Submitted by: 2018 International Energy Conservation Code Committee

R101 SCOPE AND GENERAL REQUIREMENTS

R101.1 Title.

This code shall be known as the Energy Conservation Code for the City of Phoenix as amended by the Phoenix Building Construction Code of ~~[NAME OF JURISDICTION]~~, and shall be cited as such. It is referred to herein as “this code.”

R101.2 Scope.

This code applies to *residential buildings* and the buildings’ sites and associated systems and equipment.

R101.3 Intent.

This code shall regulate the design and construction of buildings for the effective use and conservation of energy over the useful life of each building. This code is intended to provide flexibility to permit the use of innovative approaches and techniques to achieve this objective. This code is not intended to abridge safety, health or environmental requirements contained in other applicable codes or ordinances.

R101.4 Applicability.

Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern.

R101.4.1 Mixed residential and commercial buildings.

Where a building includes both *residential building* and *commercial building* portions, each portion shall be separately considered and meet the applicable provisions of IECC—Commercial Provisions or IECC—Residential Provisions.

R101.5 Compliance.

Residential buildings shall meet the provisions of IECC—Residential Provisions. *Commercial buildings* shall meet the provisions of IECC—Commercial Provisions.

R101.5.1 Compliance materials.

The *code official* shall be permitted to approve specific computer software, worksheets, compliance manuals and other similar materials that meet the intent of this code.

R102 ALTERNATIVE MATERIALS, DESIGN AND METHODS OF CONSTRUCTION AND EQUIPMENT – Reserved.

PART 2 – ADMINISTRATION AND ENFORCEMENT

R103 CONSTRUCTION DOCUMENTS

R103.1 General.

Construction documents and other supporting data shall be submitted in one or more sets with each application for a permit. The construction documents shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed. Where special conditions exist, the *code official* is authorized to require necessary construction documents to be prepared by a registered design professional.

Exception: The *code official* is authorized to waive the requirements for construction documents or other supporting data if the *code official* determines they are not necessary to confirm compliance with this code.

R103.2 Information on construction documents.

Construction documents shall be drawn to scale on suitable material. Electronic media documents are permitted to be submitted where *approved* by the *code official*. Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed, and show in sufficient detail pertinent data and features of the building, systems and equipment as herein governed. Details shall include, but are not limited to, the following as applicable:

1. Insulation materials and their *R*-values.
2. Fenestration *U*-factors and solar heat gain coefficients (SHGCs).
3. Area-weighted *U*-factor and solar heat gain coefficient (SHGC) calculations.
4. Mechanical system design criteria.
5. Mechanical and service water heating systems and equipment types, sizes and efficiencies.
6. Equipment and system controls.
7. Duct sealing, duct and pipe insulation and location
8. Air sealing details.

R103.2.1 Building thermal envelope depiction.

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R103.3.2 Previous approvals. – Reserved.

R103.3.3 Phased approval. – Reserved.

R103.4 Amended construction documents. – Reserved.

R103.5 Retention of construction documents. – Reserved.

R104 FEES – Reserved.

R105 INSPECTION. – Reserved.

R106 VALIDITY – Reserved.

R107 REFERENCE STANDARDS

R107.1 Referenced codes and standards.

The codes and standards referenced in this code shall be those listed in Chapter 5, and such codes and standards shall be considered as part of the requirements of this code to the prescribed extent of each such reference and as further regulated in Sections R107.1.1 and R107.1.2.

R107.1.1 Conflicts.

Where conflicts occur between provisions of this code and referenced codes and standards, the provisions of this code shall apply.

R107.1.2 Provisions in referenced codes and standards.

Where the extent of the reference to a referenced code or standard includes subject matter that is within the scope of this code, the provisions of this code, as applicable, shall take precedence over the provisions in the referenced code or standard.

R107.2 Application of references.

References to chapter or section numbers, or to provisions not specifically identified by number, shall be construed to refer to such chapter, section or provision of this code.

R107.3 Other laws.

The provisions of this code shall not be deemed to nullify any provisions of local, state or federal law.

R108 STOP WORK ORDER – Reserved.

R109 BOARD OF APPEALS – Reserved.

Reasons:

The Reserved provisions are contained in the Phoenix Building Construction Code IBC, which is being used as a centralized location for the administrative provisions. These provisions may conflict with the adopted administrative code sections and retaining them is redundant.

Cost Impact: No cost impact.

Approved in previous 2012 Code Adoption process: **YES** **NO**

ACTION TAKEN:

2018 Code Committee	Date: January 08, 2018
<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) Technical Subcommittee	Date: March 08, 2018
<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: March 15, 2018
<input checked="" type="checkbox"/> Approved as submitted <input type="checkbox"/> Modified and approved <input type="checkbox"/> Denied	<input type="checkbox"/> No action taken

Downtown, Aviation, Economy, and Innovation Subcommittee	Date: May 2, 2018
<input checked="" 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: June 6, 2018
<input checked="" type="checkbox"/> Approved as submitted <input type="checkbox"/> Modified and approved <input type="checkbox"/> Denied	<input type="checkbox"/> No action taken

Adopted by City of Phoenix Ordinance G-6463 effective July 6, 2018



City of Phoenix

PLANNING & DEVELOPMENT DEPARTMENT

PHOENIX BUILDING CONSTRUCTION CODE

Amendment to 2018 International Energy Conservation Code (IECC) Section C101.2

Submitted by: 2018 International Energy Conservation Code Committee

C101.2 Scope.

This code applies to *commercial buildings* and the buildings' sites and associated systems and equipment. 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.

Reasons:

This provision was adopted in the previous code cycle. It would allow a multi-family developer the choice between residential and commercial provisions regardless of height and would align the commercial and residential provisions for multi-family construction.

Cost Impact:

Possible cost savings.

Approved in previous 2012 Code Adoption process: YES NO

ACTION TAKEN:

2018 Code Committee Date: March 2, 2018
 Approved as submitted Modified and approved Denied No action taken

Development Advisory Board (DAB) Technical Subcommittee Date: March 08, 2018
 Approved as submitted Modified and approved Denied No action taken

Development Advisory Board (DAB) Date: March 15, 2018
 Approved as submitted Modified and approved Denied No action taken

Downtown, Aviation, Economy, and Innovation Subcommittee Date: May 2, 2018
 Approved as submitted Modified and approved Denied No action taken

City Council Action Date: June 6, 2018
 Approved as submitted Modified and approved Denied No action taken

Adopted by City of Phoenix Ordinance G-6463 effective July 6, 2018



City of Phoenix

PLANNING & DEVELOPMENT DEPARTMENT

PHOENIX BUILDING CONSTRUCTION CODE

Amendment to 2018 International Energy Conservation Code (IECC) Section R101.2

Submitted by: 2018 International Energy Conservation Code Committee

R101.2 Scope.

This code applies to residential buildings and the building sites and associated systems and equipment. 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.

Reasons:

This provision was adopted in the previous code cycle. It would allow a multi-family developer the choice between residential and commercial provisions regardless of height, and would align the commercial and residential provisions for multi-family construction.

Cost Impact:

Possible cost savings to the developer.

Approved in previous 2012 Code Adoption process: YES NO

ACTION TAKEN:

2018 Code Committee Date: January 8, 2018

Approved as submitted Modified and approved Denied No action taken

Development Advisory Board (DAB) Technical Subcommittee Date: March 8, 2018

Approved as submitted Modified and approved Denied No action taken

Development Advisory Board (DAB) Date: March 15, 2018

Approved as submitted Modified and approved Denied No action taken

Downtown, Aviation, Economy, and Innovation Subcommittee Date: May 2, 2018

Approved as submitted Modified and approved Denied No action taken

City Council Action Date: June 6, 2018

Approved as submitted Modified and approved Denied No action taken

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City of Phoenix

PLANNING & DEVELOPMENT DEPARTMENT

PHOENIX BUILDING CONSTRUCTION CODE

Amendment to 2018 International Energy Conservation Code (IECC) Section C302.1

Submitted by: 2018 International Energy Conservation Code Committee

C302.1 Interior design conditions.

The interior design temperatures used for heating and cooling load calculations shall be a maximum of 72°F (22°C) for heating and a minimum of 75°F (24°C) for cooling. This section only applies for prescriptive design. The professional registrant may use the total building performance method per Section C407.

Reasons:

One set of interior temperatures will not necessarily meet the needs of all residents or businesses. There are many variables to a comfortable and healthy interior environment. This amendment clarifies that the intent of this section was not to regulate the temperature of the building occupants, but to determine the energy consumption allowed for a building, using the prescriptive method. The professional registrant may choose to alter the building envelope or design temperature utilizing the total building performance method in Section C407 as long as the total energy used does not exceed the total energy consumption of the standard reference design.

Cost Impact: No cost impact.

Approved in previous 2012 Code Adoption process: YES NO

ACTION TAKEN:

2018 Code Committee Date: March 7, 2018
 Approved as submitted Modified and approved Denied No action taken

Development Advisory Board (DAB) Technical Subcommittee Date: March 08, 2018
 Approved as submitted Modified and approved Denied No action taken

Development Advisory Board (DAB) Date: March 15, 2018
 Approved as submitted Modified and approved Denied No action taken

Downtown, Aviation, Economy, and Innovation Subcommittee Date: May 2, 2018
 Approved as submitted Modified and approved Denied No action taken

City Council Action Date: June 6, 2018
 Approved as submitted Modified and approved Denied No action taken

Adopted by City of Phoenix Ordinance G-6463 effective July 6, 2018



PHOENIX BUILDING CONSTRUCTION CODE

**Amendment to 2018 International Energy Conservation Code (IECC)
Section R102.1.2**

Submitted by: 2018 International Energy Conservation Code Committee

R102.1.2 RESNET testing & inspection protocol.

The Residential Energy Services Network (RESNET) Mortgage Industry National Home Energy Rating System, Standards Protocol for third party testing and inspections, shall be deemed to meet the requirements of sections R402.4.1.1, R402.4.1.2 and R403.2.2. and shall meet the following conditions:

1. Third Party Testing and 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 RESNET 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. R402.4.1.1 – Building Envelope – Thermal and Air Barrier Checklist
 - b. R402.4.1.2 – Testing – Air Leakage Rate
 - c. R403.2.2 – Sealing – Duct Tightness
4. The other requirements identified as “mandatory” in Chapter 4 shall be met.
5. Alternate testing and inspection programs and protocols shall be allowed when approved by the Code Official.

Reasons:

This section was previously adopted in the 2012 IECC and included in the Phoenix Building Construction Code.

Previous Substantiation:

1. Maricopa Association of Governments Building Code Committee has reviewed the Third-Party Testing and Inspection procedures of the Residential Energy Services Network (RESNET) with the intent to promote and present uniform guidelines for the acceptance of the RESNET Mortgage Industry National Home Energy Rating System Standards (Standards) as an “Above Code Program” for the jurisdictions within Maricopa County; and
2. The inspection and testing required under the 2018 International Residential Code (IRC) and the 2018 International Energy Conservation Code (IECC) is currently being performed under the RESNET Standards for home builders participating in the Environmental Protection Agency’s ENERGY STAR for Homes Program; and
3. The RESNET Standards (Chapters 3,6, and 8) are in the process of being certified as ANSI Standards; and
4. The utilization of the RESNET Standards would assure home builders the ability to continue a testing and inspection process that has been proven to be successful in saving energy while protecting the health, safety and welfare of the public in the building code sections covered by the program; and

5. The committee has researched and discussed this issue and determined that the intent of the code is being met by the acceptance of the testing and inspection protocols of the RESNET Standards.

Cost Impact:

There will be significant cost savings for the large production home builders.

Approved in previous 2012 Code Adoption process: **YES** **NO**

ACTION TAKEN:

2018 Code Committee Date: January 08, 2018

Approved as submitted Modified and approved Denied No action taken

Development Advisory Board (DAB) Technical Subcommittee Date: March 08, 2018

Approved as submitted Modified and approved Denied No action taken

Development Advisory Board (DAB) Date: March 15, 2018

Approved as submitted Modified and approved Denied No action taken

Downtown, Aviation, Economy, and Innovation Subcommittee Date: May 2, 2018

Approved as submitted Modified and approved Denied No action taken

City Council Action Date: June 6, 2018

Approved as submitted Modified and approved Denied No action taken

Adopted by City of Phoenix Ordinance G-6463 effective July 6, 2018



City of Phoenix

PLANNING & DEVELOPMENT DEPARTMENT

PHOENIX BUILDING CONSTRUCTION CODE

Amendments to 2018 International Energy Conservation Code (IECC) Section R302.1

Submitted by: 2018 International Energy Conservation Code Committee

R302.1 Interior design conditions.

The interior design temperatures used for heating and cooling load calculations shall be a maximum of 72°F (22°C) for heating and a minimum of 75°F (24°C) for cooling. This section only applies for prescriptive design. The professional registrant may use the total building performance method per Section R405.

Reasons:

One set of interior temperatures will not necessarily meet the needs of all residents or businesses. There are many variables to a comfortable and healthy interior environment. This amendment clarifies that the intent of this section was not to regulate the temperature of the building occupants, but to determine the energy consumption allowed for a building, using the prescriptive method. The professional registrant may choose to alter the building envelope or design temperature utilizing the total building performance method in Section C407 as long as the total energy used does not exceed the total energy consumption of the standard reference design.

Cost Impact: No cost impact.

Approved in previous 2012 Code Adoption process: YES NO

ACTION TAKEN:

2018 Code Committee Date: March 7, 2018
 Approved as submitted Modified and approved Denied No action taken

Development Advisory Board (DAB) Technical Subcommittee Date: March 08, 2018
 Approved as submitted Modified and approved Denied No action taken

Development Advisory Board (DAB) Date: March 15, 2018
 Approved as submitted Modified and approved Denied No action taken

Downtown, Aviation, Economy, and Innovation Subcommittee Date: May 2, 2018
 Approved as submitted Modified and approved Denied No action taken

City Council Action Date: June 6, 2018
 Approved as submitted Modified and approved Denied No action taken

Adopted by City of Phoenix Ordinance G-6463 effective July 6, 2018



City of Phoenix

PLANNING & DEVELOPMENT DEPARTMENT

PHOENIX BUILDING CONSTRUCTION CODE

Amendment to 2018 International Energy Conservation Code (IECC) Section C401.2

Submitted by: 2018 International Energy Conservation Code Committee

C401.2 Application.

Commercial buildings shall comply with one of the following:

1. The requirements of ANSI/ASHRAE/IESNA 90.1.
2. The requirements of Sections C402 through C405 ~~and C408~~. In addition, commercial buildings shall comply with Section C406 and tenant spaces shall comply with Section C406.1.1.
3. The requirements of Sections C402.5, C403.2, C403.3 through C403.3.2, C403.4 through C403.4.2.3, C403.5.5, C403.7, C403.8.1 through C403.8.4, C403.10.1 through C403.10.3, C403.11, C403.12, C404, C405, and C407 ~~and C408~~. The building energy cost shall be equal to or less than 85 percent of the standard reference design building.
4. Compliance with the provisions of Section C408 are optional.

Reasons:

The 2018 IECC added references for mandatory compliance with Section C408 in Section C401.2. 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; 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 reduced.

Approved in previous 2012 Code Adoption process: YES NO

ACTION TAKEN:

2018 Code Committee Date: March 1, 2018

Approved as submitted Modified and approved Denied No action taken

Development Advisory Board (DAB) Technical Subcommittee Date: March 08, 2018

Approved as submitted Modified and approved Denied No action taken

Development Advisory Board (DAB) Date: March 15, 2018

Approved as submitted Modified and approved Denied No action taken

Downtown, Aviation, Economy, and Innovation Subcommittee Date: May 2, 2018

Approved as submitted Modified and approved Denied No action taken

City Council Action Date: June 6, 2018

Approved as submitted Modified and approved Denied No action taken

Adopted by City of Phoenix Ordinance G-6463 effective July 6, 2018



PHOENIX BUILDING CONSTRUCTION CODE

**Amendment to 2018 International Energy Conservation Code (IECC)
Section R403.3.1**

Submitted by: 2018 International Energy Conservation Code Committee

R403.3 Ducts.

Ducts and air handlers shall be installed in accordance with Sections R403.3.1 through R403.3.7.

R403.3.1 Insulation (prescriptive).

Supply and return ducts in attics shall be insulated to an *R*-value of not less than R-8 for ducts 3 inches (76 mm) in diameter and larger, and not less than R-6 for ducts smaller than 3 inches (76 mm) in diameter. Supply and return ducts in other portions of the *building* shall be insulated to not less than R-6 for ducts 3 inches (76 mm) in diameter, and not less than R-4.2 for ducts smaller than 3 inches (76 mm) in diameter.

Exception: ~~Ducts or portions thereof located completely inside the *building thermal envelope*.~~

1. Ducts or portions thereof located completely inside the building thermal envelope.
2. Supply ducts may be insulated to a minimum of R-6 when one or more of the following conditions are met:
 - 2.1 Minimum SEER rating of space heating/cooling system is increased to 15.
 - 2.2 Maximum U-factor is decreased to 0.35 and maximum SHGC is decreased to 0.22 for all fenestration products.
 - 2.3 Wall cavity insulation minimum R-value is increased to R-19.
 - 2.4 Residential buildings that meet the requirements of sections R102.1.1 or R405.
 - 2.5 Residential buildings with attic radiant barriers in accordance with ASTM C1313, installed in accordance with ASTM C1743.

Reasons:

These provisions were adopted in 2012.

Previous substantiation: The Arizona Homebuilders Association proposed efficiency improvements in heating/cooling equipment, glazing product performance, and increased thermal envelope insulation as an alternative to providing R-8 duct insulation required by the IECC. A Code Modification was approved in July 2006 to allow a trade-off to the use of R-6 insulation on HVAC ducts in residential attics. Energy simulation software was used to compare cost savings for each of the proposed areas of concentration. The benefits from improving the efficiency of the air conditioning system, window thermal resistance to heat gain, and wall cavity insulation were shown to surpass cost savings from increasing HVAC duct insulation. Based on these findings, staff recommendation is that this amendment be adopted for use in the 2012 IECC and the 2012 IRC Chapter 11.

** A public proposal was submitted to include attic radiant barriers in the list of trade-offs for the R-8 duct insulation. Simulation software was used to demonstrate cost savings when radiant barriers and R-6 insulation were incorporated, as compared to no radiant barriers and R-8 duct insulation. Based on these positive savings results and the requirement for listed products, staff recommends that this previously approved proposal be modified to include radiant barriers in the list of exceptions.

Cost Impact:

Builders could realize construction cost savings or net – neutral cost savings.

Approved in previous 2012 Code Adoption process: **YES** **NO**

ACTION TAKEN:

2018 Code Committee Date: January 08, 2018
 Approved as submitted Modified and approved Denied No action taken

Development Advisory Board (DAB) Technical Subcommittee Date: March 08, 2018
 Approved as submitted Modified and approved Denied No action taken

Development Advisory Board (DAB) Date: March 15, 2018
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City of Phoenix

PLANNING & DEVELOPMENT DEPARTMENT

PHOENIX BUILDING CONSTRUCTION CODE

Amendment to 2018 International Energy Conservation Code (IECC) Table R406.4

Submitted by: 2018 International Energy Conservation Code Committee

TABLE R406.4

MAXIMUM ENERGY RATING INDEX	
CLIMATE ZONE	ENERGY RATING INDEX
1	57
2	57 64
3	57
4	62
5	61
6	58
7	58
8	58

Reasons:

In 2012, the Phoenix Building Construction Code had set the HERS score at 73, In 2016 it was lowered to 64 based on 2015 IECC numbers. COP 2017 permit records of home testing results show an average score of 62.5. The committee recommends the score remain at 64.

Cost Impact:

Cost savings for construction.

Approved in previous 2012 Code Adoption process: **YES AND** **NO**

ACTION TAKEN:

2018 Code Committee Date: January 08, 2018
 Approved as submitted Modified and approved Denied No action taken

Development Advisory Board (DAB) Technical Subcommittee Date: March 08, 2018
 Approved as submitted Modified and approved Denied No action taken

Development Advisory Board (DAB) Date: March 15, 2018
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PHOENIX BUILDING CONSTRUCTION CODE

**Amendment to 2018 International Energy Conservation Code (IECC)
Section C408.3.1**

Submitted by: 2018 International Energy Conservation Code Committee

C408.3 Functional testing of lighting controls.

Automatic lighting controls required by this code shall comply with this section.

C408.3.1 Functional testing.

Prior to passing final inspection, ~~the registered design professional~~ a preliminary report of commissioning test procedures and results shall be completed and certified by the registered design professional or approved agency and provided to the building owner or owner's authorized agent. The report shall be identified as "Preliminary Commissioning Report - Lighting," and shall be provided to the code official from the building owner or owner's authorized agent. The preliminary report shall include the completed Commissioning Compliance Checklist, Figure C408.2.4, and shall identify:

1. Itemization of deficiencies found during testing required by this section that have not been corrected at the time of report preparation.
2. Deferred tests that cannot be performed at the time of report.
3. Schedule of when deferred tests will be performed.
4. Results of functional performance tests.
5. Functional performance test procedures used during the commissioning process, including measurable criteria for test acceptance.

The preliminary and final commissioning reports shall provide evidence that the lighting control systems have been tested to ensure that control hardware and software are calibrated, adjusted, programmed and in proper working condition, in accordance with the construction documents and manufacturer's instructions. Functional testing shall be in accordance with Sections C408.3.1.1 through C408.3.1.3 for the applicable control type.

Reasons:

Provides clarity that a preliminary report is required for lighting controls as well as mechanical systems prior to final inspection. Any tests that cannot be performed at the time of the preliminary report will be documented and scheduled to be included in the final report due to the owner, within 90 days of Certificate of Occupancy (C of O).

This will ensure that any lighting control systems that can be commissioned prior to final inspection will be performed and a plan to complete any deferred testing will be in place at time of C of O. This is consistent with the requirements in the mechanical commissioning section C408.2.4.

Cost Impact: No cost impact.

Approved in previous 2012 Code Adoption process: YES NO

ACTION TAKEN:

2018 Code Committee Date: January 08, 2018
 Approved as submitted Modified and approved Denied No action taken

Development Advisory Board (DAB) Technical Subcommittee Date: March 08, 2018
 Approved as submitted Modified and approved Denied No action taken

Development Advisory Board (DAB) Date: March 15, 2018
 Approved as submitted Modified and approved Denied No action taken

Downtown, Aviation, Economy, and Innovation Subcommittee Date: May 2, 2018
 Approved as submitted Modified and approved Denied No action taken

City Council Action Date: June 6, 2018
 Approved as submitted Modified and approved Denied No action taken

Adopted by City of Phoenix Ordinance G-6463 effective July 6, 2018