

AGENDA



4:30 P.M.

CITY COUNCIL MEETING

WEDNESDAY, MAY 27, 2026

NOTES:

- Meeting room is wheelchair accessible. American Disabilities Act (ADA) accommodations and translation services are available upon request. Please phone 928-282-3113 at least two (2) business days in advance.
- City Council Meeting Agenda Packets are available on the City's website at:

www.SedonaAZ.gov

THE MEETING CAN BE VIEWED
LIVE ON THE CITY'S WEBSITE AT
WWW.SEDONAAZ.GOV OR ON
CABLE CHANNEL 4.

GUIDELINES FOR PUBLIC COMMENT

PURPOSE:

- To allow the public to provide input to the City Council on a particular subject scheduled on the agenda.
- This is not a question/answer session.
- No disruptive behavior or profane language will be allowed.

PROCEDURES:

- Fill out a "Comment Card" and deliver it to the City Clerk.
- When recognized, use the podium/microphone.
- State your:
 1. Name and
 2. City of Residence
- Limit comments to **3 MINUTES**.
- Submit written comments to the City Clerk.

1. CALL TO ORDER/PLEDGE OF ALLEGIANCE/MOMENT OF SILENCE

2. ROLL CALL

3. SPECIAL BUSINESS

LINK TO DOCUMENT =

- a. AB 3315 **Discussion/direction** from Council on the proposed changes to SCC Article 15 for the updated building codes.
- b. **Discussion/possible action** regarding ideas for future meetings/agenda items.

4. EXECUTIVE SESSION

Upon a public majority vote of the members constituting a quorum, the Council may hold an Executive Session that is not open to the public for the following purposes:

- a. To consult with legal counsel for advice regarding matters listed on this agenda per A.R.S. § 38-431.03(A)(3).
- b. Return to open session. **Discussion/possible action** regarding executive session items.

5. ADJOURNMENT

Posted: 05/20/2026

By: DJ

JoAnne Cook, CMC, City Clerk

Note: Pursuant to A.R.S. § 38-431.02(B) notice is hereby given to the members of the City Council and to the general public that the Council will hold the above open meeting. Members of the City Council will attend either in person or by telephone, video, or internet communications. The Council may vote to go into executive session on any agenda item, pursuant to A.R.S. § 38-431.03(A)(3) and (4) for discussion and consultation for legal advice with the City Attorney. Because various other commissions, committees and/or boards may speak at Council meetings, notice is also given that a quorum of members of these other City commissions, boards, or committees may be in attendance.

A copy of the packet with material relating to the agenda items is typically available for review by the public in the Clerk's office after 1:00 p.m. the Thursday prior to the Council meeting and on the City's website at www.SedonaAZ.gov. The Council Chambers is accessible to people with disabilities, in compliance with the Federal 504 and ADA laws. Those with needs for special typeface print, may request these at the Clerk's Office. All requests should be made **forty-eight hours** prior to the meeting.

NOTICE TO PARENTS AND LEGAL GUARDIANS: Parents and legal guardians have the right to consent before the City of Sedona makes a video or voice recording of a minor child, pursuant to A.R.S. § 1-602(A)(9). The Sedona City Council meetings are recorded and may be viewed on the City of Sedona website. If you permit your child to attend/participate in a televised City Council meeting, a recording will be made. You may exercise your right not to consent by not allowing your child to attend/participate in the meeting.

CITY COUNCIL CHAMBERS
102 ROADRUNNER DRIVE, SEDONA, AZ

The mission of the City of Sedona government is to provide exemplary municipal services
that are consistent with our values, history, culture and unique beauty.



CITY COUNCIL AGENDA BILL

AB 3315
May 27, 2026
Special Business

Agenda Item: 3a

Proposed Action & Subject: Discussion/direction from Council on the proposed changes to SCC Article 15 for the updated building codes.

Department Community Development

Time to Present 20 min

Total Time for Item 2.5 hours

Other Council Meetings N/A

Exhibits

- A. Outline
- B. Current Article 15 Amendments
- C. Proposed Article 15 Amendments
- D. Significant Code Changes Document
- E. Est. Costs 2018 – 2021 IRC
- F. Est. Costs 2021 – 2024 IRC
- G. SIG report

Finance Approval	Reviewed 05/19/26 BGW	
City Attorney Approval	Reviewed 5/19/26 KWC	Expenditure Required
		\$ N/A
City Manager's Recommendation	Provide direction to staff ABS 5/13/26	Amount Budgeted
		\$ N/A
		Account No. N/A (Description)

SUMMARY STATEMENT

Background:

The current adopted building codes for the City of Sedona, under SCC Article 15, are the 2018 I-Codes (International Building Code, International Residential Code, etc.) and the 2017 National Electrical Code. When these codes were adopted, they were adopted with the cooperation of, and in sync with, the surrounding Verde Valley municipalities and Yavapai County. At that time, City Council agreed to maintain a 6-year adoption cycle which was also in line with the Verde Valley communities. As such, the update of our current building codes has been a Council priority in the last two years and is coming before Council now due to a delay in the printing of the International Residential Code and the International Mechanical Code by the International Code Council. The proposed code updates being brought before Council at this time are a culmination of a year's worth of again working with the Verde Valley communities and Yavapai County along with Prescott, Prescott Valley, Chino Valley and the

Yavapai Contractor's Association. The goal was to all adopt the 2024 I-Codes and the 2023 National Electrical Code, which almost all the municipalities already have, and to get our respective amendments as close as possible to each other. This is the first public meeting review. Any direction given by Council in this meeting will be incorporated into the proposed code amendments and be presented to Council for possible approval on July 14, 2026.

Climate Action Plan/Sustainability Consistent: ☒Yes - ☐No - ☐Not Applicable

The new codes have additional requirements to reduce water use, which is a strategy of the Water and Natural Systems chapter of the CAP and have PV and EV ready requirements which fit in part, the action to, "Require EV-ready parking spaces in new commercial and multifamily developments". Additional CAP actions will be proposed as a part of the SIG report.

Board/Commission Recommendation: ☐Applicable – ☒ Not Applicable

Alternative(s): N/A

MOTION

I move to: For discussion and direction only.

Title 15

BUILDINGS AND CONSTRUCTION

Chapters:

15.05	Building Code
15.10	International Plumbing Code
15.15	Electrical Code
15.20	Mechanical Code
15.25	Dangerous Buildings Code
15.30	International Fuel Gas Code
15.35	Adoption of Technical Documents
15.40	International Existing Building Code
15.45	International Energy Conservation Code
15.50	International Swimming Pool and Spa Code

Chapter 15.05

BUILDING CODE*

Sections:

15.05.010	Adoption of the International Building Code.
15.05.020	Amendments to the International Building Code.
15.05.030	Adoption of the International Residential Code.
15.05.040	Amendments to the International Residential Code.
15.05.050	Conformance to the land development code.
15.05.060	Building permit fees and valuation.
15.05.070	Wood burning fireplaces.
15.05.080	Permitting of wood stoves and similar devices.
15.05.090	Manufactured homes, factory-built buildings and mobile homes.
15.05.100	Jurisdiction of other agencies.

* **Editorial note:** See Ordinances 90-01, 91-22, 92-01, 93-09, 93-22, 98-05, 2007-04 and 2007-16.

15.05.010 Adoption of the International Building Code.

The following document, three copies of which are on file and are available for public inspection in the office of the director of community development, is adopted as the building code of the city of Sedona, Arizona, for regulating the erection, construction, enlargement, alteration, repair, moving, removal, demolition, conversion, occupancy, equipment, use, height, area and maintenance of all buildings or structures in the city; and providing for issuance of permits and collection of fees therefor:

- A. International Building Code, 2018 Edition, as amended and codified, published by the International Code Council, Inc.
- B. Each and all of the regulations, provisions, conditions and terms of the International Building Code, 2018 Edition, as amended and codified, published by the International Code Council, Inc., are hereby referred to, adopted and made a part of this code as if fully set out herein, excepting such provisions as hereinafter deleted or amended. [Code 2006 § 7-1-1. Ord. 98-05, 3-24-1998; Ord. 2007-16, 10-23-2007; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.05.020 Amendments to the International Building Code.

The International Building Code, as adopted, is hereby modified as follows:

- A. Section 101.1, Title, is hereby amended by adding the words "City of Sedona" in place of "Name of Jurisdiction."

B. Sections 101.4.1, Gas, 101.4.2, Mechanical, 101.4.3, Plumbing, 101.4.4, Property maintenance, 101.4.6, Energy and 101.4.7, Existing buildings, are hereby amended by adding the following directly after the title of the code:

..., as adopted and amended by the City of Sedona,

- C. Section 105.2, Work exempt from permits, Building Item Nos. 1, 2, 4, 9, 10 and 11, relating to Exempted Work, are hereby amended to read:

1. One-story detached buildings used as tool and storage sheds, playhouses or similar uses, provided the projected roof area does not exceed 120 square feet, the building does not exceed 7 feet high at the highest point of the roof or wall, and it has no electrical or plumbing installations.
2. Freestanding fences and walls not supporting a structure, not over 30 inches high, and not located within flood hazard areas as determined by the City or County flood hazard administrative authority.
4. Retaining walls not over 30 inches in height, measured from top of footing to the top of wall, unless supporting a surcharge or impounding Class I, II or IIIA liquids.
9. Prefabricated swimming pools accessory to Group R-3 occupancies, which are less than 18 inches in depth and less than 8 feet in all dimensions and constructed entirely above grade.
10. This item, referring to shade cloth structures, is deleted in its entirety.

11. Swings and other playground equipment.

D. Section 105.7, Placement of permit, is hereby amended by deleting the section in its entirety and substituting the following:

Section 105.7 Placement of permit. The building permit shall be kept on site in a conspicuous place, visible from the public way, and shall be kept on the site of the work until the completion of the project and the issuance of final inspection approval by the City.

E. Section 107.1, General, is hereby amended by the addition of the following paragraphs to the end of the section:

Such documents may be reviewed and approved by other departments of this City and other agencies with jurisdiction in the areas of public health and safety prior to permit issuance, including, but not limited to, the Arizona Department of Environmental Quality, the County Health Department and the County Flood Control District to verify compliance with any applicable laws under their jurisdiction.

The Building Official shall require that contractors be licensed as required by Arizona state law before issuing permits to them. The Building Official shall also require contractors and builders to either be licensed or otherwise retain the services of someone who is properly licensed or certified, as may be necessary to assure the proper installation of building components, equipment or appliances consistent with the technical codes or the approved installation specifications and standards.

Owners of Property may construct, add to, alter or remodel structures on their property subject to the provisions of Arizona Revised Statutes, Section [32-1121](#). Violation of the provisions of ARS § [32-](#)

[1121](#) shall be cause to commence enforcement proceedings. The Building Official may also report such violations to the Arizona Registrar of Contractors.

F. Section 107.3.1, Approval of construction documents, is hereby amended by adding the following paragraph to the end of the section:

When plans are required, if the Building Official issues a permit, he/she shall endorse in writing or stamp the plans and specifications "Reviewed for Code compliance" which signifies only that said plans may be used in conjunction with a building permit for construction. Any omission or error in said plans shall not be grounds to fail to comply with or waive any city, state or federal requirements. The designer, builder and owner are hereby charged with the responsibility to comply with all said requirements. Approved plans, specifications, building addresses, legal descriptions and permits shall not be changed, modified or altered without authorization from the Building Official, and all work shall be done in accordance with the approved plans, specifications and permits. A land split or subdivision of land made on property for which a building permit has been issued shall be approved by the Director of Community Development prior to recording.

G. Section 110.3.5, Lath, gypsum board and gypsum panel product inspection, is hereby amended by deleting the exception.

H. Section 111.1, Change of occupancy, is hereby amended by inserting the following text after the first sentence of the paragraph:

Every tenant of every building and structure, except Group R-3 and U occupancies associated with Group R-3 uses, and non-occupied Group U occupancies, shall obtain a tenant occupancy permit and a certificate of occupancy prior to opening for business. Tenant occupancy permits and certificates shall be nontransferable from one building to another and from one tenant to another.

I. Section 111.3, Temporary occupancy, is hereby amended by adding the following to the end of the section:

The issuance of Temporary Certificates of Occupancy is not customary, is reviewed by the Director of Community Development after the submittal of a written request identifying the hardship(s) not caused directly or indirectly by the applicant, property owner, design professionals or contractors, and is based solely on incomplete or non-compliant exterior work. Upon approval of the Director of Community Development to allow issuance of a Temporary Certificate of Occupancy, the owner shall

submit to the Building Official for review and approval a letter requesting temporary occupancy for a period of time to be approved by the Building Official and include with the request:

1. An itemization of all work authorized and required by the building and grading permits that must be completed to permanently occupy the building. (Note that said work shall be exterior to the building or structure. Temporary Certificates of Occupancy will not be issued for any work not completed and approved by the City that is interior to the building or structure.)
2. An irrevocable bond or other financial deposit acceptable to the Building Official and payable to the City of Sedona in the event construction is not completed before expiration of the Temporary Certificate of Occupancy. The amount of the bond or deposit shall equal 100 percent of the construction cost to complete the work required by the permits.

For the purpose of this section, construction cost shall include all labor, materials, equipment, sales tax, permit fees and contractors' profit and overhead plus a twenty-five percent (25%) contingency amount for unforeseen construction expenses and City administration in the event the City undertakes completion of the project. The Building Official may require written proposals or estimates from contractors to substantiate the amount of the bond or deposit.

3. The payment of a non-refundable fee for the Temporary Certificate of Occupancy shall be \$300.00 for single-family dwellings and \$500.00 for commercial projects.
4. A written agreement that the bond or deposit is forfeited by the owner to the City in the event all required work is not completed before expiration of the Temporary Certificate of Occupancy and authorization for the City to undertake and complete construction with the forfeited funds.

If the City undertakes completion of the project with the forfeited funds, any unexpended amount shall be returned to the owner or bonding agent as applicable. If costs to complete the project exceed the amount of the bond or deposit, the City may file a lien against the subject property and take appropriate action as necessary to recover all the additional expenses incurred completing the construction.

The Building Official may extend the time period of an original Temporary Certificate of Occupancy or issue one or more additional temporary certificates if conditions beyond the control of the owner prevent project completion by the expiration of the original Temporary Certificate. Extensions and additional temporary certificates shall be requested by the owner before the expiration of the original certificate and approved by the Building Official in the same manner as the original certificate. The owner shall provide a bond or deposit and pay a new fee for each extension or additional certificate.

EXCEPTION: Public schools are not required to provide a bond or deposit for completion of work or pay temporary certificate fees.

J. Section 113.3, Qualifications, is hereby amended by deleting the section in its entirety and substituting the following:

113.3 Board Composition and Authority. All reviews required of a Board of Appeals shall be delegated to a hearing officer to be appointed in the same manner as such other hearing officers appointed by the City Council to hear appeals to the City of Sedona's Board of Adjustment. The hearing officer(s) appointed pursuant to this section shall have final review authority and no further appeal shall be required by the City of Sedona.

K. Section 114.4, Violation penalties, is hereby amended by adding the following paragraph to the end of the section:

Such person, firm or corporation shall be subject to the penalties as provided in SCC [1.15.010](#) for each and every such violation and non-compliance as a separate offense. Imposition of penalty for a violation of this code shall not excuse the violation or permit it to continue. A violation shall be remedied within a reasonable time, and each day that such violation continues unabated shall constitute a separate offense.

L. Section 115.2, Issuance, is hereby amended by removing the first sentence in its entirety and inserting the following:

A stop work order shall be in writing and shall be given to the owner of the property, to the owner's authorized agent, or to the person performing the work, or shall be posted on the structure or on site in a conspicuous location.

M. Section R115.3, Unlawful continuance, is hereby deleted in its entirety and replaced by the following:

Section R115.3 Unlawful continuance and/or removal of stop work notice. Any person who shall continue or allow the continuance of any work in or about the structure or property after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, or any person who removes, or causes the removal of, the stop work notice without the consent of the City, shall be subject to fines and penalties as set by the applicable governing authority.

N. Sections 305.2, Group E, day care facilities, and 308.5, Institutional Group I-4, day care facilities, are hereby amended by adding the following exception:

A "child care group home" complying with the requirements ARS [36-897](#) through [36-897.13](#) and providing child care for less than 24 hours per day for not less than five (5) children but no more than ten (10) children through the age of twelve years shall be classified as Group R-3, provided that all child care rooms are located on the level of exit discharge and each child care room has an exit door directly to the exterior.

O. Section 502.1, Address identification, is hereby amended by adding the following paragraph to the end of the section:

In addition to the requirements stated herein, building addressing and display shall comply with SCC [12.20.070](#). Building addresses placed on building permits and Certificates of Occupancy shall not be changed unless approved by the City Engineer pursuant to Chapter [12.20](#) SCC.

P. Section 901.2, Fire protection systems, is hereby amended by deleting the first paragraph and replacing said paragraph with the following:

Fire protection systems shall be designed, installed, repaired, operated, tested and maintained in accordance with this code and the Sedona Fire District's adopted regulations, codes and amendments. Where there is a conflict between this code and those of the Sedona Fire District, the more restrictive of those regulations, codes, and amendments shall apply.

Q. Section 903.2, Where required, is hereby amended by adding the following paragraph to the end of the section:

Approved automatic sprinkler systems shall also be designed and provided in accordance with the adopted and amended codes and regulations of the Sedona Fire District, and all plan review and inspections for said systems will be done by the Sedona Fire District.

R. Section 907.2.10.1, Group R-1, is hereby amended by deleting the section in its entirety and substituting the following:

Section 907.2.10.1 Group R-1. Single- or multiple-station smoke alarms shall be installed in all of the following locations in Group R-1:

1. In sleeping areas.
2. In every room in the path of the means of egress from the sleeping area to the door leading from the sleeping unit.
3. In each story within the sleeping unit, including basements. For sleeping units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level, and that the smoke alarm is installed on the ceiling in close proximity of the stairs.
4. In sleeping units where the ceiling height of a room open to the hallway serving the bedrooms exceeds that of the hallway by twenty-four inches (24") or more, smoke detectors shall be installed in the hallway and in the adjoining room.

S. Section 907.2.10.2, Groups R-2, R-3, R-4 and I-4, is hereby amended by adding the following to the end of the section:

4. In sleeping units where the ceiling height of a room open to the hallway serving the bedrooms exceeds that of the hallway by twenty-four inches (24") or more, smoke detectors shall be installed in the hallway and in the adjoining room.

T. Section 1008.1 is hereby amended by adding the following sentence to the end of the first sentence:

In addition, emergency illumination shall be required in non-residential occupancies where deemed necessary by the Building Official.

U. Section 1015.2, Where required, is hereby amended by deleting "30 inches (762 mm)" from the first sentence and replacing it with "20 inches (508 mm)."

V. Section 1612.3, Establishment of flood hazard areas, is modified by deleting the section in its entirety and replacing it with the following:

1612.3 Establishment of flood hazard areas. Flood hazard areas and regulations shall be established by the appropriate, governing County or City agency having flood management jurisdiction. Where the requirements of this section conflict with the flood hazard regulations adopted by the appropriate, governing County or City agency having flood management jurisdiction, the regulations of the governing County or City agency shall apply.

W. Section 1807.1.6, Prescriptive design of concrete and masonry foundation walls, is hereby amended by adding the following to the end of the sentence:

... provided that the minimum vertical reinforcement for any concrete or masonry foundation wall shall be a #4 spaced not more than 48 inches on center. Un-reinforced concrete (PC) is not permitted.

X. Section 2901.1, Scope, is hereby amended by deleting the third sentence in its entirety and replacing it with the following:

Plumbing systems and equipment shall be designed, constructed and maintained in accordance with the International Plumbing Code as amended by the City of Sedona. Private sewage disposal systems shall conform to the requirements of the applicable State or County governing authority.

Y. Section 3109.1, General, is hereby amended by adding the following to the end of the sentence:

...and all applicable state and county regulations including Arizona Statute A.R.S. [36-1681](#).

[Code 2006 § 7-1-2. Ord. 2007-16, 10-23-2007; amended during 2012 codification; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.05.030 Adoption of the International Residential Code.

The following document, three copies of which are on file and are available for public inspection in the office of the director of community development, is hereby adopted as the building code of the city of Sedona, Arizona, for regulating the erection, construction, enlargement, alteration, repair, moving, removal, demolition, conversion, occupancy, equipment, use, height, area and maintenance of all one- and two-family dwellings and townhouses and associated buildings or structures in the city; and providing for issuance of permits and collection of fees therefor:

A. International Residential Code, 2018 Edition, as amended and codified, published by the International Code Council, Inc., including the following appendix chapters:

1. Appendix A: Sizing and Capacity of Gas Piping;
2. Appendix B: Sizing of Venting Systems Serving Appliances Equipped With Draft Hoods, Category I Appliances and Appliances Listed For Use With Type B Vents;
3. Appendix C: Exit Terminals of Mechanical Draft and Direct-Vent Venting Systems;
4. Appendix G: Piping Standards for Various Applications;
5. Appendix J: Existing Buildings and Structures;
6. Appendix K: Sound Transmission;
7. Appendix N: Venting Methods;
8. Appendix O: Automatic Vehicular Gates;
9. Appendix P: Sizing of Water Piping System;
10. Appendix Q: Tiny Houses, as amended to include the following:

Section AQ106 ADDITIONAL REQUIREMENTS AND ALLOWANCES

Section AQ106.1 Egress door. The main egress door shall be no less than 32" in width.

Section AQ106.2 Room dimensions. The minimum room dimension of a habitable room, other than the loft or kitchen, shall be 6'-6", and the room area shall be no less than 60 sq.ft.

Section AQ106.3 Foundation. Tiny houses shall be built on, and permanently attached to, full, continuous concrete or masonry foundations.

Section AQ106.4 General. Tiny houses shall comply with all other requirements of the adopted International Residential Code.

11. Appendix R: Light Straw-Clay Construction;
12. Appendix S: Strawbale Construction;
13. Appendix T: Solar-Ready Provisions – Detached One- And Two-Family Dwellings And Townhouses.

B. Each and all of the regulations, provisions, conditions and terms of the International Residential Code, 2018 Edition, as amended and codified, published by the International Code Council, Inc., are hereby referred to, adopted and made a part of this code as if fully set out herein, excepting such provisions as hereinafter deleted or amended. [Code 2006 § 7-1-3. Ord. 2007-16, 10-23-2007; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.05.040 Amendments to the International Residential Code.

The International Residential Code, as adopted, is hereby modified as follows:

A. Section R101.1 Title, is hereby amended by adding the words “City of Sedona” in place of “Name of Jurisdiction.”

B. Section R101.2 Scope, is hereby amended by adding the following new section:

R101.2.1 Fences, yard walls and retaining walls. Fences, yard walls and retaining walls shall be designed in accordance with the minimum requirements of the City of Sedona prescriptive fence, wall and retaining wall details located within the City of Sedona Fence Building Permit Packet or the design of such structures shall be supported by structural calculations performed by an Arizona registered design professional approved to perform structural design.

C. Section R104.10.1, Flood hazard areas, is hereby deleted in its entirety.

D. Section R105.2, Exempted work, Item Nos. 1, 2, 3, 7 and 10, are hereby amended to read:

1. One-story detached buildings used as tool and storage sheds, playhouses or similar uses, provided the projected roof area does not exceed 120 square feet, the building does not exceed seven feet (7') high at the highest point of the roof or wall, and it has no electrical or plumbing installations.

2. Fences not over thirty inches (30") high and not located within flood hazard areas as determined by the City or County flood hazard administrative authority.

3. Retaining walls not over thirty inches (30") high measured from the top of footing to the top of wall and not support any structures or located within flood hazard areas as determined by the City or County flood hazard administrative authority.

7. Prefabricated swimming pools accessory to Group R-3 occupancies which are less than 18 inches in depth and less than 8 feet in any dimension and constructed entirely above grade.

10. Decks not exceeding 100 square feet in area, that are less than 20 inches above grade at any point, are not attached to a dwelling, do not have stairs or steps and do not serve the exit door required by Section R311.2.

E. Section R105.3.1.1, Determination of substantially improved or substantially damaged existing buildings in flood hazard areas, is hereby amended by deletion in its entirety and substituting the following:

Reconstruction, rehabilitation, additions, alteration, repair, relocation or other improvements to buildings or structures located in flood hazard areas as established by Table R301.2(1), shall comply with the regulations and requirements of the appropriate, governing County or City authority.

F. Section R105.5, Expiration, is hereby amended by adding the following to the end of the first sentence:

Lack of a scheduled and performed qualified inspection within 180 days constitutes a suspension or abandonment of work, and therefore an expiration of the permit.

G. Section R105.7, Placement of permit, is hereby amended by deleting the section in its entirety and substituting the following:

Section 105.7 Placement of permit. The building permit shall be kept on site in a conspicuous place, visible from the public way, and shall be kept on the site of the work until the completion of the project and the issuance of final inspection approval by the City.

H. Section R106.1.1, Information on construction documents, is hereby amended by adding the following to the end of the section:

All text, numbers, symbols, lines, shading, etc. shall be clear, well defined, sized and properly weighted so as to be clearly legible, and plan sheets shall be no larger than 30" x 42" in size.

I. Section R106.3, Examination of documents, is hereby amended by adding the following to the end of the section:

The application and construction drawings may be reviewed and approved by other departments of this City and other agencies with jurisdiction in the areas of public health and safety prior to permit issuance, including, but not limited to, the Arizona Department of Environmental Quality, the County Health Department and the County Flood Control District to verify compliance with any applicable laws under their jurisdiction.

The Building Official shall require that contractors be licensed as required by Arizona state law before issuing permits to them. The Building Official shall also require contractors and builders to either be licensed or otherwise retain the services of someone who is properly licensed or certified, as may be necessary to assure the proper installation of building components, equipment or appliances consistent with the technical codes or the approved installation specifications and standards.

Owners of Property may construct, add to, alter or remodel structures on their property subject to the provisions of Arizona Revised Statutes, Section [32-1121](#). Violation of the provisions of ARS § [32-1121](#) shall be cause for the Building Official to commence enforcement proceedings. The Building Official may also report such violations to the Arizona Registrar of Contractors.

J. Section R108.2, Schedule of permit fees, is hereby amended by adding the following to the end of the section:

Fees, valuations, plan review deposits and refunds that are within the scope of this Section shall be assessed in accordance with the provisions of this section and as set forth in SCC [15.05.060](#).

K. Section R109.1.3, Floodplain inspections, is hereby amended by adding the following to the end of the paragraph:

Inspections for the reconstruction, rehabilitation, additions, alteration, repair, relocation or other improvements to buildings or structures located in flood hazard areas as established by Table R301.2(1), shall comply with the regulations and requirements of the appropriate, governing County or City authority.

L. Section R110.4, Temporary occupancy, is amended by adding the following to the end of the section:

The issuance of Temporary Certificates of Occupancy is not customary, is reviewed by the Director of Community Development after the submittal of a written request identifying the hardship(s) not caused directly or indirectly by the applicant, property owner, design professionals or contractors, and is based solely on incomplete or non-compliant exterior work. Upon approval of the Director of

Community Development to allow issuance of a Temporary Certificate of Occupancy, the owner shall submit to the Building Official for review and approval a letter requesting temporary occupancy for a period of time to be approved by the Building Official and include with the request:

1. An itemization of all work authorized and required by the building and grading permits that must be completed to permanently occupy the building. (Note that said work shall be exterior to the building or structure. Temporary Certificates of Occupancy will not be issued for any work not completed and approved by the City that is interior to the building or structure.)
2. An irrevocable bond or other financial deposit acceptable to the Building Official and payable to the City of Sedona in the event construction is not completed before expiration of the Temporary Certificate of Occupancy. The amount of the bond or deposit shall equal 100 percent of the construction cost to complete the work required by the permits.

For the purpose of this section, construction cost shall include all labor, materials, equipment, sales tax, permit fees and contractors' profit and overhead plus a twenty percent (25%) contingency amount for unforeseen construction expenses and City administration in the event the City undertakes completion of the project. The Building Official may require written proposals or estimates from contractors to substantiate the amount of the bond or deposit.

3. The payment of a non-refundable fee for the Temporary Certificate of Occupancy shall be \$300.00 for single-family dwellings and \$500.00 for commercial projects.
4. A written agreement that the bond or deposit is forfeited by the owner to the City in the event all required work is not completed before expiration of the Temporary Certificate of Occupancy and authorization for the City to undertake and complete construction with the forfeited funds.

If the City undertakes completion of the project with the forfeited funds, any unexpended amount shall be returned to the owner or bonding agent as applicable. If costs to complete the project exceed the amount of the bond or deposit, the City may file a lien against the subject property and take appropriate action as necessary to recover all the additional expenses incurred completing the construction.

The Building Official may extend the time period of an original Temporary Certificate of Occupancy or issue one or more additional temporary certificates if conditions beyond the control of the owner prevent project completion by the expiration of the original Temporary Certificate. Extensions and additional temporary certificates shall be requested by the owner before the expiration of the original certificate and approved by the Building Official in the same manner as the original certificate. The owner shall provide a bond or deposit and pay a new fee for each extension or additional certificate.

EXCEPTION: Public schools are not required to provide a bond or deposit for completion of work or pay temporary certificate fees.

M. Section R112.3, Qualifications, is hereby deleted and replaced with the following:

R112.3 Board Composition and Authority. All reviews required of a Board of Appeals shall be delegated to a hearing officer to be appointed in the same manner as such other hearing officers appointed by the City Council to hear appeals to the City of Sedona's Board of Adjustment. The hearing officer(s) appointed pursuant to this section shall have final review authority and no further appeal shall be required by the City of Sedona.

N. Section R114.1, Notice to owner or the owner's authorized agent, is hereby amended by adding the following to the end of the section:

Posting of the Stop Work order on the structure or property in question is deemed proper notification to the owner or owner's authorized agent.

O. Section R114.2, Unlawful continuance, is hereby deleted in its entirety and replaced by the following:

Section R114.2 Unlawful continuance and/or removal of stop work notice. Any person who shall continue or allow the continuance of any work in or about the structure or property after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, or any person who removes, or causes the removal of, the stop work notice without the consent of the City, shall be subject to penalties as prescribed by law and City Code.

P. The design criteria required of Table R301.2(1) are established as follows:

Ground Snowload	Speed (mph)	Seismic Design Category	Subject to Damage From				Winter Design Temperature	Flood Hazards
			Weathering	Frost Line Depth	Termite	Decay		
25 psf	115 mph	C	Moderate	12"	Moderate to Heavy	None to Slight	16	***

Ground Snowload	Speed (mph)	Seismic Design Category	Subject to Damage From				Winter Design Temperature	Flood Hazards
			Weathering	Frost Line Depth	Termite	Decay		
	Vult							

*** Flood hazard areas shall be designated and regulated by the adopted regulations of the appropriate, governing county or city agency having flood management jurisdiction.

Q. Section R302.2.6, Structural independence, is hereby amended by adding the following to the end of the first sentence:

The common wall separating townhouses shall not be used for gravity load bearing purposes including the support of joists or trusses.

R. Section R302.3, Two-family dwellings, is hereby amended by deleting "1-hour" in the first sentence and replacing it with "2-hour."

S. Section R302.3, Two-family dwellings, is hereby amended by deleting "1/2 hour" in Exception 1 and replacing it with "1-hour."

T. Section R302.3, Two-family dwellings, is hereby amended by deleting Exception 2 in its entirety.

U. R312.1.1, Where required, is hereby amended by replacing "30 inches (762 mm)" in the first sentence with "20 inches (508 mm)."

V. R314.3, Location, is hereby amended by adding the following to the end of the section:

5. In dwelling units where the ceiling height of a room open to the hallway serving the bedrooms exceeds that of the hallway by twenty-four inches (24") or more, smoke detectors shall be installed in the hallway and in the adjoining room.

W. Section R322.1, General, is hereby modified by adding the following sentence to the end of the first paragraph:

Where the requirements of this section conflict with the flood hazard regulations adopted by the appropriate, governing County or City agency having flood management jurisdiction, the regulations of the governing County or City agency shall apply.

X. Section R326.1, General, is hereby amended by adding the following to the end of the first sentence:

... and all applicable state and county regulations including Arizona Statute A.R.S. [36-1681](#).

Y. Section R403.1.1, Minimum size, is hereby amended by adding the following to the end of the fifth sentence:

... and shall not be less than 18" x 18" in width and 12" in height.

Z. Section R403.1.1, Minimum size, is hereby amended by adding the following subsection:

R403.1.1.1 Minimum footing reinforcement. Continuous spread concrete footings shall be reinforced with at least two #4 horizontal reinforcement bar located 3 inches from the bottom of the footing. Monolithic interior and exterior concrete footings shall be reinforced with at least two #4 horizontal located 3 inches from the bottom of the footing and one #4 located 3 inches from the top of the slab. Pier and column footings shall be reinforced with #4 horizontal reinforcement spaced no more than 12 inches in each direction and located 3 inches from the bottom of the footing.

AA. Table R404.1.1(1), Plain Masonry Foundation Walls, is hereby amended by deleting the table in its entirety.

BB. Section R404.1.2.1, Masonry foundation walls, is hereby amended by deletion in its entirety and substituting the following:

Masonry foundation walls. Concrete masonry foundation walls shall be constructed as set forth in Tables R404.1.1(2), (3) and (4) for the most restrictive soil class (unless a soils report is provided that shows that the site consists of a different soils class.) and shall also comply with the provisions of this section. Rubble stone masonry walls are not permitted.

CC. Section R404.1.3.2, Reinforcement for foundation walls, is hereby amended by adding the following to the end of the paragraph:

Concrete foundation walls, including insulating concrete form (ICF) foundation walls, shall be constructed as set forth in Tables R404.1.2(2) through R404.1.2(8) for the most restrictive design soil class (unless a soils report is provided that shows that the site consists of a different soils class) provided that PC in the table represents a minimum vertical reinforcement of #4 at forty-eight inches (48") oc. PC or Plain Unreinforced Concrete is not permitted. Concrete foundation walls shall also comply with the provisions of this section and the applicable provisions of sections R402.2 and R612.

DD. Section R404.1.8, Rubble stone masonry, is hereby deleted in its entirety.

EE. Section R404.2, Wood foundation walls, is hereby deleted in its entirety.

FF. Section M1602.2, Return air openings, is hereby amended by adding the following to the end of the section:

8. Return air shall be provided through the use of approved ducts, plenums, transfer ducts and transfer grills. Return air shall not be provided through the use of under-door cuts or openings.

GG. Section G2417.4.1 (Section 406.4.1), Test pressure, is hereby amended by deleting "3 psig (20kPa gauge)" and replacing with "10 psig."

HH. Section P2801.1, Required, is hereby amended by adding the following sentence to the end of the section:

All new R-3 occupancies shall have a hot water recirculating system installed.

II. Section E3406.2, Conductor material, is hereby amended by deleting the section in its entirety and substituting the following:

Section E3406.2 Conductor material. Conductors used to conduct current and regulated by this code shall be of copper. All references to the contrary are hereby deleted from this code.

JJ. Section E3901, Receptacle Outlets, is hereby amended by adding the following new section:

Section E3901.13 EV-Ready outlet. An approved conduit of no less than $\frac{3}{4}$ " in diameter shall be installed from the service panel to an approved and covered junction box located in the garage or carport area and sized to allow the installation of a 240-volt receptacle. All junction boxes installed as part of the EV-ready conduit system shall be labeled as "EV Use".

KK. Appendix T, Section T103.6, Capped roof penetration sleeve, is hereby amended by deleting the section in its entirety and substituting the following:

Section T103.6 Preinstalled PV-ready conduit. An approved conduit of no less than ¾" in diameter shall be installed from the service panel to an approved and covered junction box located in an area adjacent to or in an accessible attic directly beneath the required solar-ready zone. All junction boxes installed as part of the PV-ready conduit system shall be labeled as "PV Use".

[Code 2006 § 7-1-4. Ord. 2007-16, 10-23-2007; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.05.050 Conformance to the land development code.

Whenever a building permit is issued and a building inspection performed, such building shall conform to the provisions of the city land development code in addition to the provisions of SCC [2.60.020](#), Chapters [5.30](#), [8.30](#), [12.05](#), [12.15](#), [12.20](#), [12.25](#) and [14.10](#) SCC and this title. [Code 2006 § 7-1-5. Ord. 98-05, 3-24-1998; Ord. 2007-16, 10-23-2007; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.05.060 Building permit fees and valuation.

A. *Plan Review Payment.* At the time of submitting plans, specifications or other data for plan review, the full amount of the plan review fee shall be collected by the director of community development for each permit application as set forth in the City of Sedona Consolidated Fee Schedule, Valuation/Permit Fee Schedule.

B. *Building Valuations.* Building construction and unit construction valuations, for the purpose of calculating building permit fees, shall be determined by the director of community development in accordance with the City of Sedona Consolidated Fee Schedule, Valuation and Fee Schedule and/or Unit Construction Valuations, or may be based upon the applicant's submitted construction valuation if items listed in the City of Sedona Consolidated Fee Schedule are not applicable to the proposed work.

C. *Building Permit Fees.* Building permit fees based upon construction valuations shall be calculated in accordance with the City of Sedona Consolidated Fee Schedule, Valuation/Permit

Fee Schedule. Building permit fees for individual items of construction shall be calculated in accordance with the City of Sedona Consolidated Fee Schedule, Unit Permit Fees, when the fees are not based upon the construction valuation.

D. *Plan Review Fees.* The plan review fee shall be 65 percent of the building permit fee stipulated in this section when the building permit fee is based upon the construction valuation. The plan review fee is a separate fee from the building permit fees specified in this section and is in addition to the building permit fees. Where plans are incomplete or changed so as to require additional plan review, an additional plan review fee shall be charged at the rate specified in this section.

E. *Fee Refunds.*

1. The building official may authorize the refunding of any fee collected pursuant to this section that was erroneously paid or collected.
2. The building official may authorize refunding of not more than 80 percent of the building permit fee paid when no work has been done under the permit issued in accordance with this code; not more than 70 percent of the building permit fee after foundation construction has commenced; and not more than 50 percent of the building permit fee after framing or above-grade wall construction has commenced. No building permit fee shall be refunded after the framing or above-grade wall construction has been inspected and approved.
3. The building official may authorize refunding of not more than 80 percent of the plan review fee when a permit application for which a plan review fee was paid is canceled or withdrawn before any plan review is commenced; no plan review fee shall be refunded after an initial plan review has been completed or the permit application has been approved for issuance. [Code 2006 § 7-1-6. Ord. 98-05, 3-24-1998; Ord. 2007-04, 4-24-2007; Ord. 2009-05, 5-12-2009; Ord. 2009-06, 5-12-2009; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.05.070 Wood burning fireplaces.

A. *Definitions.* For purposes of this section, the following definitions shall apply unless the context clearly indicates or requires a different meaning:

“Alternative fuel” means natural gas, propane, electric or other nonsolid fuel.

“Solid fuel” means wood, or any compressed wood or fiber product, including coal, other solid hydrocarbons or compounds, oil and combustible pellets, or solids of any composition.

“Wood burning fireplace” means an open fireplace within buildings or structures that will burn wood or other solid fuel.

B. *Abatement.*

1. After the effective date of the ordinance codified in this section, no person within the city of Sedona, Arizona, shall place, install or fabricate in place a wood burning fireplace.
2. In order to receive a final occupancy permit for any structure, any new fireplace must be equipped with an operable alternative fuel device.
3. Wood burning fireplaces in existence prior to the effective date of the ordinance codified in this section will be exempt from the provisions of this section.

C. *Violations and Penalties.* The owner of any property subject to this section, wherein such fireplace was reconverted to wood burning in contravention of this section, will be subject to a \$500.00 fine and be required to convert to alternative fuel or seal the fireplace within 90 days from notice of violation. Failure to comply within 90 days will result in an additional \$500.00 fine each day the violation continues to exist.

D. *Effective Date.* This section is effective on August 11, 2003. [Code 2006 § 7-1-7. Ord. 2003-08, 5-13-2003; Ord. 2007-16, 10-23-2007; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.05.080 Permitting of wood stoves and similar devices.

A. *Definitions.* For the purpose of this section, the following definitions shall apply unless the context clearly indicates or requires a different meaning. In the event that a definition set forth herein is unclear or raises a conflict, the applicable definitions set forth by the United States Environmental Protection Agency shall prevail in construing this section.

“Certified device” means a wood stove or fireplace insert which has been certified in accordance with minimum Phase II standards adopted by the United States Environmental

Protection Agency. If it cannot be verified by the director of community development that a wood stove or fireplace insert has been certified, then it is deemed uncertified.

“Cook stove” means a wood stove installed in the kitchen which is primarily designed for cooking and has a stove top and an oven, or a stove which is equipped with gas burners for cooking. Cook stoves are exempt from compliance with subsections (B) and (C) of this section.

“Fireplace” means a hearth, fire chamber and chimney, and includes:

1. “Factory-built fireplace” means a fireplace composed of listed factory-built components assembled in accordance with the terms of listing to form the completed fireplace.
2. “Masonry fireplace” means a hearth and fire chamber of solid masonry units such as bricks, stones, masonry units or reinforced concrete, provided with a suitable chimney.

“Fireplace insert” means a factory-built, field-installed product consisting of a firebox assembly designed to be installed within or partially within the fire chamber of a fireplace, which uses the fireplace flue to vent the products of combustion.

“Pellet stove” means a solid fuel burning appliance designed to heat the interior of a building. It is a forced draft heater with an automatic feed which supplies appropriately sized feed material of compressed wood pellets or other biomass material to the firebox.

“Solid fuel burning appliance” means a chimney-connected device that burns solid fuel and which is designed for purposes of heating, cooking or both.

“Stove kit” means a kit that may include a door, legs, flue pipe and collars, brackets, bolts and other hardware and instructions for assembling a wood heater with ordinary tools.

“Structure” means that which is built or constructed, an edifice or building of any kind, or any piece of work artificially built up or composed of parts joined together in some definite matter.

“Wood heater” means an enclosed wood burning appliance capable of and intended for space heating, domestic water heating or indoor cooking which has an air-to-fuel ratio of less than 35:1 in the low burn cycle. It also shall have a usable firebox volume less than 20

cubic feet, weight less than 800 kilograms, and a minimum burn rate less than five kilograms per hour. Appliances that are described as factory-built fireplaces and are designed to accommodate doors or other accessories which would create the air-starved operating conditions of a wood heater are deemed to be wood heaters if they meet the criteria in the above definition with those accessories in place.

“Wood stove” means, for purposes of compliance with subsections (B) and (C) of this section, a solid fuel burning appliance which may be a wood heater or pellet stove, or an appliance with doors or other items which cause a fireplace to function as a wood heater. Wood stoves do not include exempt fireplaces, barbecue devices, gas-fired fireplaces or cook stoves.

B. *General Standard.* Commencing June 30, 1992, it is unlawful for any person to advertise, sell, offer to sell, install or replace any wood stove or fireplace insert in any structure within the city which is not a certified device. Wood heaters built from stove kits are subject to this standard. Fireplaces that have not been modified to create an air-starved operating condition are exempt from this standard.

C. *Installation.*

1. Commencing June 30, 1992, no person shall install or replace a wood stove or fireplace insert with a certified device within the city without first obtaining a permit from the director of community development for such installation in accordance with the applicable provisions of the International Building Code and International Mechanical Code adopted by the city.

2. Commencing June 30, 1992, installation or replacement of a wood stove or fireplace insert within the city shall comply with all written manufacturer's specifications. A wood stove or fireplace insert shall not be operated until after its inspection and approval, upon completion, by the director of community development or his designee.

3. Wood heaters built from stove kits are subject to the requirements of this subsection. Fireplaces that have not been modified to create an air-starved operating condition are exempt from the requirements of this subsection. [Code 2006 § 7-1-8. Ord. 2007-16, 10-23-2007; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.05.090 Manufactured homes, factory-built buildings and mobile homes.

Definitions. For the purpose of the City Code, the following definitions shall apply unless the context clearly indicates or requires a different meaning:

“Factory-built building” means a residential or nonresidential building (including a dwelling unit or habitable room) which is wholly or in substantial part manufactured at an off-site location to be assembled on site, except that it does not include a manufactured home, recreational vehicle or mobile home as defined in this section.

“Manufactured home” means a structure built in accordance with the National Manufactured Home Construction and Safety Standards Act of 1974 and Title VI of the Housing and Community Development Act of 1974, as implemented by the Arizona Office of Manufactured Housing pursuant to A.R.S. Title [41](#), Chapter [16](#).

“Mobile home” means a structure built prior to June 15, 1976, on a permanent chassis, capable of being transported in one or more sections and designed to be used with or without a permanent foundation as a dwelling when connected to on-site utilities, except it does not include recreational vehicles or factory-built buildings.

“Recreational vehicle” means a vehicle-type unit which is:

1. A portable camping trailer mounted on wheels and constructed with collapsible partial side walls which fold for towing by another vehicle and unfold for camping;
2. A portable truck camper constructed to provide temporary living quarters for recreational, travel or camping use, and consisting of roof, floor and sides designed to be loaded onto and unloaded from the bed of a pickup truck;
3. A travel trailer mounted on wheels, designed to provide temporary living quarters for recreational, camping or travel use, and which has an area less than 320 square feet when measured to the exterior of the unit. This definition includes fifth wheel trailers;
4. A motor home designed to provide temporary living quarters for recreational, camping or travel use and built on or permanently attached to a self-propelled motor vehicle chassis or on a chassis cab or van that is an integral part of the completed vehicle;

5. A park trailer built on a single chassis, mounted on wheels and designed to be connected to utilities necessary for operation of installed fixtures and appliances, and has a gross trailer area of not less than 320 square feet and not more than 400 square feet when it is set up, except it does not include fifth wheel trailers. Area measurements shall be taken on the exterior of the unit. [Code 2006 § 7-1-9. Ord. 98-05, 3-24-1998; Ord. 2007-16, 10-23-2007; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.05.100 Jurisdiction of other agencies.

Permits issued under the requirements of this chapter shall not relieve the owner of responsibility for securing required permits for work which is regulated by any other department or division of the city or other governing agency, or any other city code provision or ordinance. A grading permit shall not be issued until all required permits are obtained from the Arizona Department of Environmental Quality, the county health department, the county flood control district and other agencies with regulatory jurisdiction. [Code 2006 § 7-1-10. Ord. 2007-16, 10-23-2007; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

Chapter 15.10 INTERNATIONAL PLUMBING CODE

Sections:

15.10.010 Adoption of International Plumbing Code.

15.10.020 Amendments to International Plumbing Code.

15.10.010 Adoption of International Plumbing Code.

That certain document, three copies of which are on file and available for public inspection in the office of the director of community development, entitled International Plumbing Code, 2018 Edition, as amended and codified, published by the International Code Council and including appendix chapters:

Appendix B – Rates of Rainfall for Various Cities;

Appendix C – Structural Safety;

Appendix D – Degree Day and Design Temperatures;

Appendix E – Sizing of Water Piping System;

is hereby adopted as the International Plumbing Code of the city, excepting such portions as are hereinafter deleted or amended. [Code 2006 § 7-2-1. Ord. 98-05, 3-24-1998; Ord. 2007-16, 10-23-2007; Ord. 2008-05, 6-10-2008; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.10.020 Amendments to International Plumbing Code.

The International Plumbing Code, 2018 Edition, is hereby modified as follows:

- A. Section 101.1, Title, is hereby amended by replacing “Name of Jurisdiction” with “City of Sedona.”
- B. Section 106.5.3, Expiration, is hereby amended by adding the following to the end of the first sentence:

Lack of a scheduled and performed inspection within 180 days constitutes a suspension or abandonment of work, and therefore an expiration of the permit.
- C. Section 106.5.4, Extensions, is amended by deleting the last sentence in its entirety.
- D. Sections 106.6.2, Fee Schedule, and 106.6.3, Fee Refunds, are amended by deleting both sections in their entirety and inserting the following:

Fees and refunds shall be assessed in accordance with SCC [15.05.060](#).

- E. Section 108.4, Violation penalties, is hereby amended by deleting the section in its entirety and inserting the following:

Section 108.4 Violation penalties. Any person, firm or corporation who shall violate this code shall be subject to the penalties as provided in SCC [1.15.010](#) for each and every such violation and non-compliance as a separate offense. Imposition of penalty for a violation of this code shall not excuse

the violation or permit it to continue. A violation shall be remedied within a reasonable time, and each day that such violation continues unabated shall constitute a separate offense.

F. Section 108.5, Stop work orders, is hereby amended by deleting the last sentence in its entirety and inserting the following:

Any person, firm or corporation who removes a stop work order without authorization from the Building Official, or who shall continue any work in or about the structure after having been served a stop work order, or where a stop work order has been posted, except such work as that person, firm or corporation is directed to perform to remove a violation or unsafe condition, shall be subject to the penalties as provided in SCC [1.15.010](#) for each and every such violation and non-compliance as a separate offense. Imposition of penalty for a violation of this code shall not excuse the violation or permit it to continue. A violation shall be remedied within a reasonable time, and each day that such violation continues unabated shall constitute a separate offense.

G. Section 109, Means of Appeal, is hereby amended by deleting the section in its entirety and inserting the following:

Section 109 Means of Appeal. Appeals of decisions made by the code official shall be to the Board of Appeals as established in the 2018 International Building Code as amended by the City of Sedona.

H. Section 312.2, Drainage and vent water test, is hereby amended by adding the following to the end of the paragraph:

All pre-slab or underslab plumbing shall be tested with a five pound air test exclusively.

I. Section 403.1.2, Single-user toilet facility and bathing room fixtures, is hereby amended by deleting the word "shall" in the last sentence and replacing it with the word "may."

J. Section 403.2, Separate facilities, is hereby amended by adding the following new exception to the end of the section:

5. Separate facilities for each sex shall not be required in any occupancy or structure where the total number, type and design of fixtures required by Table 403.1 of this code, Section 1109.2.1 of the International Building Code and Chapters 2 and 6 of the most current ADA Standards for Accessible Design can be met by the use of single-user toilet facilities and bathing room facilities.

K. Section 504.6, Requirements for discharge piping, is hereby amended by adding the following to the end of Item No. 5:

Where discharging outdoors, discharge piping shall be no less than six inches and no greater than 24 inches from grade.

L. Section 714.1, Sewage backflow, is hereby amended by deleting the first sentence in its entirety and replacing with the following:

Where plumbing fixtures are installed on a floor with a finished floor elevation of four inches or less above the elevation of the next upstream manhole in the public sewer, such fixtures shall be protected with a backwater valve installed in the building drain, or horizontal branch serving such fixtures.

M. Section 714.3, Location, is hereby amended by adding the following to the end of the sentence:

Such valves shall be located exterior to the building and a minimum of 10 feet from drainage ways and inlets.

N. Section 903.1, Roof Extension, is hereby amended by replacing “[number]” with “six” in the first sentence.

O. Section 1003.1, Where required, is hereby amended by deleting the section in its entirety and replacing with the following:

Section 1003.1 Where required. Interceptors and separators shall be provided to prevent the discharge of oil, grease, sand and other substances harmful or hazardous to the public sewer, the private sewage system, the sewage treatment plant or process, storm drainage systems and drainage ways.

P. Section 1003.2, Approval, is hereby amended by adding the following to the end of the paragraph:

In addition to the requirements herein, grease interceptors, grease traps, oil separators, and sand interceptors shall comply with SCC Title [13](#).

Q. Section 1003.3.5.2, Rate of flow controls, is hereby amended to read:

Number of fixture units x 1.5 min. retention time = gallon capacity of grease trap.

R. Section 1003.3.5.2, Rate of flow controls, is hereby amended to add to the end of the paragraph:

A four-inch inspection tee fitting shall be installed in the waste line on the outlet side of the interceptor.

S. Section 1302.6.1, Gray water used for fixture flushing, is hereby amended by adding the following to the end of the sentence:

Gray Water Systems, shall also comply with the requirements contained in regulations approved by the Arizona Department of Environmental Quality.

[Code 2006 § 7-2-2. Ord. 98-05, 3-24-1998; Ord. 2007-16, 10-23-2007; Ord. 2008-05, 6-10-2008; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

Chapter 15.15

ELECTRICAL CODE

Sections:

15.15.010 **Adoption of the National Electrical Code.**

15.15.020 **Amendments to the National Electrical Code.**

15.15.010 Adoption of the National Electrical Code.

That certain code entitled National Electrical Code, 2017 Edition, as amended and codified, published by the National Fire Protection Association, three copies of which are available for public inspection in the office of the director of community development, is adopted as the electrical code of the city, and made a part of this title the same as though set forth in full

herein, excepting those portions hereinafter deleted or amended. [Code 2006 § 7-3-1. Ord. 98-05, 3-24-1998; Ord. 2007-16, 10-23-2007; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.15.020 Amendments to the National Electrical Code.

The National Electrical Code, 2017 Edition, is modified as follows:

A. Article 110.5, Conductors, is hereby amended by deleting the article in its entirety and substituting the following in its place:

Conductors normally used to carry current shall be of copper. All references to the contrary are hereby deleted from this code.

B. Article 310.106(B), Conductor Material, is hereby amended by deleting the article in its entirety and substituting the following in its place:

Conductors in this article shall be of copper. All references to the contrary are hereby deleted from this code.

[Code 2006 § 7-3-2. Ord. 98-05, 3-24-1998; Ord. 2007-16, 10-23-2007; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019; Ord. 2022-07 § 1, 9-27-2022].

Chapter 15.20 MECHANICAL CODE

Sections:

- | | |
|------------------|---|
| 15.20.010 | Adoption of the International Mechanical Code. |
| 15.20.020 | Amendments to the International Mechanical Code. |

15.20.010 Adoption of the International Mechanical Code.

That certain code entitled International Mechanical Code, 2018 Edition, as amended and codified, published by the International Code Council, Inc., three copies of which are available for public inspection in the office of the director of community development, is hereby adopted as the mechanical code of the city and made a part of this title the same as though set forth in full herein, excepting those portions hereinafter deleted or amended. [Code 2006 § 7-4-1. Ord. 98-05, 3-24-1998; Ord. 2007-16, 10-23-2007; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.20.020 Amendments to the International Mechanical Code.

The International Mechanical Code, 2018 Edition, is modified as follows:

- A. Section 101.1, Title, is hereby amended by replacing “Name of Jurisdiction” with “City of Sedona.”
- B. Section 106.4.3, Expiration, is hereby amended by adding the following to the end of the first sentence:

Lack of a scheduled and performed qualified inspection within 180 days constitutes a suspension or abandonment of work, and therefore an expiration of the permit.

- C. Section 106.4.4, Extensions, is hereby amended by deleting the last sentence in its entirety.
- D. Sections 106.5.2, Fee Schedule, and 106.5.3, Fee Refunds, are hereby amended by deleting both sections in their entirety and inserting the following:

Fees and refunds shall be assessed in accordance with SCC [15.05.060](#).

- E. Section 106.5.3, Fee refunds, is hereby amended by adding the following to the end of the section:

Refunds that are within the scope of this Section shall be assessed in accordance with the provisions of this section and as set forth in SCC [15.05.060](#).

F. Section 107.2, Required inspection and testing, is hereby amended by adding the following new Item 4:

4. A test and balance report(s), performed by a third party, certified test and balance contractor, shall be submitted to the City prior to final inspection. Said test and balance report(s) shall verify compliance of any newly installed or altered ventilation and/or hydronic system(s) and equipment with the approved permit plans, the mechanical code and any applicable standards.

G. Section 108.5, Stop work orders, is hereby amended by deleting the second sentence and substituting the following:

A stop work order shall be in writing and shall be given to the owner of the property, to the owner's authorized agent, or to the person performing the work, or shall be posted on the structure or on site in a conspicuous location.

H. Section 108.5, Stop work orders, is hereby amended by deleting the fifth sentence and substituting the following:

Any person who shall continue or allow the continuance of any work in or about the structure or property after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, or any person who removes, or causes the removal of, the stop work notice without the consent of the City, shall be subject to fines and penalties as set by the applicable governing authority.

I. Section 109, Means of Appeal, is hereby amended by deletion in its entirety and substituting the following:

Appeals of decisions made by the code official shall be to the Board of Appeals as established in the 2018 International Building Code as amended by the City of Sedona.

J. Section 506.3.11, Grease duct enclosures, is hereby amended by deleting the Exception in its entirety. [Code 2006 § 7-4-2. Ord. 98-05, 3-24-1998; Ord. 2007-16, 10-23-2007; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

Chapter 15.25

DANGEROUS BUILDINGS CODE

Sections:

15.25.010 Adoption of the Uniform Code for the Abatement of Dangerous Buildings.

15.25.020 Amendments to the Uniform Code for the Abatement of Dangerous Buildings.

15.25.010 Adoption of the Uniform Code for the Abatement of Dangerous Buildings.

That certain code entitled Uniform Code for the Abatement of Dangerous Buildings, 1994 Edition, as amended and codified, published by the International Conference of Building Officials, three copies of which are available for public inspection in the office of the director of community development, is hereby adopted as the dangerous buildings code of the city, and made a part of this title the same as though set forth in full herein, excepting those portions hereinafter deleted or amended. [Code 2006 § 7-5-1. Ord. 98-05, 3-24-1998; Ord. 2007-16, 10-23-2007].

15.25.020 Amendments to the Uniform Code for the Abatement of Dangerous Buildings.

The Uniform Code for the Abatement of Dangerous Buildings, 1994 Edition, is modified as follows.

A. Section 601 is hereby amended by adding 601.7 to read:

601.7 Appeals. The City of Sedona Board of Adjustment is hereby designated and authorized to act as the Board of Appeals to hear and decide appeals of orders, decisions, or determinations made by the building official relative to the application and interpretation of this code. All decisions of this Board relative to this Code shall be final.

B. Sections 801.1 and 802.1, and Chapter 9, Section 901 are hereby amended by deleting “Director of Public Works” wherever that term appears and substituting “Director of Community Development” in its place. [Code 2006 § 7-5-2. Ord. 98-05, 3-24-1998; Ord. 2007-16, 10-23-2007; Ord. 2014-02 § 1, 1-28-2014].

Chapter 15.30

INTERNATIONAL FUEL GAS CODE

Sections:

- 15.30.010** **Adoption of the International Fuel Gas Code.**
- 15.30.020** **Amendments to the International Fuel Gas Code.**

15.30.010 Adoption of the International Fuel Gas Code.

That certain code entitled International Fuel Gas Code, 2018 Edition, published by the International Code Council, Inc., three copies of which are available for public inspection in the office of the director of community development, is hereby adopted as the fuel gas code of the city and made a part of this title the same as though set forth in full herein, excepting those portions hereinafter deleted or amended. [Code 2006 § 7-6-1. Ord. 2007-16, 10-23-2007; Ord. 2010-04 § 1, 1-12-2010; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.30.020 Amendments to the International Fuel Gas Code.

The 2018 International Fuel Gas Code is hereby modified as follows:

- A. Section 101.1, Title, is hereby amended by replacing “Name of Jurisdiction” with “City of Sedona.”
- B. Section 106.5.3, Expiration, is hereby amended by adding the following to the end of the first sentence:

Lack of a scheduled and performed qualified inspection within 180 days constitutes a suspension or abandonment of work, and therefore an expiration of the permit.

C. Sections 106.6.2, Fee Schedule, and 106.6.3, Fee Refunds, are hereby amended by deleting both sections in their entirety and inserting the following:

Fees and refunds shall be assessed in accordance with SCC [15.05.060](#).

D. Section 108.5, Stop work orders, is hereby amended by deleting the second sentence and substituting the following:

A stop work order shall be in writing and shall be given to the owner of the property, to the owner's authorized agent, or to the person performing the work, or shall be posted on the structure or on site in a conspicuous location.

E. Section 108.5, Stop work orders, is hereby amended by deleting the fifth sentence and substituting the following:

Any person who shall continue or allow the continuance of any work in or about the structure or property after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, or any person who removes, or causes the removal of, the stop work notice without the consent of the City, shall be subject to fines and penalties as set by the applicable governing authority.

F. Section 109, Means of Appeal, is amended by deletion in its entirety and substituting the following:

Appeals of decisions made by the code official shall be to the Board of Appeals as established in the 2018 International Building Code as amended by the City of Sedona.

G. Section 404.12, Minimum burial depth, is hereby amended by adding the following to the end of the paragraph:

However, in cases other than that specified in Section 404.12.1, underground plastic piping systems shall be installed a minimum depth of 18 inches below grade to the top of the pipe.

H. Section 404.12.1, Individual outdoor appliances, is hereby amended by adding the following to the end of the paragraph:

However, in such cases, underground plastic piping systems shall be installed a minimum depth of 12 inches to the top of the pipe or in accordance with the manufacturer's installation guidelines, whichever is deeper.

I. Section 406.4, Test pressure measurement, is hereby amended by adding the following to the end of the paragraph:

Where the test pressure requirement is 10 psig or less the test pressure measurement shall be a gauge having a reading of one tenth of a pound per square inch (0.10 psi) increments.

J. Section 406.4.1, Test pressure, is hereby amended by deleting "3 psig (20kPa gauge)" and replacing with "10 psig."

K. Section 409.3.2, Individual Buildings, is hereby amended by deleting in its entirety and substituting the following:

Section 409.3.2, Individual Buildings. Gas piping shall be equipped with separate shutoff valves located at each building and so arranged that the gas supply can be turned on or off to any individual or separate building. Such shutoff shall be placed on the riser located outside the building it supplies and shall be readily accessible at all times.

[Code 2006 § 7-6-2. Ord. 2007-16, 10-23-2007; Ord. 2010-04 § 1, 1-12-2010; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

Chapter 15.35

ADOPTION OF TECHNICAL DOCUMENTS

Sections:

15.35.010 Adoption of Maricopa Association of Governments (MAG) Uniform Standard Specifications and Uniform Standard Details for Public Works Construction.

15.35.020 Adoption of Institute of Transportation Engineers (ITE) guidelines.**15.35.010 Adoption of Maricopa Association of Governments (MAG)
Uniform Standard Specifications and Uniform Standard
Details for Public Works Construction.**

Those certain specifications entitled “Maricopa Association of Governments Uniform Standard Specifications and Uniform Standard Details for Public Works Construction,” sponsored and distributed by the Maricopa Association of Governments (MAG), are hereby adopted by the city and made part of this title the same as though said specifications were specifically set forth in full herein; and at least three copies of the specifications shall be available for public inspection in the office of the city engineer. [Code 2006 § 7-8-1. Ord. 98-05, 3-24-1998; Ord. 2008-05, 6-10-2008].

**15.35.020 Adoption of Institute of Transportation Engineers (ITE)
guidelines.**

Those certain documents specified as follows are hereby adopted by the city as specifications, and made part of this title the same as though the specifications were specifically set forth in full herein; and at least three copies of the specifications shall be available in the office of the city engineer. In case of conflict between these standards, and between these standards and other city standards, the city engineer shall determine the applicable standard:

- A. Guidelines for Driveway Location and Design, ITE Publication No. RP-006B;
- B. Guidelines for Residential Subdivision Streets – A Recommended Practice, ITE Publication No. RP-011C. [Code 2006 § 7-8-2. Ord. 98-05, 3-24-1998; Ord. 2008-05, 6-10-2008].

Chapter 15.40 INTERNATIONAL EXISTING BUILDING CODE

Sections:

15.40.010 Adoption of the International Existing Building Code.**15.40.020 Amendments to the International Existing Building Code.****15.40.010 Adoption of the International Existing Building Code.**

That certain code entitled International Existing Building Code, 2018 Edition, as amended and codified, published by the International Code Council, Inc., three copies of which are available for public inspection in the office of the director of community development, is hereby adopted as the existing building code of the city and made a part of this title the same as though set forth in full herein, excepting those portions hereinafter deleted or amended. [Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.40.020 Amendments to the International Existing Building Code.

The International Existing Building Code, 2018 Edition, is modified as follows:

- A. Section 101.1, Title, is hereby amended by replacing “Name of Jurisdiction” with “City of Sedona.”
- B. Section 105.2, Work exempt from permit, is hereby amended by deleting Building Item 4 in its entirety.
- C. Section 108.2, Schedule of permit fees, is hereby amended by deleting the section in its entirety and inserting the following:

The fees for activities and services performed by the department in carrying out its responsibilities under this code shall be assessed in accordance with SCC [15.05.060](#).

- D. Section 112, Board of Appeals, is hereby amended by deletion in its entirety and substituting the following:

Appeals of decisions made by the code official shall be to the Board of Appeals as established in the 2018 International Building Code as amended by the City of Sedona.

E. Section 114.2, Issuance, is hereby amended by removing the first sentence in its entirety and inserting the following:

A stop work order shall be in writing and shall be given to the owner of the property, to the owner's authorized agent, or to the person performing the work, or shall be posted on the structure or on site in a conspicuous location.

F. Section R114.3, Unlawful continuance, is hereby amended by deletion in its entirety and substituting the following:

Section R114.3 Unlawful continuance and/or removal of stop work notice. Any person who shall continue or allow the continuance of any work in or about the structure or property after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, or any person who removes, or causes the removal of, the stop work notice without the consent of the City, shall be subject to fines and penalties as set by the applicable governing authority.

[Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

Chapter 15.45

INTERNATIONAL ENERGY CONSERVATION CODE

Sections:

- 15.45.010** **Adoption of the International Energy Conservation Code.**
- 15.45.020** **Amendments to the International Energy Conservation Code.**

15.45.010 Adoption of the International Energy Conservation Code.

That certain code entitled International Energy Conservation Code, 2018 Edition, as amended and codified, published by the International Code Council, Inc., three copies of which are available for public inspection in the office of the director of community development, is hereby adopted as the energy conservation code of the city and made a part of this title the same as though set forth in full herein, including Appendix Chapters CA, Solar Ready Zone –

Commercial, and CB, Electrical Vehicle Ready Parking Areas – Commercial, and excepting those portions hereinafter deleted or amended. [Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.45.020 Amendments to the International Energy Conservation Code.

The International Energy Conservation Code, 2018 Edition, is modified as follows:

- A. Section C101.1 Title, is hereby amended by replacing “Name of Jurisdiction” with “City of Sedona.”
- B. Section C104.2, Schedule of permit fees, is hereby amended by deleting the section in its entirety and inserting the following:

The fees for activities and services performed by the department in carrying out its responsibilities under this code shall be assessed in accordance with SCC [15.05.060](#).

- C. Section C108.2, Issuance, is hereby amended by removing the first sentence in its entirety and inserting the following:

A stop work order shall be in writing and shall be given to the owner of the property, to the owner’s authorized agent, or to the person performing the work, or shall be posted on the structure or on site in a conspicuous location.

- D. Section C108.4, Failure to comply, is hereby deleted in its entirety and replaced by the following:

Section C108.4 Failure to comply and/or removal of stop work notice. Any person who shall continue or allow the continuance of any work in or about the structure or property after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, or any person who removes, or causes the removal of, the stop work notice without the consent of the City, shall be subject to fines and penalties as set by the applicable governing authority.

E. Section C109, Board of Appeals, is hereby amended by deletion in its entirety and substituting the following:

Appeals of decisions made by the code official shall be to the Board of Appeals as established in the 2018 International Building Code as amended by the City of Sedona.

F. Appendix CB is hereby added as a new appendix as follows:

Appendix CB Electrical Vehicle Ready Parking Areas – Commercial

CB 101.1 General. These provisions shall be applicable for new construction where electrical vehicle ready provisions are required in Section CB 201.1.

CB 201.1 Electrical vehicle ready parking spaces. For every newly permitted structure governed by, and within the scope of, the International Building Code, with more than 9 parking spaces, 5 percent of the total number of parking spaces shall be capable of supporting future electric vehicle charging stations (EVCS) and said spaces shall be identified on the construction documents along with the location of the proposed EVCS. At least one EVCS shall be located in common use areas and available for use by all residents. (Note: When calculating the required electrical vehicle ready parking spaces, rounding shall be used to the nearest whole number. Where the calculations fall at the midpoint of a whole number, the number must be rounded up.)

CB 201.2 Design and installation requirements – Single EVCS required. When only one EVCS space is required, a 208/240-volt individual branch circuit or a listed raceway to accommodate a future individual branch circuit shall be installed. The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). The raceway shall originate at the main service or subpanel and shall terminate into a listed cabinet, box or other enclosure in close proximity to the proposed location of the electric vehicle charger. Construction documents shall identify the raceway termination point. The service panel or subpanel circuit directory shall provide capacity to install a 40-ampere minimum dedicated branch circuit and space(s) reserved to permit installation of a branch circuit overcurrent device. Electric vehicle supply equipment shall be installed in accordance with NFPA 70.

CB 201.3 Design and installation requirements – Multiple EVCS required. Construction documents shall indicate the raceway termination point and proposed location of future EVCS and electric vehicle chargers. Construction documents shall also provide information on amperage of future electric vehicle supply equipment (EVSE), raceway method(s) wiring schematics and electrical panel service capacity and electrical system, including any on-site distribution transformer(s), have sufficient capacity to simultaneously charge all electric vehicles at all required EVCS at the full rated amperage of the EVSE. Plan design shall be based upon 40-ampere minimum branch circuit. Raceways and related components that are planned to be installed underground, enclosed, inaccessible or in

concealed areas and spaces shall be installed at time of the original construction. Electric vehicle supply equipment shall be installed in accordance with NFPA 70.

CB 201.4 Identification. The service panel or subpanel circuit directory shall identify the overcurrent protective device space(s) reserved for future electric vehicle charging as "EV CAPABLE". The raceway termination location shall be permanently and visibly marked as "EV CAPABLE".

G. Section R101.1, Title, is hereby amended by replacing "Name of Jurisdiction" with "City of Sedona."

H. Section R104.2, Schedule of permit fees, is hereby amended by deleting the section in its entirety and inserting the following:

The fees for activities and services performed by the department in carrying out its responsibilities under this code shall be assessed in accordance with SCC [15.05.060](#).

I. Section R108.2, Issuance, is hereby amended by removing the first sentence in its entirety and inserting the following:

A stop work order shall be in writing and shall be given to the owner of the property, to the owner's authorized agent, or to the person performing the work, or shall be posted on the structure or on site in a conspicuous location.

J. Section R108.4, Failure to comply, is hereby deleted in its entirety and replaced by the following:

Section R108.4 Failure to comply and/or removal of stop work notice. Any person who shall continue or allow the continuance of any work in or about the structure or property after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, or any person who removes, or causes the removal of, the stop work notice without the consent of the City, shall be subject to fines and penalties as set by the applicable governing authority.

K. Section R109, Board of Appeals, is hereby amended by deletion in its entirety and substituting the following:

Appeals of decisions made by the code official shall be to the Board of Appeals as established in the 2018 International Building Code as amended by the City of Sedona.

[Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

Chapter 15.50

INTERNATIONAL SWIMMING POOL AND SPA CODE

Sections:

- 15.50.010** **Adoption of the International Swimming Pool and Spa Code.**
- 15.50.020** **Amendments to the International Swimming Pool and Spa Code.**

15.50.010 Adoption of the International Swimming Pool and Spa Code.

That certain code entitled International Swimming Pool and Spa Code, 2018 Edition, as amended and codified, published by the International Code Council, Inc., three copies of which are available for public inspection in the office of the director of community development, is hereby adopted as the swimming pool and spa code of the city and made a part of this title the same as though set forth in full herein, excepting those portions hereinafter deleted or amended. [Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.50.020 Amendments to the International Swimming Pool and Spa Code.

The International Swimming Pool and Spa Code, 2018 Edition, is modified as follows:

- A. Section 101.1, Title, is hereby amended by replacing "Name of Jurisdiction" with "City of Sedona."
- B. Section 102.9, Other laws, is hereby amended by adding the following to the end of the sentence:

...including Arizona Statute [36-1681](#), except that Section (D)(7) of Statute [36-1681](#) is hereby deleted in its entirety.

C. Section 105.5.3, Expiration, is hereby amended by adding the following to the end of the first sentence:

Lack of a scheduled and performed inspection within 180 days constitutes a suspension or abandonment of work, and therefore an expiration of the permit.

D. Section 105.5.4, Extensions, is hereby amended by deleting the last sentence in its entirety.

E. Section 105.6.2, Fee schedule, is hereby amended by deleting the section in its entirety and inserting the following:

The fees for activities and services performed by the department in carrying out its responsibilities under this code shall be assessed in accordance with SCC [15.05.060](#).

F. Section 105.6.3, Fee refunds, is hereby amended by adding the following to the end of the section:

Refunds that are within the scope of this Section shall be assessed in accordance with the provisions of this section and as set forth in SCC [15.05.060](#).

G. Section 107.4, Violation penalties, is hereby amended by deleting the section in its entirety and inserting the following:

Section 107.4 Violation penalties. Any person, firm or corporation who shall violate this code shall be subject to the penalties as provided in SCC [1.15.010](#) for each and every such violation and non-compliance as a separate offense. Imposition of penalty for a violation of this code shall not excuse the violation or permit it to continue. A violation shall be remedied within a reasonable time, and each day that such violation continues unabated shall constitute a separate offense.

H. Section 107.5, Stop work orders, is hereby amended by removing the second sentence in its entirety and inserting the following:

Such notice shall be in writing and shall be given to the owner of the property, or to the owner's authorized agent, or to the person performing the work, or shall be posted on the building or on site in a conspicuous location.

I. Section 107.5, Stop work orders, is hereby amended by deleting the last sentence in its entirety and inserting the following:

Any person, firm or corporation who removes a stop work order without authorization from the Building Official, or who shall continue any work in or about the structure after having been served a stop work order, or where a stop work order has been posted, except such work as that person, firm or corporation is directed to perform to remove a violation or unsafe condition, shall be subject to the penalties as provided in SCC [1.15.010](#) for each and every such violation and non-compliance as a separate offense. Imposition of penalty for a violation of this code shall not excuse the violation or permit it to continue. A violation shall be remedied within a reasonable time, and each day that such violation continues unabated shall constitute a separate offense.

J. Section 108, Means of appeal, is hereby amended by deletion in its entirety and substituting the following:

Appeals of decisions made by the code official shall be to the Board of Appeals as established in the 2018 International Building Code as amended by the City of Sedona.

K. Section 305.2.1, Barrier height and clearances, is hereby amended by deleting "48 inches (1219 mm)" from Item 1 and replacing with "60 inches."

L. Section 305.3.3, Latches, is hereby amended by deleting "3 inches (76 mm)" from the fourth line of the paragraph and replacing with "5 inches."

M. Section 305.3.3, Latches, is hereby amended by deleting "18 inches (457 mm)" from the last line of the paragraph and replacing with "24 inches."

N. Section 305.4, Structure wall as a barrier, is hereby amended by deleting Item 1 in its entirety.

O. Section 305.4, Structure wall as a barrier, is hereby amended by deleting Item 3 in its entirety adding in its place the following new Item 3:

3. All ground level doors or other doors with direct access to the swimming pool or other contained body of water shall be equipped with self-closing, self-latching devices which meet the requirements of Section 305.3.3. Emergency escape or rescue windows from sleeping rooms with access to the swimming pool or other contained body of water shall be equipped with a latching device not less than 54 inches above the adjacent finished floor. All other openable dwelling unit or guest room windows with similar access shall be equipped with a screwed in place wire mesh screen, or a keyed lock that prevents the window from opening more than 4 inches, or a latching device located not less than 54 inches above the adjacent finished floor.

P. Section 305.5, Onground residential pool structure as a barrier, is hereby amended by deleting "48 inches (1219 mm)" from Items 1 and 2 and replacing with "60 inches." [Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

The Sedona City Code is current through Ordinance 2025-05, passed May 13, 2025.

Disclaimer: The city clerk's office has the official version of the Sedona City Code. Users should contact the city clerk's office for ordinances passed subsequent to the ordinance cited above.

[City Website: www.SedonaAZ.gov](http://www.SedonaAZ.gov)

[Hosted by General Code.](#)

Title 15

BUILDINGS AND CONSTRUCTION

Chapters:

15.05	Building Code
15.10	International Plumbing Code
15.15	Electrical Code
15.20	Mechanical Code
15.25	Dangerous Buildings Code
15.30	International Fuel Gas Code
15.35	Adoption of Technical Documents
15.40	International Existing Building Code
15.45	International Energy Conservation Code
15.50	International Swimming Pool and Spa Code
15.55	International Property Maintenance Code

Chapter 15.05

BUILDING CODE*

Sections:

15.05.010	Adoption of the International Building Code.
15.05.020	Amendments to the International Building Code.
15.05.030	Adoption of the International Residential Code.
15.05.040	Amendments to the International Residential Code.
15.05.050	Conformance to the land development code.
15.05.060	Building permit fees and valuation.
15.05.070	Wood burning fireplaces.
15.05.080	Permitting of wood stoves and similar devices.
15.05.090	Manufactured homes, factory-built buildings and mobile homes.
15.05.100	Jurisdiction of other agencies.

* **Editorial note:** See Ordinances 90-01, 91-22, 92-01, 93-09, 93-22, 98-05, 2007-04 and 2007-16.

15.05.010 Adoption of the International Building Code.

The following document, three copies of which are on file and are available for public inspection in the office of the director of community development, is adopted as the building code of the city of Sedona, Arizona, for regulating the erection, construction, enlargement, alteration, repair, moving, removal, demolition, conversion, occupancy, equipment, use, height, area and maintenance of all buildings or structures in the city; and providing for issuance of permits and collection of fees therefor:

A. International Building Code, **2024 Edition**, as amended and codified, published by the International Code Council, Inc.

B. Each and all of the regulations, provisions, conditions and terms of the International Building Code, **2024 Edition**, as amended and codified, published by the International Code Council, Inc., are hereby referred to, adopted and made a part of this code as if fully set out herein, excepting such provisions as hereinafter deleted or amended. [Code 2006 § 7-1-1. Ord. 98-05, 3-24-1998; Ord. 2007-16, 10-23-2007; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.05.020 Amendments to the International Building Code.

The International Building Code, as adopted, is hereby modified as follows:

A. Section 101.1, Title, is hereby amended by adding the words “City of Sedona” in place of “Name of Jurisdiction.”

B. **Section 103.1, Creation of enforcement agency, is hereby amended by adding the words “Building Safety Department” in place of “Insert Name of Department”.**

C. Section 105.2, Work exempt from permits, Building Item Nos. 1, 2, 4, 5, 9 and 10, relating to Exempted Work, are hereby amended to read:

1. One-story detached buildings used as tool and storage sheds, playhouses or similar uses, provided the projected roof area does not exceed 120 square feet, the building does not exceed 7 feet high at the highest point of the roof or wall, and it has no electrical or plumbing installations.
2. Freestanding fences and walls not supporting a structure, not over 30 inches high, and not located within flood hazard areas as determined by the City or County flood hazard administrative authority.
4. Retaining walls not over 30 inches in height, measured from top of footing to the top of wall, unless supporting a surcharge or impounding Class I, II or IIIA liquids.
5. Water tanks supported directly on grade if the capacity is not greater than 800 gallons (3,028.3 L) and the ratio of height to diameter or width is not greater than 2:1.
9. Prefabricated swimming pools accessory to Group R-3 occupancies, which are less than 18 inches in depth, less than 8 feet in all dimensions and constructed entirely above grade.
10. This item, referring to shade cloth structures, is deleted in its entirety.

D. Section 105.5, Expiration, is hereby amended by adding the following to the end of the first sentence:

, or by not having a qualified inspection within 180 days of the previous or last qualified inspection.

E. Section 105.7, Placement of permit, is hereby amended by deleting the section in its entirety and substituting the following:

Section 105.7 Placement of permit. The building permit shall be placed in a conspicuous place, visible from the public way, and shall be kept on the site of the work until the completion of the project and the issuance of final inspection approval by the City.

F. Section 107.1, General, is hereby amended by the addition of the following paragraphs to the end of the section:

Such documents may be reviewed and approved by other departments of this City and other agencies with jurisdiction in the areas of public health and safety prior to permit issuance, including, but not limited to, the Arizona Department of Environmental Quality, the County Health Department and the County Flood Control District to verify compliance with any applicable laws under their jurisdiction.

The Building Official shall require that contractors be licensed as required by Arizona state law before issuing permits to them. The Building Official shall also require contractors and builders to either be

licensed or otherwise retain the services of someone who is properly licensed or certified, as may be necessary to assure the proper installation of building components, equipment or appliances consistent with the technical codes or the approved installation specifications and standards.

Owners of Property may construct, add to, alter or remodel structures on their property subject to the provisions of Arizona Revised Statutes, Section [32-1121](#). Violation of the provisions of ARS § [32-1121](#) shall be cause to commence enforcement proceedings. The Building Official may also report such violations to the Arizona Registrar of Contractors.

G. Section 107.3.1, Approval of construction documents, is hereby amended by adding the following paragraph to the end of the section:

When plans are required, if the Building Official issues a permit, he/she shall endorse in writing or stamp the plans and specifications "Reviewed for Code compliance" which signifies only that said plans may be used in conjunction with a building permit for construction. Any omission or error in said plans shall not be grounds to fail to comply with or waive any city, state or federal requirements. The designer, builder and owner are hereby charged with the responsibility to comply with all said requirements. Approved plans, specifications, building addresses, legal descriptions and permits shall not be changed, modified or altered without authorization from the Building Official, and all work shall be done in accordance with the approved plans, specifications and permits. A land split or subdivision of land made on property for which a building permit has been issued shall be approved by the Director of Community Development prior to recording.

H. Section 111.1, Change of occupancy, is hereby amended by inserting the following text after the first sentence of the paragraph:

Every tenant of every building and structure, except Group R-3 and U occupancies associated with Group R-3 uses, and non-occupied Group U occupancies, shall obtain a tenant occupancy permit and a certificate of occupancy prior to opening for business. Tenant occupancy permits and certificates shall be nontransferable from one building to another and from one tenant to another.

I. Section 111.3, Temporary occupancy, is hereby amended by adding the following to the end of the section:

The issuance of Temporary Certificates of Occupancy is not customary, is reviewed by the Director of Community Development after the submittal of a written request identifying the hardship(s) not caused directly or indirectly by the applicant, property owner, design professionals or contractors, and is based solely on incomplete or non-compliant exterior work. Upon approval of the Director of

Community Development to allow issuance of a Temporary Certificate of Occupancy, the owner shall submit to the Building Official for review and approval a letter requesting temporary occupancy for a period of time to be approved by the Building Official and include with the request:

1. An itemization of all work authorized and required by the building and grading permits that must be completed to permanently occupy the building. (Note that said work shall be exterior to the building or structure. Temporary Certificates of Occupancy will not be issued for any work not completed and approved by the City that is interior to the building or structure.)
2. An irrevocable bond or other financial deposit acceptable to the Building Official and payable to the City of Sedona in the event construction is not completed before expiration of the Temporary Certificate of Occupancy. The amount of the bond or deposit shall equal 100 percent of the construction cost to complete the work required by the permits.

For the purpose of this section, construction cost shall include all labor, materials, equipment, sales tax, permit fees and contractors' profit and overhead plus a twenty-five percent (25%) contingency amount for unforeseen construction expenses and City administration in the event the City undertakes completion of the project. The Building Official may require written proposals or estimates from contractors to substantiate the amount of the bond or deposit.

3. The payment of a non-refundable fee for the Temporary Certificate of Occupancy shall be \$300.00 for single-family dwellings and \$500.00 for commercial projects.
4. A written agreement that the bond or deposit is forfeited by the owner to the City in the event all required work is not completed before expiration of the Temporary Certificate of Occupancy and authorization for the City to undertake and complete construction with the forfeited funds.

If the City undertakes completion of the project with the forfeited funds, any unexpended amount shall be returned to the owner or bonding agent as applicable. If costs to complete the project exceed the amount of the bond or deposit, the City may file a lien against the subject property and take appropriate action as necessary to recover all the additional expenses incurred completing the construction.

The Building Official may extend the time period of an original Temporary Certificate of Occupancy or issue one or more additional temporary certificates if conditions beyond the control of the owner prevent project completion by the expiration of the original Temporary Certificate. Extensions and additional temporary certificates shall be requested by the owner before the expiration of the original certificate and approved by the Building Official in the same manner as the original certificate. The owner shall provide a bond or deposit and pay a new fee for each extension or additional certificate.

EXCEPTION: Public schools are not required to provide a bond or deposit for completion of work or pay temporary certificate fees.

J. Section 113.3, Qualifications, is hereby amended by deleting the section in its entirety and substituting the following:

113.3 **Board Composition and Authority.** All reviews required of a Board of Appeals shall be brought before the City's hearing officer to hear such appeals. The hearing officer(s) shall have final review authority and no further appeal shall be required by the City of Sedona.

K. Section 114.4, Violation penalties, is hereby amended by adding the following paragraph to the end of the section:

Such person, firm or corporation shall be subject to the penalties as provided in SCC [1.15.010](#) for each and every such violation and non-compliance as a separate offense. Imposition of penalty for a violation of this code shall not excuse the violation or permit it to continue. A violation shall be remedied within a reasonable time, and each day that such violation continues unabated shall constitute a separate offense.

L. Section 115.2, Issuance, is hereby amended by removing the first sentence in its entirety and inserting the following:

A stop work order shall be in writing and shall be given to the owner of the property, to the owner's authorized agent, or to the person performing the work, or shall be posted on the structure or on site in a conspicuous location.

M. Section R115.4, **Failure to comply**, is hereby deleted in its entirety and replaced by the following:

Section R115.4 **Failure to comply.** Any person who shall continue or allow the continuance of any work in or about the structure or property after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, or any person who removes, or causes the removal of, the stop work notice without the consent of the City, shall be subject to fines and penalties as set by the applicable governing authority.

N. Sections 305.2, Group E, day care facilities, and 308.5, Institutional Group I-4, day care facilities, are hereby amended by adding the following exception:

A “child care group home” complying with the requirements ARS [36-897](#) through [36-897.13](#) and providing child care for less than 24 hours per day for not less than five (5) children but no more than ten (10) children through the age of twelve years shall be classified as Group R-3, provided that all child care rooms are located on the level of exit discharge and each child care room has an exit door directly to the exterior.

O. Section 502.1, Address identification, is hereby amended by adding the following paragraph to the end of the section:

In addition to the requirements stated herein, building addressing and display shall comply with SCC [12.20.070](#). Building addresses placed on building permits and Certificates of Occupancy shall not be changed unless approved by the City Engineer pursuant to Chapter [12.20](#) SCC.

P. Section 901.2, Fire protection systems, is hereby amended by deleting the first paragraph and replacing said paragraph with the following:

Fire protection systems shall be designed, installed, repaired, operated, tested and maintained in accordance with this code and the Sedona Fire District’s adopted regulations, codes and amendments. The Sedona Fire District shall be the enforcing agency of this chapter. Where there is a conflict between this code and those of the Sedona Fire District, the more restrictive of those regulations, codes, and amendments shall apply.

Q. Section 903.2, Where required, is hereby amended by adding the following paragraph to the end of the section:

Approved automatic sprinkler systems shall also be designed and provided in accordance with the adopted and amended codes and regulations of the Sedona Fire District, and all plan review and inspections for said systems will be done by the Sedona Fire District.

R. Section 907.2.[11](#).1, Group R-1, is hereby amended by deleting the section in its entirety and substituting the following:

Section 907.2.10.1 Group R-1. Single- or multiple-station smoke alarms shall be installed in all of the following locations in Group R-1:

1. In sleeping areas.

2. In every room in the path of the means of egress from the sleeping area to the door leading from the sleeping unit.

3. In each story within the sleeping unit, including basements. For sleeping units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level, and that the smoke alarm is installed on the ceiling in close proximity of the stairs.

4. In sleeping units where the ceiling height of a room open to the hallway serving the bedrooms exceeds that of the hallway by twenty-four inches (24") or more, smoke detectors shall be installed in the hallway and in the adjoining room.

S. Section 907.2.11.2, Groups R-2, R-3, R-4 and I-1, is hereby amended by adding the following to the end of the section:

4. In sleeping units where the ceiling height of a room open to the hallway serving the bedrooms exceeds that of the hallway by twenty-four inches (24") or more, smoke detectors shall be installed in the hallway and in the adjoining room.

T. Section 1008.1, Means of egress illumination, is hereby amended by adding the following sentence to the end of the first sentence:

In addition, emergency illumination shall be required where deemed necessary by the Building Official.

U. Section 1015.2, Where required, is hereby amended by deleting "30 inches (762 mm)" from the first sentence and replacing it with "20 inches (508 mm)."

V. Section 1612.3, Establishment of flood hazard areas, is modified by deleting the section in its entirety and replacing it with the following:

1612.3 Establishment of flood hazard areas. Flood hazard areas and regulations shall be established by the appropriate, governing County or City agency having flood management jurisdiction. Where the requirements of this section conflict with the flood hazard regulations adopted by the appropriate, governing County or City agency having flood management jurisdiction, the regulations of the governing County or City agency shall apply.

W. Section 1807.1.6, Prescriptive design of concrete and masonry foundation walls, is hereby amended by adding the following to the end of the sentence:

... provided that the minimum vertical reinforcement for any concrete or masonry foundation wall shall be a #4 spaced not more than 48 inches on center. Un-reinforced concrete (PC) is not permitted.

X. Section 2901.1, Scope, is hereby amended by deleting the third sentence in its entirety and replacing it with the following:

Private sewage disposal systems shall conform to the requirements of the applicable State or County governing authority.

Y. Section 3109.1, General, is hereby amended by adding the following to the end of the sentence:

...and all applicable state and county regulations including Arizona Statute A.R.S. [36-1681](#), whichever is more restrictive.

[Code 2006 § 7-1-2. Ord. 2007-16, 10-23-2007; amended during 2012 codification; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.05.030 Adoption of the International Residential Code.

The following document, three copies of which are on file and are available for public inspection in the office of the director of community development, is hereby adopted as the building code of the city of Sedona, Arizona, for regulating the erection, construction, enlargement, alteration, repair, moving, removal, demolition, conversion, occupancy, equipment, use, height, area and maintenance of all one- and two-family dwellings and townhouses and associated buildings or structures in the city; and providing for issuance of permits and collection of fees therefor:

A. International Residential Code, **2024** Edition, as amended and codified, published by the International Code Council, Inc., including the following appendix chapters:

1. **Appendix BB: Tiny Houses;**
 - a. Section **BB107** ADDITIONAL REQUIREMENTS AND ALLOWANCES
 - b. Section **BB107.1** Egress door. The main egress door shall be no less than 34" in width.
 - c. Section **BB107.2** Room dimensions. The minimum room dimension of a habitable room, other than the loft or kitchen, shall be 6'-6", and the room area shall be no less than 60 sq.ft. in area.
 - d. Section **BB107.3** Foundation. Tiny houses shall be built on, and permanently attached to, full, continuous frost-proof concrete or masonry foundations.
 - e. Section **BB107.4** General. Tiny houses shall comply with all other requirements of the adopted and amended International Residential Code.
2. **Appendix BG: Sound Transmission;**
3. **Appendix BH: Automatic Vehicular Gates;**
4. **Appendix BI: Light Straw-Clay Construction;**
5. **Appendix BJ: Strawbale Construction;**
6. **Appendix BK: COB Construction;**
7. **Appendix BL: Hemp-Lime (Hempcrete) Construction;**
8. **Appendix BM: 3D-Printed Building Construction;**
9. **Appendix CA: Sizing and Capacities of Gas Piping;**
10. **Appendix CB: Sizing of Venting Systems Serving Appliances Equipped With Draft Hoods, Category I Appliances and Appliances Listed For Use With Type B Vents;**
11. **Appendix CD: Piping Standards for Various Applications;**
12. **Appendix CE: Venting Methods;**
13. **Appendix CF: Sizing of Water Piping System;**
14. **Appendix NB: Solar-Ready Provisions – Detached One- And Two-Family Dwellings And Townhouses;**
15. **Appendix NC: Zero Net Energy Residential Building Provisions;**
16. **Appendix ND: Electric Energy Storage Provisions, as amended to include the following new section:**
 - a. Section ND103.1.1 Approved locations. Energy Storage System (ESS) batteries shall not be installed within a dwelling except that such batteries may be installed within an attached garage. When installed within an attached garage, all walls separating the garage from the dwelling unit shall be protected with minimum 5/8" Type X gypsum board on the garage side;
17. **Appendix NL: Renewable Energy Infrastructure.**

B. Each and all of the regulations, provisions, conditions and terms of the International Residential Code, **2024** Edition, as amended and codified, published by the International Code Council, Inc., are hereby referred to, adopted and made a part of this code as if fully set out

herein, excepting such provisions as hereinafter deleted or amended. [Code 2006 § 7-1-3. Ord. 2007-16, 10-23-2007; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.05.040 Amendments to the International Residential Code.

The International Residential Code, as adopted, is hereby modified as follows:

A. Section R101.1 Title, is hereby amended by adding the words “City of Sedona” in place of “Name of Jurisdiction.”

B. Section R101.2 Scope, is hereby amended by adding the following new section:

R101.2.2 Fences, yard walls and retaining walls. Fences, yard walls and retaining walls shall be designed in accordance with the minimum requirements of the City of Sedona prescriptive fence, wall and retaining wall details located within the City of Sedona Fence Building Permit Packet or the design of such structures shall be supported by structural calculations performed by an Arizona registered design professional approved to perform structural design.

C. Section R103.1 Creation of agency, is hereby amended by adding the words “Building Safety Department” in place of “Insert Name of Department.”

D. Section **R104.2.3.1** Flood hazard areas, is hereby deleted in its entirety. Structures in flood hazard areas shall comply with all Federal, County and City flood maps and requirements.

E. Section R104.3.1, Determination of substantially improved or substantially damaged existing buildings in flood hazard areas, is hereby amended by deletion in its entirety and substituting the following:

Reconstruction, rehabilitation, additions, alteration, repair, relocation or other improvements to buildings or structures located in flood hazard areas as established by Table R301.2, shall comply with the regulations and requirements of the appropriate, governing County or City authority.

F. Section R105.2, Exempted work, Item Nos. 1, 2, 3, **4, 5**, 7 and 10, are hereby amended to read:

1. Other than storm shelters, one-story detached buildings used as tool and storage sheds, playhouses or similar uses, provided the projected roof area does not exceed 120 square feet, the building does not exceed seven feet (7') high at the highest point of the roof or wall, and it has no electrical or plumbing installations.
2. Fences not over thirty inches (30") high and not located within flood hazard areas as determined by the City or County flood hazard administrative authority.
3. Retaining walls not over thirty inches (30") high measured from the top of footing to the top of wall and not support any structures or located within flood hazard areas as determined by the City or County flood hazard administrative authority.
4. Water tanks supported directly on grade if the capacity is not greater than 800 gallons (3,028.3 L) and the ratio of height to diameter or width is not greater than 2:1.
5. Sidewalks, driveways, patios, and other exterior similar exterior flatwork not containing electrical or plumbing, but not including sport courts that are required to be built through the issuance of a Conditional Use Permit (CUP).
7. Prefabricated swimming pools accessory to Group R-3 occupancies which are less than 18 inches in depth, less than 8 feet in any dimension and less than 650 gallons constructed entirely above grade.
10. Decks not exceeding 100 square feet in area, that are less than 20 inches above grade at any point, are not attached to a dwelling, do not have stairs or steps and do not serve the exit door required by Section R311.2.

G. Section R105.5, Expiration, is hereby amended by adding the following to the end of the first sentence:

Lack of a scheduled and performed qualified inspection within 180 days constitutes a suspension or abandonment of work, and therefore an expiration of the permit.

H. Section R105.7, Placement of permit, is hereby amended by deleting the section in its entirety and substituting the following:

Section 105.7 Placement of permit. The building permit shall be kept on site in a conspicuous place, visible from the public way, and shall be kept on the site of the work until the completion of the project and the issuance of final inspection approval by the City.

I. Section R106.1.1, Information on construction documents, is hereby amended by adding the following to the end of the section:

All text, numbers, symbols, lines, shading, etc. shall be clear, well defined, sized and properly weighted so as to be clearly legible, and plan sheets shall be no larger than 30" x 42" in size.

J. Section R106.3, Examination of documents, is hereby amended by adding the following to the end of the section:

The application and construction drawings may be reviewed and approved by other departments of this City and other agencies with jurisdiction in the areas of public health and safety prior to permit issuance, including, but not limited to, the Arizona Department of Environmental Quality, the County Health Department and the County Flood Control District to verify compliance with any applicable laws under their jurisdiction.

The Building Official shall require that contractors be licensed as required by Arizona state law before issuing permits to them. The Building Official shall also require contractors and builders to either be licensed or otherwise retain the services of someone who is properly licensed or certified, as may be necessary to assure the proper installation of building components, equipment or appliances consistent with the technical codes or the approved installation specifications and standards.

Owners of Property may construct, add to, alter or remodel structures on their property subject to the provisions of Arizona Revised Statutes, Section [32-1121](#). Violation of the provisions of ARS § [32-1121](#) shall be cause for the Building Official to commence enforcement proceedings. The Building Official may also report such violations to the Arizona Registrar of Contractors.

K. Section R108.2, Schedule of permit fees, is hereby amended by adding the following to the end of the section:

Fees, valuations, and refunds that are within the scope of this Section shall be assessed in accordance with the provisions of this section and as set forth in SCC [15.05.060](#).

L. Section R109.1.3, Floodplain inspections, is hereby amended by adding the following to the end of the paragraph:

Inspections for the reconstruction, rehabilitation, additions, alteration, repair, relocation or other improvements to buildings or structures located in flood hazard areas as established by Table R301.2,

shall comply with the regulations and requirements of the appropriate, governing County or City authority.

M. Section R110.3, Temporary occupancy, is amended by adding the following to the end of the section:

The issuance of Temporary Certificates of Occupancy is not customary, is reviewed by the Director of Community Development after the submittal of a written request identifying the hardship(s) not caused directly or indirectly by the applicant, property owner, design professionals or contractors, and is based solely on incomplete or non-compliant exterior work. Upon approval of the Director of Community Development to allow issuance of a Temporary Certificate of Occupancy, the owner shall submit to the Building Official for review and approval a letter requesting temporary occupancy for a period of time to be approved by the Building Official and include with the request:

1. An itemization of all work authorized and required by the building and grading permits that must be completed to permanently occupy the building. (Note that said work shall be exterior to the building or structure. Temporary Certificates of Occupancy will not be issued for any work not completed and approved by the City that is interior to the building or structure.)
2. An irrevocable bond or other financial deposit acceptable to the Building Official and payable to the City of Sedona in the event construction is not completed before expiration of the Temporary Certificate of Occupancy. The amount of the bond or deposit shall equal 100 percent of the construction cost to complete the work required by the permits.

For the purpose of this section, construction cost shall include all labor, materials, equipment, sales tax, permit fees and contractors' profit and overhead plus a twenty percent (25%) contingency amount for unforeseen construction expenses and City administration in the event the City undertakes completion of the project. The Building Official may require written proposals or estimates from contractors to substantiate the amount of the bond or deposit.

3. The payment of a non-refundable fee for the Temporary Certificate of Occupancy shall be \$300.00 for single-family dwellings and \$500.00 for commercial projects.
4. A written agreement that the bond or deposit is forfeited by the owner to the City in the event all required work is not completed before expiration of the Temporary Certificate of Occupancy and authorization for the City to undertake and complete construction with the forfeited funds.

If the City undertakes completion of the project with the forfeited funds, any unexpended amount shall be returned to the owner or bonding agent as applicable. If costs to complete the project exceed the amount of the bond or deposit, the City may file a lien against the subject property and take

appropriate action as necessary to recover all the additional expenses incurred completing the construction.

The Building Official may extend the time period of an original Temporary Certificate of Occupancy or issue one or more additional temporary certificates if conditions beyond the control of the owner prevent project completion by the expiration of the original Temporary Certificate. Extensions and additional temporary certificates shall be requested by the owner before the expiration of the original certificate and approved by the Building Official in the same manner as the original certificate. The owner shall provide a bond or deposit and pay a new fee for each extension or additional certificate.

EXCEPTION: Public schools are not required to provide a bond or deposit for completion of work or pay temporary certificate fees.

N. Section R112.3, Qualifications, is hereby deleted and replaced with the following:

R112.3 **Board Composition and Authority.** All reviews required of a Board of Appeals shall be brought before the City's hearing officer to hear such appeals. The hearing officer(s) shall have final review authority and no further appeal shall be required by the City of Sedona.

O. Section R114.2, **Issuance**, is hereby amended by adding the following to the end of the section:

Posting of the Stop Work order on the structure or property in question is deemed proper notification to the owner or owner's authorized agent.

P. Section R114.4, **Failure to comply**, is hereby deleted in its entirety and replaced by the following:

Section R114.4 **Failure to comply.** Any person who shall continue or allow the continuance of any work in or about the structure or property after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, or any person who removes, or causes the removal of, the stop work notice without the consent of the City, shall be subject to penalties as prescribed by law and City Code.

Q. **Section R202 - Definition, Substantial Improvement, is hereby amended by adding the words "construction cost" in place of "market value."**

R. The design criteria required of Table R301.2 are established as follows:

Ground Snow load	Speed (mph)	Seismic Design Category	Subject to Damage From				Winter Design Temperature	Flood Hazards
			Weathering	Frost Line Depth	Termite	Decay		
20 psf	105 mph Vult	C	Moderate	12"	Moderate to Heavy	None to Slight	16° F	***

*** Flood hazard areas shall be designated and regulated by the adopted regulations of the appropriate, governing county or city agency having flood management jurisdiction.

S. Section R302.2.2, Common walls, is hereby amended by adding the following to the end of the first sentence:

The common wall separating townhouses or its membranes shall not be penetrated by any wood framing including joists, trusses, bracing or purlins.

T. Section R302.3.2, Fire-resistance rating, is hereby amended by deleting "1-hour" in the first sentence and replacing it with "2-hour."

U. Section R302.3.2, Fire-resistance rating, is hereby amended by deleting "one-half hour" in the first sentence and replacing it with "1-hour."

V. Section R302.3.3.2, Vertical assemblies, is hereby amended by deleting Exception 4 in its entirety.

W. Table 302.6 – Dwelling Unit Garage Separation, is hereby amended by adding the following new row to the table.

Separation	Material
For garages with storage batteries (ESS), from dwelling units and attics	Not less than 5/8" Type X gypsum Board or equivalent.

X. R302.13 Fire protection of floors, is hereby amended by adding the following to the end of Exception 2:

A crawl space not intended for storage is one that has a clear ceiling height from grade or floor to the underside of the framing above of less than 30" across all areas of the space.

Y. R306.1 General, is hereby amended by adding the following to the end of the first paragraph:

Where the requirements of this section conflict with the flood hazard regulations adopted by the appropriate, governing County or City agency having flood management jurisdiction, the regulations of the governing County or City agency shall apply.

Z. R309 Automatic Sprinkler Systems, is hereby removed in its entirety. Automatic Fire Sprinkler Systems are regulated by the governing Fire District.

AA. R319.1 Emergency escape and rescue opening required, is hereby amended by removing Exception 3 in its entirety.

BB. R321.1.1 Where required, is hereby amended by replacing "30 inches (762 mm)" in the first sentence with "20 inches (508 mm)."

CC. R328.1 General, is hereby amended by adding the following to the end of the first sentence:

... and all applicable state and county regulations including Arizona Statute A.R.S. [36-1681](#), whichever is more restrictive.

DD. R330.4 Locations, is hereby amended by removing Item 4 in its entirety.

EE. Section R403.1.1 Minimum size, is hereby amended by adding the following to the end of the fifth sentence:

... but shall not be less than 18" x 18" in width and 12" in height.

FF. Section R403.1.1 Minimum size, is hereby amended by adding the following subsection:

R403.1.1.1 Minimum footing reinforcement. Continuous spread concrete footings shall be reinforced with at least two #4 horizontal reinforcement bar located 3 inches from the bottom of the footing. Monolithic interior and exterior concrete footings shall be reinforced with at least two #4 horizontal bars located 3 inches from the bottom of the footing and one #4 located 3 inches from the top of the slab. Pier and column footings shall be reinforced with #4 horizontal reinforcement spaced no more than 12 inches in each direction and located 3 inches from the bottom of the footing.

GG. Table R404.1.2.1(1) Plain Masonry Foundation Walls, is hereby amended by deleting the table in its entirety.

HH. Section R404.1.2.1 Masonry foundation walls, is hereby amended by deletion in its entirety and substituting the following:

Masonry foundation walls. Concrete masonry foundation walls shall be constructed as set forth in Tables R404.1.1(2), (3) and (4) for the most restrictive soil class (unless a soils report is provided that shows that the site consists of a different soils class.) and shall also comply with the provisions of this section. Rubble stone masonry walls are not permitted.

II. Section R404.1.3.2 Reinforcement for foundation walls, is hereby amended by adding the following to the end of the paragraph:

Concrete foundation walls, including insulating concrete form (ICF) foundation walls, shall be constructed as set forth in Tables R404.1.2(2) through R404.1.2(8) for the most restrictive design soil class (unless a soils report is provided that shows that the site consists of a different soils class) provided that PC in the table represents a minimum vertical reinforcement of #4 at forty-eight inches (48") oc. PC or Plain Unreinforced Concrete is not permitted. Concrete foundation walls shall also comply with the provisions of this section and the applicable provisions of sections R402.2 and R612.

JJ. Section R404.1.8 Rubble stone masonry, is hereby deleted in its entirety.

KK. Section R404.2 Wood foundation walls, is hereby deleted in its entirety.

LL. Chapter 11 Energy Efficiency, is hereby deleted in its entirety and substituting Chapter 11 Energy Efficiency of the 2018 International Residential Code with the following amendment to Table 1101.7:

Table N1101.7, CLIMATES ZONES, MOISTURE REGIMES, AND WARM-HUMID DESIGNATIONS BY STATE, COUNTY AND TERRITORY, is hereby amended by identifying Climate Zone 4B as the Climate Zone for the entire City of Sedona.

MM. Section M1602.2 Return air openings, is hereby amended by adding the following to the end of the section:

11. Return air for locations other than No. 6 above shall be provided through the use of approved ducts, plenums, transfer ducts and transfer grills. Return air shall not be provided through the use of under-door cuts or openings.

NN. Section G2415.12, Minimum burial depth, is hereby amended by adding the following to the end of the paragraph:

However, in cases other than that specified in Section 2415.12.1, underground plastic piping systems shall be installed a minimum depth of 18 inches below grade to the top of the pipe.

OO. Section G2415.12.1, Individual outdoor appliances, is hereby amended by adding the following to the end of the paragraph:

However, in such cases, underground plastic piping systems shall be installed a minimum depth of 12 inches to the top of the pipe or in accordance with the manufacturer's installation guidelines, whichever is deeper.

PP. Section G2417.4.1 (Section 406.4.1), Test pressure, is hereby amended by deleting "3 psig (20kPa gauge)" and replacing with "10 psig."

QQ. Section P2603.5.1, Sewer Depth, is hereby amended by replacing "Number" in the first sentence with "18" and replacing "Number" in the second sentence with "18".

RR. Section P2801- GENERAL, is hereby amended by adding the following new section:

P2801.9 Recirculating system required. All new R-3 occupancies shall have a hot water recirculating system installed.

SS. Section E3406.2, Conductor material, is hereby amended by deleting the section in its entirety and substituting the following:

E3406.2 Conductor material. Conductors in this article shall be of copper, aluminum or copper-clad aluminum unless otherwise specified. Aluminum and copper-clad aluminum conductors shall be no less than 4 AWG in size, shall only be used for service entrance conductors or feeders, and shall be AA-8000 series electrical grade aluminum alloy conductor material. All references to the contrary are hereby deleted from this code.

TT. Section E3901.4.2, Island and peninsular countertops and work surfaces, is hereby amended by deleting the section in its entirety and substituting the following:

Section E3901.4.2, Island and peninsular countertops and work surfaces. Receptacle outlets, if installed to serve an island or peninsular countertop or work surface, shall be installed in accordance with Section E3901.4.3. If a receptacle outlet is not provided to serve an island or peninsular countertop or work surface, a minimum ½" raceway shall be provided from the electrical panel serving the required appliance circuits to an approved, covered junction box within or at the island, peninsular countertop or work station. The cover of said junction box shall be labeled, "For future receptacle installation".

UU. Section E3901.4.3, Receptacle outlet location, is hereby amended by adding the following to the end of the section:

Exception: Receptacle outlets shall be permitted to be mounted not more than 12" below the countertop or work surface at islands and peninsular countertops and work surfaces where the surface is flat across its entire surface and there is no means to mount a receptacle within 20" of the countertop, such as in an overhead cabinet. Receptacles mounted below the countertop or work surface in accordance with this exception shall not be located where the countertop or work surface extends more than 6" beyond its support base.

VV. Section E3901, Receptacle Outlets, is hereby amended by adding the following new section:

Section E3901.13 EV-Ready outlet. An approved conduit of no less than ¾" in diameter shall be installed from the service panel to an approved and covered junction box located in the garage or carport area and sized to allow the installation of a 240-volt receptacle. All junction boxes installed as part of the EV-ready conduit system shall be labeled as "EV Use".

WW. Appendix NB, Section NB103.6, Capped roof penetration sleeve, is hereby amended by deleting the section in its entirety and substituting the following:

Section NB103.6 Preinstalled PV-ready conduit. An approved conduit of no less than ¾" in diameter shall be installed from the service panel to an approved and covered junction box located in an area adjacent to or in an accessible attic directly beneath the required solar-ready zone. All junction boxes installed as part of the PV-ready conduit system shall be labeled as "PV Use".

[Code 2006 § 7-1-4. Ord. 2007-16, 10-23-2007; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.05.050 Conformance to the land development code.

Whenever a building permit is issued and a building inspection performed, such building shall conform to the provisions of the city land development code in addition to the provisions of SCC [2.60.020](#), Chapters [5.30](#), [8.30](#), [12.05](#), [12.15](#), [12.20](#), [12.25](#) and [14.10](#) SCC and this title. [Code 2006 § 7-1-5. Ord. 98-05, 3-24-1998; Ord. 2007-16, 10-23-2007; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.05.060 Building permit fees and valuation.

A. *Plan Review Payment.* At the time of submitting plans, specifications or other data for plan review, the full amount of the plan review fee shall be collected by the director of community development for each permit application as set forth in the City of Sedona Consolidated Fee Schedule, Valuation/Permit Fee Schedule.

B. *Building Valuations.* Building construction and unit construction valuations, for the purpose of calculating building permit fees, shall be determined by the director of community development in accordance with the City of Sedona Consolidated Fee Schedule, Valuation and Fee Schedule and/or Unit Construction Valuations, or may be based upon the applicant's submitted construction valuation if items listed in the City of Sedona Consolidated Fee Schedule are not applicable to the proposed work.

C. *Building Permit Fees.* Building permit fees based upon construction valuations shall be calculated in accordance with the City of Sedona Consolidated Fee Schedule, Valuation/Permit Fee Schedule or the valuation indicated on the permit application, whichever is higher. Building permit fees for individual items of construction shall be calculated in accordance with the City of Sedona Consolidated Fee Schedule, Unit Permit Fees, when the fees are not based upon the construction valuation.

D. *Plan Review Fees.* The plan review fee shall be 65 percent of the building permit fee stipulated in this section when the building permit fee is based upon the construction valuation. The plan review fee is a separate fee from the building permit fees specified in this section and is in addition to the building permit fees. Where plans are incomplete or changed so as to require additional plan review, an additional plan review fee shall be charged at the rate specified in this section.

E. *Fee Refunds.*

1. The building official may authorize the refunding of any fee collected pursuant to this section that was erroneously paid or collected.
2. The building official may authorize refunding of not more than 80 percent of the building permit fee paid when no work has been done under the permit issued in accordance with this code; not more than 70 percent of the building permit fee after foundation construction has commenced; and not more than 50 percent of the building permit fee after framing or above-grade wall construction has commenced. No building permit fee shall be refunded after the framing or above-grade wall construction has been inspected and approved.
3. The building official may authorize refunding of not more than 80 percent of the plan review fee when a permit application for which a plan review fee was paid is canceled or withdrawn before any plan review is commenced; no plan review fee shall be refunded after an initial plan review has been completed or the permit application has been approved for issuance. [Code 2006 § 7-1-6. Ord. 98-05, 3-24-1998; Ord. 2007-04, 4-24-2007; Ord. 2009-05, 5-12-2009; Ord. 2009-06, 5-12-2009; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.05.070 Wood burning fireplaces.

A. *Definitions.* For purposes of this section, the following definitions shall apply unless the context clearly indicates or requires a different meaning:

“Alternative fuel” means natural gas, propane, electric or other nonsolid fuel.

“Solid fuel” means wood, or any compressed wood or fiber product, including coal, other solid hydrocarbons or compounds, oil and combustible pellets, or solids of any composition.

“Wood burning fireplace” means an open fireplace within buildings or structures that will burn wood or other solid fuel.

B. *Abatement.*

1. After the effective date of the ordinance codified in this section, no person within the city of Sedona, Arizona, shall place, install or fabricate in place a wood burning fireplace.

2. In order to receive a final occupancy permit for any structure, any new fireplace must be equipped with an operable alternative fuel device.
3. Wood burning fireplaces in existence prior to the effective date of the ordinance codified in this section will be exempt from the provisions of this section.

C. *Violations and Penalties.* The owner of any property subject to this section, wherein such fireplace was reconverted to wood burning in contravention of this section, will be subject to a \$500.00 fine and be required to convert to alternative fuel or seal the fireplace within 90 days from notice of violation. Failure to comply within 90 days will result in an additional \$500.00 fine each day the violation continues to exist.

D. *Effective Date.* This section is effective on August 11, 2003. [Code 2006 § 7-1-7. Ord. 2003-08, 5-13-2003; Ord. 2007-16, 10-23-2007; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.05.080 Permitting of wood stoves and similar devices.

A. *Definitions.* For the purpose of this section, the following definitions shall apply unless the context clearly indicates or requires a different meaning. In the event that a definition set forth herein is unclear or raises a conflict, the applicable definitions set forth by the United States Environmental Protection Agency shall prevail in construing this section.

“Certified device” means a wood stove or fireplace insert which has been certified in accordance with minimum Step 2/Phase II standards adopted by the United States Environmental Protection Agency. If it cannot be verified by the director of community development that a wood stove or fireplace insert has been certified, then it is deemed uncertified.

“Cook stove” means a wood stove installed in the kitchen which is primarily designed for cooking and has a stove top and an oven, or a stove which is equipped with gas burners for cooking. Cook stoves are exempt from compliance with subsections (B) and (C) of this section.

“Fireplace” means a hearth, fire chamber and chimney, and includes:

1. "Factory-built fireplace" means a fireplace composed of listed factory-built components assembled in accordance with the terms of listing to form the completed fireplace.
2. "Masonry fireplace" means a hearth and fire chamber of solid masonry units such as bricks, stones, masonry units or reinforced concrete, provided with a suitable chimney.

"Fireplace insert" means a factory-built, field-installed product consisting of a firebox assembly designed to be installed within or partially within the fire chamber of a fireplace, which uses the fireplace flue to vent the products of combustion.

"Pellet stove" means a solid fuel burning appliance designed to heat the interior of a building. It is a forced draft heater with an automatic feed which supplies appropriately sized feed material of compressed wood pellets or other biomass material to the firebox.

"Solid fuel burning appliance" means a chimney-connected device that burns solid fuel and which is designed for purposes of heating, cooking or both.

"Stove kit" means a kit that may include a door, legs, flue pipe and collars, brackets, bolts and other hardware and instructions for assembling a wood heater with ordinary tools.

"Structure" means that which is built or constructed, an edifice or building of any kind, or any piece of work artificially built up or composed of parts joined together in some definite matter.

"Wood heater" means an enclosed wood burning appliance capable of and intended for space heating, domestic water heating or indoor cooking which has an air-to-fuel ratio of less than 35:1 in the low burn cycle. It also shall have a usable firebox volume less than 20 cubic feet, weight less than 800 kilograms, and a minimum burn rate less than five kilograms per hour. Appliances that are described as factory-built fireplaces and are designed to accommodate doors or other accessories which would create the air-starved operating conditions of a wood heater are deemed to be wood heaters if they meet the criteria in the above definition with those accessories in place.

"Wood stove" means, for purposes of compliance with subsections (B) and (C) of this section, a solid fuel burning appliance which may be a wood heater or pellet stove, or an appliance with doors or other items which cause a fireplace to function as a wood heater.

Wood stoves do not include exempt fireplaces, barbecue devices, gas-fired fireplaces or cook stoves.

B. *General Standard.* Commencing June 30, 1992, it is unlawful for any person to advertise, sell, offer to sell, install or replace any wood stove or fireplace insert in any structure within the city which is not a certified device. Wood heaters built from stove kits are subject to this standard. Fireplaces that have not been modified to create an air-starved operating condition are exempt from this standard.

C. *Installation.*

1. Commencing June 30, 1992, no person shall install or replace a wood stove or fireplace insert with a certified device within the city without first obtaining a permit from the director of community development for such installation in accordance with the applicable provisions of the International Building Code and International Mechanical Code adopted by the city.

2. Commencing June 30, 1992, installation or replacement of a wood stove or fireplace insert within the city shall comply with all written manufacturer's specifications. A wood stove or fireplace insert shall not be operated until after its inspection and approval, upon completion, by the director of community development or his designee.

3. Wood heaters built from stove kits are subject to the requirements of this subsection. Fireplaces that have not been modified to create an air-starved operating condition are exempt from the requirements of this subsection. [Code 2006 § 7-1-8. Ord. 2007-16, 10-23-2007; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.05.090 Manufactured homes, factory-built buildings and mobile homes.

Definitions. For the purpose of the City Code, the following definitions shall apply unless the context clearly indicates or requires a different meaning:

"Factory-built building" means a residential or nonresidential building (including a dwelling unit or habitable room) which is wholly or in substantial part manufactured at an off-site location to

be assembled on site, except that it does not include a manufactured home, recreational vehicle or mobile home as defined in this section.

“Manufactured home” means a structure built in accordance with the National Manufactured Home Construction and Safety Standards Act of 1974 and Title VI of the Housing and Community Development Act of 1974, as implemented by the Arizona Office of Manufactured Housing pursuant to A.R.S. Title [41](#), Chapter [16](#).

“Mobile home” means a structure built prior to June 15, 1976, on a permanent chassis, capable of being transported in one or more sections and designed to be used with or without a permanent foundation as a dwelling when connected to on-site utilities, except it does not include recreational vehicles or factory-built buildings.

“Recreational vehicle” means a vehicle-type unit which is:

1. A portable camping trailer mounted on wheels and constructed with collapsible partial side walls which fold for towing by another vehicle and unfold for camping;
2. A portable truck camper constructed to provide temporary living quarters for recreational, travel or camping use, and consisting of roof, floor and sides designed to be loaded onto and unloaded from the bed of a pickup truck;
3. A travel trailer mounted on wheels, designed to provide temporary living quarters for recreational, camping or travel use, and which has an area less than 320 square feet when measured to the exterior of the unit. This definition includes fifth wheel trailers;
4. A motor home designed to provide temporary living quarters for recreational, camping or travel use and built on or permanently attached to a self-propelled motor vehicle chassis or on a chassis cab or van that is an integral part of the completed vehicle;
5. A park trailer built on a single chassis, mounted on wheels and designed to be connected to utilities necessary for operation of installed fixtures and appliances, and has a gross trailer area of not less than 320 square feet and not more than 400 square feet when it is set up, except it does not include fifth wheel trailers. Area measurements shall be taken on the exterior of the unit. [Code 2006 § 7-1-9. Ord. 98-05, 3-24-1998; Ord. 2007-16, 10-23-2007; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.05.100 Jurisdiction of other agencies.

Permits issued under the requirements of this chapter shall not relieve the owner of responsibility for securing required permits for work which is regulated by any other department or division of the city or other governing agency, or any other city code provision or ordinance. A grading permit shall not be issued until all required permits are obtained from the Arizona Department of Environmental Quality, the county health department, the county flood control district and other agencies with regulatory jurisdiction. [Code 2006 § 7-1-10. Ord. 2007-16, 10-23-2007; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

Chapter 15.10 INTERNATIONAL PLUMBING CODE

Sections:

- | | |
|------------------|---|
| 15.10.010 | Adoption of International Plumbing Code. |
| 15.10.020 | Amendments to International Plumbing Code. |

15.10.010 Adoption of International Plumbing Code.

That certain document, three copies of which are on file and available for public inspection in the office of the director of community development, entitled International Plumbing Code, 2024 Edition, as amended and codified, published by the International Code Council and including appendix chapters:

Appendix B – Rates of Rainfall for Various Cities;

Appendix C – Structural Safety;

Appendix D – Degree Day and Design Temperatures;

Appendix E – Sizing of Water Piping System;

is hereby adopted as the International Plumbing Code of the city, excepting such portions as are hereinafter deleted or amended. [Code 2006 § 7-2-1. Ord. 98-05, 3-24-1998; Ord. 2007-16, 10-23-2007; Ord. 2008-05, 6-10-2008; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.10.020 Amendments to International Plumbing Code.

The International Plumbing Code, 2024 Edition, is hereby modified as follows:

A. Section 101.1, Title, is hereby amended by replacing “Name of Jurisdiction” with “City of Sedona.”

B. Section 103.1, Creation of agency, is hereby amended by replacing “Insert Name of Department” with “Building Safety.”

C. Section 105.5.3, Expiration, is hereby amended by adding the following to the end of the first sentence:

Lack of a scheduled and performed inspection within 180 days constitutes a suspension or abandonment of work, and therefore an expiration of the permit.

D. Section 105.5.4, Extensions, is amended by deleting the last sentence in its entirety.

E. Sections 108.2, Schedule of permit fees, and 108.6, Refunds, are amended by deleting both sections in their entirety and inserting the following:

Fees and refunds shall be assessed in accordance with SCC [15.05.060](#).

F. Section 112, Means of Appeal, is hereby amended by deleting the section in its entirety and inserting the following:

Section 112 Means of Appeal. Appeals of decisions made by the code official shall be to the Board of Appeals as established in the 2024 International Building Code as amended by the City of Sedona.

G. Section 113, Board of Appeals, is hereby amended by deleting the section in its entirety and inserting the following:

Section 113 Board of Appeals. The Board of Appeals shall be as established in the 2024 International Building Code as amended by the City of Sedona.

H. Section 114.4, Violation penalties, is hereby amended by deleting the section in its entirety and inserting the following:

Section 114.4 Violation penalties. Any person, firm or corporation who shall violate this code shall be subject to the penalties as provided in SCC 1.15.010 for each and every such violation and non-compliance as a separate offense. Imposition of penalty for a violation of this code shall not excuse the violation or permit it to continue. A violation shall be remedied within a reasonable time, and each day that such violation continues unabated shall constitute a separate offense.

I. Section 115.4, Failure to comply, is hereby amended by deleting the section in its entirety and inserting the following:

Section 115.5 Failure to comply. Any person, firm or corporation who removes a stop work order without authorization from the Building Official, or who shall continue any work in or about the structure after having been served a stop work order, or where a stop work order has been posted, except such work as that person, firm or corporation is directed to perform to remove a violation or unsafe condition, shall be subject to the penalties as provided in SCC 1.15.010 for each and every such violation and non-compliance as a separate offense. Imposition of penalty for a violation of this code shall not excuse the violation or permit it to continue. A violation shall be remedied within a reasonable time, and each day that such violation continues unabated shall constitute a separate offense.

J. Section 305.4.1, Sewer Depth, is hereby amended by replacing "Number" in the first sentence with "18" and replacing "Number" in the second sentence with "18".

K. Section 312.2, Drainage and vent water test, is hereby amended by adding the following to the end of the paragraph:

All pre-slab or underslab plumbing shall be tested with a five pound air test exclusively.

L. Section 403.1.2, Fixtures in single-user toilet facility and bathing rooms, is hereby amended by deleting the word "shall" in the last sentence and replacing it with the word "may."

M. Section 504.6, Requirements for discharge piping, is hereby amended by adding the following to the end of Item No. 5:

Where discharging outdoors, discharge piping shall be no less than six inches and no greater than 24 inches from grade.

N. Section 714.1, Sewage backflow, is hereby amended by deleting the first sentence in its entirety and replacing with the following:

Where plumbing fixtures are installed on a floor with a finished floor elevation of four inches or less above the elevation of the next upstream manhole in the public sewer, such fixtures shall be protected with a backwater valve installed in the building drain, or horizontal branch serving such fixtures.

O. Section 714.3, Location, is hereby amended by adding the following to the end of the sentence:

Such valves shall be located exterior to the building and a minimum of 10 feet from drainage ways and inlets.

P. Section 903.1.1, Roof extension unprotected, is hereby amended by replacing “[number]” with “six” in the first sentence.

Q. Section 1003.1, Where required, is hereby amended by deleting the section in its entirety and replacing with the following:

Section 1003.1 Where required. Interceptors and separators shall be provided to prevent the discharge of oil, grease, sand and other substances harmful or hazardous to the public sewer, the private sewage system, the sewage treatment plant or process, storm drainage systems and drainage ways.

R. Section 1003.2, Approval, is hereby amended by adding the following to the end of the paragraph:

In addition to the requirements herein, grease interceptors, grease traps, oil separators, and sand interceptors shall comply with SCC Title [13](#).

S. Section 1003.3.5.2, Rate of flow controls, is hereby amended to add the following to the end of the section:

Required grease trap capacity shall be the number of fixture units x 1.5 min. retention time = gallon capacity of grease trap.

T. Section 1003.3.5.2, Rate of flow controls, is hereby amended to add to the end of the paragraph:

A four-inch inspection tee fitting shall be installed in the waste line on the outlet side of the interceptor.

U. Section 1302.6.1, Gray water used for fixture flushing, is hereby amended by adding the following to the end of the sentence:

Gray Water Systems, shall also comply with the requirements contained in regulations approved by the Arizona Department of Environmental Quality.

[Code 2006 § 7-2-2. Ord. 98-05, 3-24-1998; Ord. 2007-16, 10-23-2007; Ord. 2008-05, 6-10-2008; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

Chapter 15.15

ELECTRICAL CODE

Sections:

15.15.010 **Adoption of the National Electrical Code.**

15.15.020 **Amendments to the National Electrical Code.**

15.15.010 Adoption of the National Electrical Code.

That certain code entitled National Electrical Code, 2023 Edition, as amended and codified, published by the National Fire Protection Association, three copies of which are available for public inspection in the office of the director of community development, is adopted as the electrical code of the city, and made a part of this title the same as though set forth in full herein, excepting those portions hereinafter deleted or amended. [Code 2006 § 7-3-1. Ord. 98-05, 3-24-1998; Ord. 2007-16, 10-23-2007; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.15.020 Amendments to the National Electrical Code.

The National Electrical Code, 2023 Edition, is modified as follows:

A. Section 110.5, Conductors, is hereby amended by adding the following after the last sentence:

Aluminum and copper-clad aluminum conductors shall only be used for service entrance conductors or feeders and shall be AA-8000 series electrical grade aluminum alloy conductor material.

B. Section 210.52(C)(2), , Island and Peninsular Countertops and Work Surfaces, is hereby amended by deleting the section in its entirety and substituting the following:

210.52(C)(2) Island and Peninsular Countertops and Work Surfaces. Receptacle outlets, if installed to serve an island or peninsular countertop or work surface, shall be installed in accordance with Section 210.52(C)(3). If a receptacle outlet is not provided to serve an island or peninsular countertop or work surface, a minimum ½" raceway shall be provided from the electrical panel serving the required appliance circuits to an approved, covered junction box within or at the island, peninsular countertop or work station. The cover of said junction box shall be labeled, "For future receptacle installation".

C. Section 210.52(C)(3), Receptacle Outlet Location, is hereby amended by adding the following to the end of the section:

Exception: Receptacle outlets shall be permitted to be mounted not more than 12" below the countertop or work surface at islands and peninsular countertops and work surfaces where the surface is flat across its entire surface and there is no means to mount a receptacle within 20" of the countertop, such as in an overhead cabinet. Receptacles mounted below the countertop or work surface in accordance with this exception shall not be located where the countertop or work surface extends more than 6" beyond its support base.

D. Section 310.3(B), Conductor Material, is hereby amended by deleting the section in its entirety and substituting the following in its place:

310.3(B) Conductor Material. Conductors in this article shall be of copper, aluminum or copper-clad aluminum unless otherwise specified. Aluminum and copper-clad aluminum conductors shall be no less than 4 AWG in size, shall only be used for service entrance conductors or feeders, and shall be AA-8000 series electrical grade aluminum alloy conductor material.

[Code 2006 § 7-3-2. Ord. 98-05, 3-24-1998; Ord. 2007-16, 10-23-2007; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019; Ord. 2022-07 § 1, 9-27-2022].

Chapter 15.20

MECHANICAL CODE

Sections:

- 15.20.010** **Adoption of the International Mechanical Code.**
- 15.20.020** **Amendments to the International Mechanical Code.**

15.20.010 Adoption of the International Mechanical Code.

That certain code entitled International Mechanical Code, 2024 Edition, as amended and codified, published by the International Code Council, Inc., three copies of which are available for public inspection in the office of the director of community development, is hereby adopted as the mechanical code of the city and made a part of this title the same as though set forth in full herein, excepting those portions hereinafter deleted or amended. [Code 2006 § 7-4-1. Ord. 98-05, 3-24-1998; Ord. 2007-16, 10-23-2007; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.20.020 Amendments to the International Mechanical Code.

The International Mechanical Code, 2024 Edition, is modified as follows:

A. Section 101.1, Title, is hereby amended by replacing "Name of Jurisdiction" with "City of Sedona."

B. Section R103.1 Creation of agency, is hereby amended by adding the words "Building Safety Department" in place of "Insert Name of Department."

C. Section 105.4.3, Expiration, is hereby amended by adding the following to the end of the first sentence:

Lack of a scheduled and performed qualified inspection within 180 days constitutes a suspension or abandonment of work, and therefore an expiration of the permit.

D. Section 105.4.4, Extensions, is hereby amended by deleting the last sentence in its entirety.

E. Sections 108.2, Schedule of permit fees, is hereby amended by adding the following to the end of the section:

Fees shall be assessed in accordance with SCC [15.05.060](#).

F. Section 108.6, Refunds, is hereby amended by adding the following to the end of the section:

Refunds that are within the scope of this Section shall be assessed in accordance with the provisions of this section and as set forth in SCC [15.05.060](#).

G. Section 111.2, Required inspection and testing, is hereby amended by adding the following new Item 4:

4. Unless otherwise permitted by the Building Official due to the minor nature of the installation or other factors, test and balance report(s), performed by a third party, certified test and balance contractor, shall be submitted to the City prior to final inspection. Said test and balance report(s) shall verify compliance of any newly installed or altered ventilation and/or hydronic system(s) and equipment with the approved permit plans, the mechanical code and any applicable standards.

H. Section 112, Means of Appeal, is hereby amended by deletion in its entirety and substituting the following:

Appeals of decisions made by the code official shall be to the Board of Appeals as established in the 2024 International Building Code as amended by the City of Sedona.

I. Section 114.4, Violation penalties, is hereby amended by deleting the section in its entirety and inserting the following:

Section 114.4 Violation penalties. Any person, firm or corporation who shall violate this code shall be subject to the penalties as provided in SCC [1.15.010](#) for each and every such violation and non-compliance as a separate offense. Imposition of penalty for a violation of this code shall not excuse the violation or

permit it to continue. A violation shall be remedied within a reasonable time, and each day that such violation continues unabated shall constitute a separate offense.

J. Section 115.2, Issuance, is hereby amended by adding the following to the end of the section:

The posting of a stop work order on the property for which a stop work order is written constitutes proper issuance and is deemed to meet the required level of service to the property owner and related entities.

K. Section 115.4, Failure to comply, is hereby amended by deleting the section in its entirety and substituting the following:

Any person who shall continue or allow the continuance of any work in or about the structure or property after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, or any person who removes, or causes the removal of, the stop work notice without the consent of the City, shall be subject to fines and penalties as set by the applicable governing authority.

L. Section 403.1, Ventilation system, is hereby amended by adding the following to the end of the section:

Return air for enclosed rooms and areas shall be provided through the use of approved ducts, plenums, transfer ducts and transfer grills. Return air shall not be provided through the use of under-door cuts or openings.

M. Section 506.3.11, Grease duct enclosures, is hereby amended by deleting the Exception in its entirety.

[Code 2006 § 7-4-2. Ord. 98-05, 3-24-1998; Ord. 2007-16, 10-23-2007; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

Chapter 15.25

DANGEROUS BUILDINGS CODE

Sections:

15.25.010 Adoption of the Uniform Code for the Abatement of Dangerous Buildings.

15.25.020 Amendments to the Uniform Code for the Abatement of Dangerous Buildings.

15.25.010 Adoption of the Uniform Code for the Abatement of Dangerous Buildings.

That certain code entitled Uniform Code for the Abatement of Dangerous Buildings, 1994 Edition, as amended and codified, published by the International Conference of Building Officials, three copies of which are available for public inspection in the office of the director of community development, is hereby adopted as the dangerous buildings code of the city, and made a part of this title the same as though set forth in full herein, excepting those portions hereinafter deleted or amended. [Code 2006 § 7-5-1. Ord. 98-05, 3-24-1998; Ord. 2007-16, 10-23-2007].

15.25.020 Amendments to the Uniform Code for the Abatement of Dangerous Buildings.

The Uniform Code for the Abatement of Dangerous Buildings, 1994 Edition, is modified as follows.

A. Section 601 is hereby amended by adding 601.7 to read:

601.7 Appeals. The City of Sedona Board of Adjustment is hereby designated and authorized to act as the Board of Appeals to hear and decide appeals of orders, decisions, or determinations made by the building official relative to the application and interpretation of this code. All decisions of this Board relative to this Code shall be final.

B. Sections 801.1 and 802.1, and Chapter 9, Section 901 are hereby amended by deleting “Director of Public Works” wherever that term appears and substituting “Director of Community Development” in its place. [Code 2006 § 7-5-2. Ord. 98-05, 3-24-1998; Ord. 2007-16, 10-23-2007; Ord. 2014-02 § 1, 1-28-2014].

Chapter 15.30 INTERNATIONAL FUEL GAS CODE

Sections:

- 15.30.010 Adoption of the International Fuel Gas Code.**
- 15.30.020 Amendments to the International Fuel Gas Code.**

15.30.010 Adoption of the International Fuel Gas Code.

That certain code entitled International Fuel Gas Code, 2024 Edition, published by the International Code Council, Inc., three copies of which are available for public inspection in the office of the director of community development, is hereby adopted as the fuel gas code of the city and made a part of this title the same as though set forth in full herein, excepting those portions hereinafter deleted or amended. [Code 2006 § 7-6-1. Ord. 2007-16, 10-23-2007; Ord. 2010-04 § 1, 1-12-2010; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.30.020 Amendments to the International Fuel Gas Code.

The 2024 International Fuel Gas Code is hereby modified as follows:

A. Section 101.1, Title, is hereby amended by replacing “Name of Jurisdiction” with “City of Sedona.”

B. Section R103.1 Creation of agency, is hereby amended by adding the words “Building Safety Department” in place of “Insert Name of Department.”

C. Section 105.5.3, Expiration, is hereby amended by adding the following to the end of the first sentence:

Lack of a scheduled and performed qualified inspection within 180 days constitutes a suspension or abandonment of work, and therefore an expiration of the permit.

D. Section 105.5.4, Extensions, is hereby amended by deleting the last sentence in its entirety.

E. Sections 108.2, Schedule of permit fees, is hereby amended by adding the following to the end of the section:

Fees shall be assessed in accordance with SCC [15.05.060](#).

F. **Section 108.6, Refunds**, is hereby amended by adding the following to the end of the section:

Refunds that are within the scope of this Section shall be assessed in accordance with the provisions of this section and as set forth in SCC [15.05.060](#).

G. **Section 112, Means of Appeal**, is amended by deletion in its entirety and substituting the following:

Appeals of decisions made by the code official shall be to the Board of Appeals as established in the 2024 International Building Code as amended by the City of Sedona.

H. **Section 113.4, Violation penalties**, is hereby amended by deleting the section in its entirety and inserting the following:

Section 114.4 Violation penalties. Any person, firm or corporation who shall violate this code shall be subject to the penalties as provided in SCC [1.15.010](#) for each and every such violation and non-compliance as a separate offense. Imposition of penalty for a violation of this code shall not excuse the violation or permit it to continue. A violation shall be remedied within a reasonable time, and each day that such violation continues unabated shall constitute a separate offense.

I. **Section 114.2, Issuance**, is hereby amended by adding the following to the end of the section:

The posting of a stop work order on the property for which a stop work order is written constitutes proper issuance and is deemed to meet the required level of service to the property owner and related entities.

J. **Section 114.4, Failure to comply**, is hereby amended by deleting the section in its entirety and substituting the following:

Any person who shall continue or allow the continuance of any work in or about the structure or property after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, or any person who removes, or causes the removal of, the stop work notice without the consent of the City, shall be subject to fines and penalties as set by the applicable governing authority.

K. **Section 404.12, Minimum burial depth**, is hereby amended by adding the following to the end of the paragraph:

However, in cases other than that specified in Section 404.12.1, underground plastic piping systems shall be installed a minimum depth of 18 inches below grade to the top of the pipe.

L. Section 404.12.1, Individual outdoor appliances, is hereby amended by adding the following to the end of the paragraph:

However, in such cases, underground plastic piping systems shall be installed a minimum depth of 12 inches to the top of the pipe or in accordance with the manufacturer's installation guidelines, whichever is deeper.

M. Section 406.4, Test pressure measurement, is hereby amended by adding the following to the end of the paragraph:

Where the test pressure requirement is 10 psig or less the test pressure measurement shall be a gauge having a reading of one tenth of a pound per square inch (0.10 psi) increments.

N. Section 406.4.1, Test pressure, is hereby amended by deleting "3 psig (20kPa gauge)" and replacing with "10 psig."

O. Section 409.3.2, Individual Buildings, is hereby amended by deleting in its entirety and substituting the following:

Section 409.3.2, Individual Buildings. Gas piping shall be equipped with separate shutoff valves located at each building and so arranged that the gas supply can be turned on or off to any individual or separate building. Such shutoff shall be placed on the riser located outside the building it supplies and shall be readily accessible at all times.

[Code 2006 § 7-6-2. Ord. 2007-16, 10-23-2007; Ord. 2010-04 § 1, 1-12-2010; Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

Chapter 15.35

ADOPTION OF TECHNICAL DOCUMENTS

Sections:

15.35.010 Adoption of Maricopa Association of Governments (MAG) Uniform Standard Specifications and Uniform Standard Details for Public Works Construction.

15.35.020 Adoption of Institute of Transportation Engineers (ITE) guidelines.

15.35.010 Adoption of Maricopa Association of Governments (MAG) Uniform Standard Specifications and Uniform Standard Details for Public Works Construction.

Those certain specifications entitled “Maricopa Association of Governments Uniform Standard Specifications and Uniform Standard Details for Public Works Construction,” sponsored and distributed by the Maricopa Association of Governments (MAG), are hereby adopted by the city and made part of this title the same as though said specifications were specifically set forth in full herein; and at least three copies of the specifications shall be available for public inspection in the office of the city engineer. [Code 2006 § 7-8-1. Ord. 98-05, 3-24-1998; Ord. 2008-05, 6-10-2008].

15.35.020 Adoption of Institute of Transportation Engineers (ITE) guidelines.

Those certain documents specified as follows are hereby adopted by the city as specifications, and made part of this title the same as though the specifications were specifically set forth in full herein; and at least three copies of the specifications shall be available in the office of the city engineer. In case of conflict between these standards, and between these standards and other city standards, the city engineer shall determine the applicable standard:

- A. Guidelines for Driveway Location and Design, ITE Publication No. RP-006B;
- B. Guidelines for Residential Subdivision Streets – A Recommended Practice, ITE Publication No. RP-011C. [Code 2006 § 7-8-2. Ord. 98-05, 3-24-1998; Ord. 2008-05, 6-10-2008].

Chapter 15.40

INTERNATIONAL EXISTING BUILDING CODE

Sections:

- 15.40.010** **Adoption of the International Existing Building Code.**
- 15.40.020** **Amendments to the International Existing Building Code.**

15.40.010 Adoption of the International Existing Building Code.

That certain code entitled International Existing Building Code, 2024 Edition, as amended and codified, published by the International Code Council, Inc., three copies of which are available for public inspection in the office of the director of community development, is hereby adopted as the existing building code of the city and made a part of this title the same as though set forth in full herein, excepting those portions hereinafter deleted or amended. [Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.40.020 Amendments to the International Existing Building Code.

The International Existing Building Code, 2024 Edition, is modified as follows:

- A. Section 101.1, Title, is hereby amended by replacing “Name of Jurisdiction” with “City of Sedona.”
- B. Section 103.1, Creation of agency, is hereby amended by replacing “Insert Name of Department” with “City of Sedona Building Safety Department”.
- C. Section 105.2, Work exempt from permit, is hereby amended by deleting Building Items 3 and 4 in their entirety.
- D. Section 108.2, Schedule of permit fees, is hereby amended by deleting the section in its entirety and inserting the following:

108.2 Schedule of permit fees. The fees for activities and services performed by the department in carrying out its responsibilities under this code shall be assessed in accordance with SCC [15.05.060](#).

E. Section 112, **Means of Appeals**, is hereby amended by deletion in its entirety and substituting the following:

112 – Means of Appeals. Appeals of decisions made by the code official or agent of the code official shall be to the Board of Appeals as established in the **2024** International Building Code as amended by the City of Sedona.

F. Section 114.2, Issuance, is hereby amended by removing the first sentence in its entirety and inserting the following:

A stop work order shall be in writing and shall be given to the owner of the property, to the owner's authorized agent, or to the person performing the work, or shall be posted on the structure or on site in a conspicuous location.

G. Section R114.4, **Failure to comply**, is hereby amended by deletion in its entirety and substituting the following:

Section R114.4 **Failure to comply**. Any person who shall continue or allow the continuance of any work in or about the structure or property after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, or any person who removes, or causes the removal of, the stop work notice without the consent of the City, shall be subject to fines and penalties as set by the applicable governing authority.

[Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

Chapter 15.45

INTERNATIONAL ENERGY CONSERVATION CODE

Sections:

- | | |
|------------------|--|
| 15.45.010 | Adoption of the International Energy Conservation Code. |
| 15.45.020 | Amendments to the International Energy Conservation Code. |

15.45.010 Adoption of the International Energy Conservation Code.

That certain code entitled International Energy Conservation Code, 2018 Edition, as amended and codified, published by the International Code Council, Inc., three copies of which are available for public inspection in the office of the director of community development, is hereby adopted as the energy conservation code of the city and made a part of this title the same as though set forth in full herein, including Appendix Chapters CA, Solar Ready Zone – Commercial, and CB, Electrical Vehicle Ready Parking Areas – Commercial, and excepting those portions hereinafter deleted or amended. [Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.45.020 Amendments to the International Energy Conservation Code.

The International Energy Conservation Code, 2018 Edition, is modified as follows:

- A. Section C101.1 Title, is hereby amended by replacing “Name of Jurisdiction” with “City of Sedona.”
- B. Section C104.2, Schedule of permit fees, is hereby amended by deleting the section in its entirety and inserting the following:

The fees for activities and services performed by the department in carrying out its responsibilities under this code shall be assessed in accordance with SCC [15.05.060](#).

- C. Section C108.2, Issuance, is hereby amended by removing the first sentence in its entirety and inserting the following:

A stop work order shall be in writing and shall be given to the owner of the property, to the owner’s authorized agent, or to the person performing the work, or shall be posted on the structure or on site in a conspicuous location.

- D. Section C108.4, Failure to comply, is hereby deleted in its entirety and replaced by the following:

Section C108.4 Failure to comply and/or removal of stop work notice. Any person who shall continue or allow the continuance of any work in or about the structure or property after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, or any person who removes, or causes the removal of, the stop work notice without the consent of the City, shall be subject to fines and penalties as set by the applicable governing authority.

E. Section C109, Board of Appeals, is hereby amended by deletion in its entirety and substituting the following:

Appeals of decisions made by the code official shall be to the Board of Appeals as established in the 2018 International Building Code as amended by the City of Sedona.

F. Table C301.1, CLIMATES ZONES, MOISTURE REGIMES, AND WARM-HUMID DESIGNATIONS BY STATE, COUNTY AND TERRITORY, is hereby amended by identifying Climate Zone 4B as the Climate Zone for the entire City of Sedona.

G. Appendix CB is hereby added as a new appendix as follows:

Appendix CB Electrical Vehicle Ready Parking Areas – Commercial

CB 101.1 General. These provisions shall be applicable for new construction where electrical vehicle ready provisions are required in Section CB 201.1.

CB 201.1 Electrical vehicle ready parking spaces. For every newly permitted structure governed by, and within the scope of, the International Building Code, with more than 9 parking spaces, 5 percent of the total number of parking spaces shall be capable of supporting future electric vehicle charging stations (EVCS) and said spaces shall be identified on the construction documents along with the location of the proposed EVCS. At least one EVCS shall be located in common use areas and available for use by all residents. (Note: When calculating the required electrical vehicle ready parking spaces, rounding shall be used to the nearest whole number. Where the calculations fall at the midpoint of a whole number, the number must be rounded up.)

CB 201.2 Design and installation requirements – Single EVCS required. When only one EVCS space is required, a 208/240-volt individual branch circuit or a listed raceway to accommodate a future individual branch circuit shall be installed. The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). The raceway shall originate at the main service or subpanel and shall terminate into a listed cabinet, box or other enclosure in close proximity to the proposed location of the electric vehicle charger. Construction documents shall identify the raceway termination point. The service

panel or subpanel circuit directory shall provide capacity to install a 40-ampere minimum dedicated branch circuit and space(s) reserved to permit installation of a branch circuit overcurrent device. Electric vehicle supply equipment shall be installed in accordance with NFPA 70.

CB 201.3 Design and installation requirements – Multiple EVCS required. Construction documents shall indicate the raceway termination point and proposed location of future EVCS and electric vehicle chargers. Construction documents shall also provide information on amperage of future electric vehicle supply equipment (EVSE), raceway methods(s) wiring schematics and electrical panel service capacity and electrical system, including any on-site distribution transformer(s), have sufficient capacity to simultaneously charge all electric vehicles at all required EVCS at the full rated amperage of the EVSE. Plan design shall be based upon 40-ampere minimum branch circuit. Raceways and related components that are planned to be installed underground, enclosed, inaccessible or in concealed areas and spaces shall be installed at time of the original construction. Electric vehicle supply equipment shall be installed in accordance with NFPA 70.

CB 201.4 Identification. The service panel or subpanel circuit directory shall identify the overcurrent protective device space(s) reserved for future electric vehicle charging as “EV CAPABLE”. The raceway termination location shall be permanently and visibly marked as “EV CAPABLE”.

H. Section R101.1, Title, is hereby amended by replacing “Name of Jurisdiction” with “City of Sedona.”

I. Section R104.2, Schedule of permit fees, is hereby amended by deleting the section in its entirety and inserting the following:

The fees for activities and services performed by the department in carrying out its responsibilities under this code shall be assessed in accordance with SCC [15.05.060](#).

J. Section R108.2, Issuance, is hereby amended by removing the first sentence in its entirety and inserting the following:

A stop work order shall be in writing and shall be given to the owner of the property, to the owner’s authorized agent, or to the person performing the work, or shall be posted on the structure or on site in a conspicuous location.

K. Section R108.4, Failure to comply, is hereby deleted in its entirety and replaced by the following:

Section R108.4 Failure to comply and/or removal of stop work notice. Any person who shall continue or allow the continuance of any work in or about the structure or property after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, or any person who removes, or causes the removal of, the stop work notice without the consent of the City, shall be subject to fines and penalties as set by the applicable governing authority.

L. Section R109, Board of Appeals, is hereby amended by deletion in its entirety and substituting the following:

Appeals of decisions made by the code official shall be to the Board of Appeals as established in the 2018 International Building Code as amended by the City of Sedona.

M. Table R301.1, CLIMATES ZONES, MOISTURE REGIMES, AND WARM-HUMID DESIGNATIONS BY STATE, COUNTY AND TERRITORY, is hereby amended by identifying Climate Zone 4B as the Climate Zone for the entire City of Sedona.

[Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

Chapter 15.50

INTERNATIONAL SWIMMING POOL AND SPA CODE

Sections:

- 15.50.010** **Adoption of the International Swimming Pool and Spa Code.**
- 15.50.020** **Amendments to the International Swimming Pool and Spa Code.**

15.50.010 Adoption of the International Swimming Pool and Spa Code.

That certain code entitled International Swimming Pool and Spa Code, 2024 Edition, as amended and codified, published by the International Code Council, Inc., three copies of which are available for public inspection in the office of the director of community development, is hereby adopted as the swimming pool and spa code of the city and made a part of this title the

same as though set forth in full herein, excepting those portions hereinafter deleted or amended. [Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.50.020 Amendments to the International Swimming Pool and Spa Code.

The International Swimming Pool and Spa Code, 2024 Edition, is modified as follows:

A. Section 101.1, Title, is hereby amended by replacing “Name of Jurisdiction” with “City of Sedona.”

B. Section 102.9, Other laws, is hereby amended by adding the following to the end of the sentence:

...including Arizona Statute [36-1681](#), except that Section (D)(7) of Statute [36-1681](#) is hereby deleted in its entirety.

C. Section 103.1, Creation of agency, is hereby amended by replacing “Insert Name of Department” with “City of Sedona Building Safety Department”.

D. Section 105.4.3, Expiration, is hereby amended by adding the following to the end of the first sentence:

Lack of a scheduled and performed inspection within 180 days constitutes a suspension or abandonment of work, and therefore an expiration of the permit.

E. Section 105.4.4, Extensions, is hereby amended by deleting the last sentence in its entirety.

F. Section 109.2, Schedule of permit fees, is hereby amended by deleting the section in its entirety and inserting the following:

109.2 Schedule of permit fees. The fees for activities and services performed by the department in carrying out its responsibilities under this code shall be assessed in accordance with SCC [15.05.060](#).

G. Section 109.6, Refunds, is hereby amended by adding the following to the end of the section:

Refunds that are within the scope of this Section shall be assessed in accordance with the provisions of this section and as set forth in SCC [15.05.060](#).

H. Section 112 – Means of Appeals, is hereby amended by deletion in its entirety and substituting the following:

Section 112 – Means of Appeals. Appeals of decisions made by the code official shall be to the Board of Appeals as established in the 2024 International Building Code as amended by the City of Sedona.

I. Section 113.4, Violation penalties, is hereby amended by deleting the section in its entirety and inserting the following:

Section 113.4 Violation penalties. Any person, firm or corporation who shall violate this code shall be subject to the penalties as provided in SCC [1.15.010](#) for each and every such violation and non-compliance as a separate offense. Imposition of penalty for a violation of this code shall not excuse the violation or permit it to continue. A violation shall be remedied within a reasonable time, and each day that such violation continues unabated shall constitute a separate offense.

J. Section 114.2, Issuance, is hereby amended by removing the first sentence in its entirety and inserting the following:

Such notice shall be in writing and shall be given to the owner of the property, or to the owner's authorized agent, or to the person performing the work, or shall be posted on the building or on site in a conspicuous location.

K. Section 114.4, Failure to comply, is hereby amended by deletion in its entirety and substituting the following:

114.4 Failure to comply. Any person, firm or corporation who removes a stop work order without authorization from the Building Official, or who shall continue any work in or about the structure after having been served a stop work order, or where a stop work order has been posted, except such work as that person, firm or corporation is directed to perform to remove a violation or unsafe condition, shall be subject to the penalties as provided in SCC [1.15.010](#) for each and every such violation and non-compliance as a separate offense. Imposition of penalty for a violation of this code

shall not excuse the violation or permit it to continue. A violation shall be remedied within a reasonable time, and each day that such violation continues unabated shall constitute a separate offense.

L. Section 305.1, General, is hereby amended by deletion in its entirety and substituting the following:

305.1 General. The provisions of this section shall apply to the design of barriers for restricting entry into areas having pools and spas. Where spas and above-ground hot tubs having a height of at least 28" above grade on all sides for a distance of three feet (3'-0") horizontal are equipped with a lockable safety cover complying with ASTM F1346, the areas where those spas or hot tubs are located shall not be required to comply with Sections 305.2 through 305.7.

M. Section 305.2.1, Barrier height and clearances, is hereby amended by deleting "48 inches (1219 mm)" from Item 1 and replacing with "60 inches."

N. Section 305.3.3, Latch release, is hereby amended by deletion of the first sentence in its entirety and substituting the following:

Where door, gate latch and motorized cover release or operation mechanism are of the self-locking type, such as where the lock or cover is operated by means of a key, switch, an electronic opener or the entry of a combination into an integral combination lock, the lock or cover operation control and the latch release mechanism shall be located above the finished floor or ground surface in accordance with the following:

O. Section 305.3.3, Latch release, is hereby amended by deleting "3 inches (76 mm)" from Item 3 and replacing with "5 inches (127 mm)".

P. Section 305.3.4, Barriers adjacent to latch release mechanism, is hereby amended by deleting "18 inches (457 mm)" from the section and replacing with "24 inches (609.6 mm)".

Q. Section 305.4, Structure wall as a barrier, is hereby amended by deleting Items 1, 2, 3 and 4 in their entirety.

R. Section 305.4, Structure wall as a barrier, is hereby amended by deleting Item 6 in its entirety adding in its place the following new Item 6:

6. All ground level doors or other doors with direct access to the swimming pool or other contained body of water shall be equipped with self-closing, self-latching devices which meet the requirements of Section 305.3.3. Emergency escape or rescue windows from sleeping rooms with access to the

swimming pool or other contained body of water shall be equipped with a latching device not less than 54 inches above the adjacent finished floor. All other openable dwelling unit or guest room windows with similar access shall be equipped with a screwed in place wire mesh screen, or a keyed lock that prevents the window from opening more than 4 inches, or a latching device located not less than 54 inches above the adjacent finished floor.

S. Section 305.5, Onground residential pool structure as a barrier, is hereby amended by deleting “48 inches (1219 mm)” from Items 1 and 2 and replacing with “60 inches.” [Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

Chapter 15.55

INTERNATIONAL PROPERTY MAINTENANCE CODE

Sections:

15.55.010 Adoption of the International Property Maintenance Code.

15.55.020 Amendments to the International Property Maintenance Code.

15.55.010 Adoption of the International Property Maintenance Code.

That certain code entitled International Property Maintenance Code, 2024 Edition, as amended and codified, published by the International Code Council, Inc., three copies of which are available for public inspection in the office of the director of community development, is hereby adopted as the property maintenance code of the city and made a part of this title the same as though set forth in full herein, excepting those portions hereinafter deleted or amended. [Ord. 2019-05 § 1, 9-24-2019; Res. 2019-18 Exh. A, 9-24-2019].

15.55.020 Amendments to the International Property Maintenance Code.

The International Property Maintenance Code, 2024 Edition, is modified as follows:

A. Section 101.1 Title, is hereby amended by replacing "Name of Jurisdiction" with "City of Sedona."

B. Section 103.1 Creation of agency, is hereby amended by replacing "Insert Name of Department" with "City of Sedona Code Enforcement and Building Safety Departments" in the first sentence.

C. Section 103.1 Creation of agency, is hereby amended by replacing "is" with "are" in the first sentence.

D. Section 104.1 Fees, is hereby amended by deleting the section in its entirety and inserting the following:

The fees for activities and services performed by the department in carrying out its responsibilities under this code shall be assessed in accordance with SCC [15.05.060](#).

E. Section 106 – Means of Appeals, is hereby amended by deletion in its entirety and substituting the following:

Appeals of decisions made by the code official shall be to the Board of Appeals as established in the 2024 International Building Code as amended by the City of Sedona.

F. Section 108.2, Issuance, is hereby amended by removing the first sentence in its entirety and inserting the following:

A stop work order shall be in writing and shall be given to the owner of the property, to the owner's authorized agent, or to the person performing the work, or shall be posted on the structure or on site in a conspicuous location.

G. Section 108.4, Failure to comply, is hereby deleted in its entirety and replaced by the following:

Section 108.4 Failure to comply and/or removal of stop work notice. Any person who shall continue or allow the continuance of any work in or about the structure or property after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, or any person who removes, or causes the removal of, the stop work notice without the consent of the City, shall be subject to fines and penalties as set by the applicable governing authority.

H. Section 302.4 Weeds, is hereby amended by replacing “Jurisdiction to Insert Height in Inches” with “12 inches (304.8 mm)”.

I. Section 303.2 Enclosures, is hereby amended by deletion in its entirety and substituting the following:

303.2 Enclosures. Pools, hot tubs and spas and their required barriers shall comply with the 2024 International Swimming Pool and Spa Code as amended by the City of Sedona.

J. Section 304.14 Insect screens, is hereby amended by deletion in its entirety.

K. Section 402.1 Habitable spaces, is hereby amended by inserting the following at the end of the section:

Exception: Where compliance with the 2024 International Residential Code or the 2024 International Building Code is demonstrated.

L. Section 403.1 Habitable spaces, is hereby amended by inserting the following at the end of the section:

Exception: Where compliance with the 2024 International Residential Code or the 2024 International Building Code is demonstrated.

The Sedona City Code is current through Ordinance 2025-05, passed May 13, 2025.

Disclaimer: The city clerk’s office has the official version of the Sedona City Code. Users should contact the city clerk’s office for ordinances passed subsequent to the ordinance cited above.

[City Website: www.SedonaAZ.gov](http://www.SedonaAZ.gov)

[Hosted by General Code.](#)

Proposed Building Code Amendment Significant Changes:

International Building Code:			
Section	Current Language	Proposed Change	Notes
105.2 Work exempt from permit	5. Water tanks supported directly on grade if the capacity is not greater than 5,000 gallons (18,925 L) and the ratio of height to diameter or width is not greater than 2:1.	5. Water tanks supported directly on grade if the capacity is not greater than 800 gallons (3,028.3 L) and the ratio of height to diameter or width is not greater than 2:1.	At a 2:1 ratio, a 4 foot diameter tank would be 8 foot in height. The capacity of such a tank would be just over 750 gallons.
International Residential Code:			
Section	Current Language	Proposed Change	Notes
Appendix BK: COB Construction	None.	Adopting Appendix as written.	Per the ICC Codes, Appendices are not enforceable unless specifically adopted by the City. This Appendix provides us with standards and code requirements for a home being built using Cob construction, an alternative building method, also known as monolithic adobe.
Appendix BL: Hemp-Lime (Hempcrete) Construction	None.	Adopting Appendix as written.	Per the ICC Codes, Appendices are not enforceable unless specifically adopted by the City. This Appendix provides us with standards and code requirements for a home being built using Hemp-Lime construction, an alternative building method, also known as hempcrete.
Appendix BM: 3D-Printed Building Construction	None.	Adopting Appendix as written.	Per the ICC Codes, Appendices are not enforceable unless specifically adopted by the City. This Appendix provides us with standards and code requirements for a home being built using 3-D Printed building construction, an alternative building method.
Appendix NC: Zero Net Energy Residential Building Provisions	None.	Adopting Appendix as written.	Per the ICC Codes, Appendices are not enforceable unless specifically adopted by the City. This Appendix provides us with standards and code requirements for a new home using Zero Net Energy as an energy compliance alternative.
Appendix ND: Electric Energy Storage Provisions	None.	Adopting Appendix as written except for adding the following new section: Section ND103.1.1 Approved locations.	Per the ICC Codes, Appendices are not enforceable unless specifically adopted by the City. This Appendix provides us with standards

		Energy Storage System (ESS) batteries shall not be installed within a dwelling except that such batteries may be installed within an attached garage. When installed within an attached garage, all walls separating the garage from the dwelling unit shall be protected with minimum 5/8" Type X gypsum board on the garage side	and code requirements for a home using battery systems to store energy from a solar system or other energy source. The new section is being added based upon discussions with the Sedona Fire District, the known difficulty of putting out an energy storage battery fire, the proliferation of battery storage systems, and the want to best protect people in their homes from a storage battery fire.
Appendix NL: Renewable Energy Infrastructure	None.	Adopting Appendix as written.	Per the ICC Codes, Appendices are not enforceable unless specifically adopted by the City. This Appendix provides us with code requirements for new homes to provide infrastructure and clear roof space for future solar (PV) installations. This was adopted previously from the 2018 IRC under a different name and slightly different requirements.
R105.2 Work exempt from permit	4. Water tanks supported directly on grade if the capacity is not greater than 5,000 gallons (18,925 L) and the ratio of height to diameter or width is not greater than 2:1.	4. Water tanks supported directly on grade if the capacity is not greater than 800 gallons (3,028.3 L) and the ratio of height to diameter or width is not greater than 2:1.	At a 2:1 ratio, a 4 foot diameter tank would be 8 foot in height. The capacity of such a tank would be just over 750 gallons. This change is repeated above in the IBC.
R105.2 Work exempt from permit	5. Sidewalks and driveways.	5. Sidewalks, driveways, patios, and other exterior similar exterior flatwork not containing electrical, fuel gas or plumbing installations, but not including sport courts that are required to be built through the issuance of a Conditional Use Permit (CUP).	Removing flatwork that includes plumbing, fuel gas or electrical installations as well as sport courts needing a CUP from this exemption.
R202 – Definition, Substantial Improvement	Any repair, reconstruction, rehabilitation, alteration, addition or other improvement of a building or structure, the cost of which equals or exceeds 50% of the market value of the structure before the improvement or repair is started. (Partial section shown.)	Any repair, reconstruction, rehabilitation, alteration, addition or other improvement of a building or structure, the cost of which equals or exceeds 50% of the construction cost of the structure before the improvement or repair is started. (Partial section shown.)	The wording was changed from "market rate" to "construction cost" at the request of the contractor focus group as market rate is too volatile and often lacks a consensus whereas construction cost has area specific rates from recognized estimating sources such as the Means Cost Data book. Staff concurs with their reasoning.
Table R301.2, Ground Snow Load	25 psf	20 psf	The 25 psf design criteria for ground snow load was a carry over from previous code amendments. However, it is exaggerated for

				this area and 20 psf is in line with most other municipalities in the area. This may create a cost savings in the roof design and installation. The wind speed map in the Building Code was revised the design criteria for this area was lowered to 105 mph V_{ult}
Table R301.2, Wind Speed	115 mph V_{ult}		105 mph V_{ult}	The wall separating townhomes is a fire-resistant rated wall that should be continuous and any penetrations should be firestopped with a listed firestop system. As there are no listed firestop systems for wood penetrations, the second sentence in the proposed section is a clarification for designers and contractors.
R302.2.2, Common walls	Common walls separating townhouse units shall be assigned a fire-resistance rating in accordance with Item 1 or 2 and shall be rated for fire exposure from both sides. Common walls shall extend to and be tight against the exterior sheathing of the exterior walls, and the inside face of exterior walls without stud cavities, and the underside of the roof sheathing. (Partial section shown.)		Common walls separating townhouse units shall be assigned a fire-resistance rating in accordance with Item 1 or 2 and shall be rated for fire exposure from both sides. <i>The common wall separating townhouses and its outer membranes shall not be penetrated by any wood framing including joists, trusses, bracing or purlins.</i> Common walls shall extend to and be tight against the exterior sheathing of the exterior walls, or the inside face of exterior walls without stud cavities, and the underside of the roof sheathing. (Partial section shown.)	
Table 302.6, Dwelling Unit Garage Separation	None.		Separation For garages with storage batteries (ESS), from dwelling units and attics Material Not less than 5/8" Type X gypsum Board or equivalent.	The new lines in this table are being added based upon discussions with the Sedona Fire District, the known difficulty of putting out an energy storage battery fire, the proliferation of battery storage systems, and the want to best protect people in their homes from a storage battery fire. Similar amendments are being added elsewhere in the code where applicable.
R302.13, Fire protection of floors, Exception 2	Floor assemblies located directly over a crawl space not intended for storage or for the installation of fuel-fired or electric-powered heating appliances.		Floor assemblies located directly over a crawl space not intended for storage or for the installation of fuel-fired or electric-powered heating appliances. <i>A crawl space not intended for storage is one that has a clear ceiling height from grade or floor to the underside of the framing above of less than 30" across all areas of the space.</i>	ICC leaves the definition of what "a crawl space not intended for storage" is. We have defined that as a crawl space that has more than 30" of clear height.
R309, Automatic Sprinkler Systems	None.		R309 Automatic Sprinkler Systems, is hereby removed in its entirety. Automatic Fire Sprinkler Systems are regulated by the governing Fire District.	By state statute, municipalities are not permitted to require fire sprinkler systems in one- and two-family dwellings. By removing the section, it clarifies that the Sedona Fire District

R319.1, Emergency escape and rescue opening required	Exceptions: 3. Where the dwelling unit or townhouse unit is equipped with an automatic fire sprinkler system installed in accordance with Section P2904, sleeping rooms in basements shall not be required to have emergency escape and rescue openings provided that the basement has one of the following: 3.1 One means of egress complying with section R318 and one emergency escape and rescue opening. 3.2 Two means of egress complying with Section R318.	None. Exception deleted.	governs fire sprinkler systems and requirements. The same allowance is not granted in the code for bedrooms on the ground or upper levels of the home, even when fully sprinklered. If we are allowing a sleeping room in a below grade area of the house, it should have the same level of protection as sleeping rooms in all other areas of the house.
R330.4, Locations	4. Enclosed utility closets, basements, storage or utility spaces within dwelling units with finished or noncombustible walls and ceilings. Walls and ceilings of unfinished wood-framed construction shall be provided with not less than 5/8" (15.9 mm) Type X gypsum wallboard. (Partial section shown.)	None. Item deleted.	This Item is being deleted based upon discussions with the Sedona Fire District, the known difficulty of putting out an energy storage battery fire, the proliferation of battery storage systems, and the want to best protect people in their homes from a storage battery fire.
Chapter 11 Energy Efficiency	None.	Chapter 11 Energy Efficiency, is hereby deleted in its entirety and substituting Chapter 11 Energy Efficiency of the 2018 International Residential Code with the following amendment to Table 1101.7: Table N1101.7, CLIMATES ZONES, MOISTURE REGIMES, AND WARM-HUMID DESIGNATIONS BY STATE, COUNTY AND TERRITORY, is hereby amended by identifying Climate Zone 4B as the Climate Zone for the entire City of Sedona.	In discussions with the Focus Group and in an effort to help keep building costs down, the current 2018 Energy Code is proposed to remain. It is determined that the additional energy savings does not outweigh the additional costs of the new code. None of the other communities within the area are adopting the 2024 Energy Codes. The amendment to Table N1101.7 indicates that energy designs and requirements can be based upon using Climate Zone 4B for the entire city, even though the Coconino portion of Sedona has a Climate Zone designation of 5B. This currently is a policy, and this amendment will

Section P2603.5.1, Sewer depth	None.	Section P2603.5.1, Sewer Depth, is hereby amended by replacing "Number" in the first sentence with "18" and replacing "Number" in the second sentence with "18".	make it code. This fixes a mistake from the 2018 amendments where the IRC asked for a depth to be added by the municipality and the depth was never placed in our amendments. The minimum used has always been 18", but it was never codified. This same fix will be added below for the IPC.
Section E3406.2 Conductor material	Section E3406.2 Conductor material. Conductors used to conduct current and regulated by this code shall be of copper. All references to the contrary are hereby deleted from this code.	E3406.2 Conductor material. Conductors in this article shall be of copper, aluminum or copper-clad aluminum unless otherwise specified. Aluminum and copper-clad aluminum conductors shall be no less than 4 AWG in size, shall only be used for service entrance conductors or feeders, and shall be AA-8000 series electrical grade aluminum alloy conductor material. All references to the contrary are hereby deleted from this code.	In discussions with the Focus Group and in an effort to reduce the cost of building a dwelling unit, our code would now allow the use of aluminum wiring for service entrance and feeder conductors. The aluminum alloy specified has less expansion and contraction, and corrosion characteristics of previous aluminum wiring, thus greatly reducing the risks of using aluminum.
Section E3901.4.2, Island and peninsular countertops and work surfaces	None.	Section E3901.4.2, Island and peninsular countertops and work surfaces. Receptacle outlets, if installed to serve an island or peninsular countertop or work surface, shall be installed in accordance with Section E3901.4.3. If a receptacle outlet is not provided to serve an island or peninsular countertop or work surface, a minimum ½" raceway shall be provided from the electrical panel serving the required appliance circuits to an approved, covered junction box within or at the island, peninsular countertop or work station. The cover of said junction box shall be labeled, "For future receptacle installation".	The 2024 IRC now gives the builder the option to put in a receptacle(s) for an island or peninsular counter space, where as the 2018 IRC requires that at least one compliant receptacle be installed in each area. The new code also takes away the allowance to install a receptacle in the face of the cabinet within 12" of the countertop and where the countertop did not extend more than 6" beyond the receptacle, and now only allowing a receptacle that is placed within the countertop. The Focus Group liked having the option of whether to install an outlet or not, but wanted the previous option of installing the receptacle in the cabinet instead of trying to cut a hole within an expensive piece of marble or other material. There was also consensus that the pop-up receptacles on the market today were often not of the best quality and often did not work as intended. Building Safety finds no objection to allowing the installation within the face of the cabinet as previously permitted. As this section references

Section E3901.4.3, Receptacle outlet location	None.	Exception: Receptacle outlets shall be permitted to be mounted not more than 12" below the countertop or work surface at islands and peninsular countertops and work surfaces where the surface is flat across its entire surface and there is no means to mount a receptacle within 20" of the countertop, such as in an overhead cabinet. Receptacles mounted below the countertop or work surface in accordance with this exception shall not be located where the countertop or work surface extends more than 6" beyond its support base.	the next section for location allowances, the following section and this are linked together. See explanation for Section E3901.4.2 above.
International Plumbing Code:			
Section	Current Language	Proposed Change	Notes
Section 305.4.1, Sewer Depth	None.	Section 305.4.1, Sewer Depth, is hereby amended by replacing "Number" in the first sentence with "18" and replacing "Number" in the second sentence with "18" .	This fixes a mistake from the 2018 amendments where the IPC asked for a depth to be added by the municipality and the depth was never placed in our amendments. The minimum used has always been 18" , but it was never codified.
National Electrical Code:			
Section	Current Language	Proposed Change	Notes
Section 110.5, Conductors	Conductors normally used to carry current shall be of copper. All references to the contrary are hereby deleted from this code.	Aluminum and copper-clad aluminum conductors shall only be used for service entrance conductors or feeders and shall be AA-8000 series electrical grade aluminum alloy conductor material.	In discussions with the Focus Group and in an effort to reduce the cost of building a dwelling unit, our code would now allow the use of aluminum wiring for service entrance and feeder conductors. The aluminum alloy specified has less expansion and contraction, and corrosion characteristics of previous aluminum wiring, thus greatly reducing the risks of using aluminum.

Section 210.52(C)(2), , Island and Peninsular Countertops and Work Surfaces	None.	210.52(C)(2) Island and Peninsular Countertops and Work Surfaces. Receptacle outlets, if installed to serve an island or peninsular countertop or work surface, shall be installed in accordance with Section 210.52(C)(3). If a receptacle outlet is not provided to serve an island or peninsular countertop or work surface, a minimum ½” raceway shall be provided from the electrical panel serving the required appliance circuits to an approved, covered junction box within or at the island, peninsular countertop or work station. The cover of said junction box shall be labeled, “For future receptacle installation”.	The 2023 NEC now gives the builder the option to put in a receptacle(s) for an island or peninsular counter space, where as the 2018 IRC requires that at least one compliant receptacle be installed in each area. The new code also takes away the allowance to install a receptacle in the face of the cabinet within 12” of the countertop and where the countertop did not extend more than 6” beyond the receptacle, and now only allowing a receptacle that is placed within the countertop. The Focus Group liked having the option of whether to install an outlet or not, but wanted the previous option of installing the receptacle in the cabinet instead of trying to cut a hole within an expensive piece of marble or other material. There was also consensus that the pop-up receptacles on the market today were often not of the best quality and often did not work as intended. Building Safety finds no objection to allowing the installation within the face of the cabinet as previously permitted. As this section references the next section for location allowances, the following section and this are linked together. See explanation for Section 210.52(C)(2) above.
Section 210.52(C)(3), Receptacle Outlet Location	None.	Exception: Receptacle outlets shall be permitted to be mounted not more than 12” below the countertop or work surface at islands and peninsular countertops and work surfaces where the surface is flat across its entire surface and there is no means to mount a receptacle within 20” of the countertop, such as in an overhead cabinet. Receptacles mounted below the countertop or work surface in accordance with this exception shall not be located where the countertop or work surface extends more than 6” beyond its support base.	

Section 310.3(B), Conductor Material	Conductors in this article shall be of copper. All references to the contrary are hereby deleted from this code.	310.3(B) Conductor Material. Conductors in this article shall be of copper, aluminum or copper-clad aluminum unless otherwise specified. Aluminum and copper-clad aluminum conductors shall be no less than 4 AWG in size, shall only be used for service entrance conductors or feeders, and shall be AA-8000 series electrical grade aluminum alloy conductor material.	In discussions with the Focus Group and in an effort to reduce the cost of building a dwelling unit, our code would now allow the use of aluminum wiring for service entrance and feeder conductors. The aluminum alloy specified has less expansion and contraction, and corrosion characteristics of previous aluminum wiring, thus greatly reducing the risks of using aluminum.
International Mechanical Code:			
Section	Current Language	Proposed Change	Notes
Section 403.1, Ventilation system	None.	Return air for enclosed rooms and areas shall be provided through the use of approved ducts, plenums, transfer ducts and transfer grills. Return air shall not be provided through the use of under-door cuts or openings.	This section was in the previous amendments under the IRC, but was never included within the IMC. Having a central return air system that only uses the undercut of the door as its return air path creates large pressure and temperature differentials, puts a strain on the blower motor and is less energy efficient.
International Fuel Gas Code:			
Section	Current Language	Proposed Change	Notes
No substantial changes.			
International Existing Building Code:			
Section	Current Language	Proposed Change	Notes
No substantial changes.			
International Energy Conservation Code:			
Section	Current Language	Proposed Change	Notes
The 2018 IECC will remain as our Energy Code.		None.	In discussions with the Focus Group and in an effort to help keep building costs down, the current 2018 Energy Code is proposed to remain. It is determined that the additional energy savings does not outweigh the additional costs of the new code. None of the other communities within the area are adopting the 2024 Energy Codes.

Table C301.1, CLIMATES ZONES, MOISTURE REGIMES, AND WARM-HUMID DESIGNATIONS BY STATE, COUNTY AND TERRITORY	None.	Table C301.1, CLIMATES ZONES, MOISTURE REGIMES, AND WARM-HUMID DESIGNATIONS BY STATE, COUNTY AND TERRITORY, is hereby amended by identifying Climate Zone 4B as the Climate Zone for the entire City of Sedona.	The amendment to Table N1101.7 indicates that energy designs and requirements can be based upon using Climate Zone 4B for the entire city, even though the Coconino portion of Sedona has a Climate Zone designation of 5B. This currently is a policy, and this amendment will make it code. This same change was made to Table R301.1 in the residential section of the code.
International Swimming Pool and Spa Code:			
Section	Current Language	Proposed Change	Notes
Section 305.1, General	None.	305.1 General. The provisions of this section shall apply to the design of barriers for restricting entry into areas having pools and spas. Where spas and above-ground hot tubs having a height of at least 28" above grade on all sides for a distance of three feet (3'-0") horizontal are equipped with a lockable safety cover complying with ASTM F1346, the areas where those spas or hot tubs are located shall not be required to comply with Sections 305.2 through 305.7.	This proposed amendment removes the allowance to use an ASTM F1346 motorized cover as the principle pool barrier for the property, in lieu of a wall or fence. This change was made for additional safety in the wake of additional pool tragedies in Arizona this past summer and the increase in verified complaints that the pool cover was kept open during and previous to rentals at Short-term Rental properties. If this amendment is approved, ASTM F1346 motorized pool covers will only be able to be used as a barrier to access from the house.
Section 305.3.3, Latch release	None.	Where door, gate latch and motorized cover release or operation mechanism are of the self-locking type, such as where the lock or cover is operated by means of a key, switch, an electronic opener or the entry of a combination into an integral combination lock, the lock or cover operation control and the latch release mechanism shall be located above the finished floor or ground surface in accordance with the following:	Where an ASTM F1346 motorized cover is used, policy has been to require that the switch, key, operating mechanism be located at no less than 54" above the floor or grade, similar to the height of gate latches, window and door latches, etc., so as to prevent operation by small children. This amendment will now codify the required location.
International Property Maintenance Code:			
Section	Current Language	Proposed Change	Notes

2024 International Property Maintenance Code	None. No property maintenance code exists for the City of Sedona.	Complete new code with the exception of the following amendments.	The City has never had a property maintenance code, and this has hampered efforts within the Code Enforcement and Building Safety Departments as our current adopted codes are for new construction whereas this code addresses existing construction and structures. Currently, when attempting to mitigate a house or structure in disrepair, Code Enforcement often can only site the “Unsanitary Structure” provision of the City Code.
Section 304.14 Insect screens	None.	Section 304.14 Insect screens, is hereby amended by deletion in its entirety.	The need for insect screens is not as dire in this location as it is elsewhere in the country. As such, it is proposed to remove this section.
Section 402.1 Habitable spaces	None.	Exception: Where compliance with the 2024 International Residential Code or the 2024 International Building Code is demonstrated.	This section references the requirement for natural lighting in habitable spaces. However, the IRC provides additional options to meet compliance. Thus, this amendment will afford the same options within this code.
Section 403.1 Habitable spaces	None.	Exception: Where compliance with the 2024 International Residential Code or the 2024 International Building Code is demonstrated.	This section references the requirement for natural ventilation in habitable spaces. However, the IRC provides additional options to meet compliance. Thus, this amendment will afford the same options within this code.



Home Innovation
RESEARCH LABS™

ESTIMATED COSTS OF THE 2021 IRC CODE CHANGES

Prepared For
National Association of Home Builders

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ACRONYMS, ABBREVIATIONS, AND DEFINITIONS

ASTM	American Society for Testing and Materials
CPVC	Chlorinated polyvinyl chloride
CY	Cubic yards
DHW	Domestic hot water
dia.	Diameter
EA	Each
ESS	Energy storage systems
HR	Hour
HVAC	Heating, ventilation, and air conditioning
ICC	International Code Council
IECC	International Energy Conservation Code
IN	Inch
IRC	International Residential Code
LF	Linear feet
MPH	Miles per hour
NPT	National pipe thread
O&P	Overhead and profit
PEX	Cross-linked polyethylene
PSF	Pounds per square foot
SF	Square feet
u.i.	United inches, a metric for window size consisting of the sum of the height and width of the window
WSP	Wood structural panel

BACKGROUND

The 2021 International Residential Code (IRC) includes several changes which impact construction costs for residential construction.¹ The objective of this analysis is to quantify the incremental construction cost associated with constructing a house compliant with the 2021 IRC relative to a 2018 IRC baseline. Home Innovation Research Labs (Home Innovation) estimated the expected cost impacts of selected code changes provided by the National Association of Home Builders (NAHB) using four standard Reference Houses sited in various cities nationwide. Cost estimates are aggregated in ranges of high to low based on various methods or components that might be used to comply with the code.

METHODOLOGY

National Construction Cost

Reference Houses and their site locations were initially defined in a report titled *Estimated Costs of the 2015 IRC Code Changes*.² The four Reference Houses were selected for their similarity to new home offerings in the six metropolitan areas selected as site locations – Miami, Dallas, Los Angeles, Seattle, New York, and Chicago, and their size proximity to a national average of 2,607 SF. Additional information on the basis for the Reference House configurations is provided in Appendix C. Elevations and floor plans for these Reference Houses are provided in Appendices D through G. These single-family detached houses define the reference or base house that provides the starting point for estimation of the incremental cost or savings of the code change for the 2021 IRC relative to the 2018 IRC.

For this study, construction costs were developed primarily based on RSMeans 2021 Residential Cost Data.³ Costs for some materials were sourced from distributor websites. Costs associated with testing or fees provided by an energy rater, engineer, or other third party were estimated based on an internet search of associated web sites. Cost details are provided for individual code changes in Appendix A.

Appendix A costs are reported as both total to the builder and total to consumer. The total cost to builder includes overhead and profit (designated in the tables as “w/O&P”) applied to individual component costs (materials and labor) to represent the cost charged by the sub-contractor. The total cost to consumer is based on applying a builder’s gross profit margin of 19.0% to the builder’s total cost.⁴ These costs represent national average costs. For specific locations, the Appendix A costs could be modified by applying the appropriate location adjustment factor from RSMeans; selected location adjustment factors from RSMeans are listed in Appendix B.

¹ International Code Council, www.iccsafe.org/Pages/default.aspx

² Estimated Costs of the 2015 Code Changes, Home Innovation Research Labs, www.homeinnovation.com/trends_and_reports/featured_reports/estimated_costs_of_the_2015_irc_code_changes

³ RSMeans, <https://www.rsmeans.com/>

⁴ Industry average gross profit margin for 2017, as reported in NAHB’s Builder’s Cost of Doing Business Study, 2019 Edition, https://eyeonhousing.org/2019/03/builders-profit-margins-continue-to-slowly-increase/?_ga=2.73913042.1310550892.1620653840-1896975365.1593698293

Reference House Features

The Reference House features used in this analysis are shown in Table 1.

Table 1. Features of the Reference Houses

Feature	Reference House			
	1	2	3	4
Square Feet	2,607	2,607	2,607	2,607
Foundation	Slab	Slab	Basement	Basement
Number of Stories	1	2	1	2
Number of Bedrooms	3	4	3	4
Number of Bathrooms	2	2.5	2	3
Garage, attached	2-car	2-car	2-car	2-car
Heat, Gas Furnace	Yes	Yes	Yes	Yes
Cooling, (Electric) central air	Yes	Yes	Yes	Yes
Hot Water, Gas 50 gallon tank	Yes	Yes	Yes	Yes
9 ft. Ceilings, 1 st	Yes	Yes	Yes	Yes
8 ft. Ceilings, 2 nd	n/a	n/a	Yes	Yes
Energy Star appliances	Yes	Yes	Yes	Yes
Laundry Room	Yes	Yes	Yes	Yes
Walls, 2x4 (Climate Zones 1 & 2)	Yes	Yes	n/a	n/a
Walls, 2x6 (Climate Zones 3 thru 8)	n/a	n/a	Yes	Yes
Basement, Conditioned, Unfinished	n/a	n/a	Yes	Yes
Furnace Location	Attic	Attic	Basement	Basement
Water Heater Location	Interior	Garage	Basement	Basement
Window SF/% gross wall	360/18%	315/12%	360/18%	330/12%
Cladding	Brick, 4 sides	Brick, 4 sides	Brick, 4 sides	Stucco
Roof Pitch	12/12	6/12	9/12	4/12

RESULTS

Estimated Cost of 2021 IRC Code Compliance for Reference Houses by Location

Table 2 summarizes the estimated construction costs of the selected code changes that affect the Reference Houses. The costs are aggregated by location and house configuration. The results are grouped into four climate zone categories and reported in ranges of “High” and “Low” based on the code changes that would typically be applicable to the Reference Houses in those locations. It was assumed that the Reference Houses were not built in coastal zones or subject to flooding.

Table 3 summarizes the estimated construction costs of selected code changes that may or may not affect the Reference Houses and are not included in the aggregated summary. These code changes typically apply only in specific locations (e.g., hurricane-prone areas or flood zones), to items that would be an optional feature for most homes (e.g., decks), or to alternative methods of compliance. Those costs can be added to or subtracted from the aggregated costs in Table 2 as applicable to a particular location or a specific building.

The energy efficiency requirements in the IRC (Chapter 11) are the same as the residential provisions in the International Energy Conservation Code (IECC). Tables 2 and 3 include a line item cost for code changes in the 2021 IECC. This cost represents the total cost of selected changes that were estimated separately in a previous report by Home Innovation.⁵

A detailed analysis of each individual code change is provided in Appendix A.

⁵ Home Innovation Research Labs: 2021 IECC Residential Cost Effectiveness Analysis: https://www.nahb.org/-/media/NAHB/advocacy/docs/top-priorities/codes/code-adoption/2021-iecc-cost-effectiveness-analysis-hirl.pdf?_ga=2.27433528.541784929.1640700746-460189115.1639582871

Table 2. Estimated Cost to Consumer of 2021 IRC Code Compliance

		Selected Cities	Miami, Dallas		Los Angeles, Seattle, New York		Chicago, Helena		Duluth, Fairbanks	
		Climate Zones	1 & 2		3 & 4		5 & 6		7 & 8	
		Reference Houses	1 & 2		1, 2, 3, & 4		3 & 4		3 & 4	
			Cost Range (\$)							
Ref #	Description of Change	2021 IRC Section	High	Low	High	Low	High	Low	High	Low
R-8 (RB164)	Revises the minimum footing size in tables for consistency with common engineering practices.	R403.1; Tables R403.1(1-3)	\$329	\$0	\$329	(\$398)	(\$346)	(\$1,061)	(\$693)	(\$1,061)
R-9 (RB183)	Requires vapor retarders for slab-on-ground floors be 10-mil and conform to ASTM D1743 Class A requirements (formerly required 6-mil)	R506.2.3 Vapor retarder	\$1,093	\$543	\$1,100	\$543	\$1,100	\$543	\$1,100	\$543
R-10 (RB238)	Requires an insulation stop be installed around exterior window and door openings to allow drainage of water.	R703.4.1 Flashing installation	\$1,419	\$1,259	\$1,419	\$1,259	\$1,419	\$1,312	\$1,419	\$1,312
R-11 (RB242)	Divides the water-resistive barrier requirements behind stucco into sections for dry climates and moist or marine climates, and for moist or marine climates requires a 3/16-inch air space or material with high drainage efficiency.	R703.7.3 Water-resistive barriers (stucco)	\$2,654	\$0	\$2,802	\$0	\$2,802	\$0	\$0	\$0
R-12 (RB289)	Adds testing requirements to Appendix AF Radon Control Methods.	AF104 Testing	\$278	\$0	\$278	\$0	\$278	\$0	\$278	\$0
Sub-Total IRC Building Provisions to Consumer			\$5,772	\$1,802	\$5,927	\$1,404	\$5,252	\$794	\$2,105	\$794
Sub-Total IECC Provisions to Consumer			\$8,369	\$3,979	\$11,755	\$3,474	\$11,900	\$4,426	\$8,354	\$6,618
Total to Consumer			\$14,141	\$5,781	\$17,682	\$4,878	\$17,152	\$5,220	\$10,459	\$7,412

Table 3. Additional Cost to Consumer of 2021 IRC Code Compliance Not Attributed to the Reference Houses

		Selected Cities	Miami, Dallas		Los Angeles, Seattle, New York		Chicago		Fairbanks	
		Climate Zones	1 & 2		3 & 4		5 & 6		7 & 8	
		Reference Houses	1 & 2		1, 2, 3, & 4		3 & 4		3 & 4	
			Cost Range (\$)							
Ref #	Description of Change	2021 IRC Section	High	Low	High	Low	High	Low	High	Low
R-1 (G12.2)	Modifies the definition of "windborne debris region" to include sites within one mile of the mean high water line of an Exposure D condition.	R202 Definitions	\$7,174	\$6,105	\$7,174	\$6,105	\$7,174	\$6,378	NA	NA
R-2 (RB40)	Adds hillside homes as an irregular building type to be addressed by engineered design.	R301.2.2.6 Irregular buildings	\$2,222	\$1,728	\$2,222	\$1,728	\$2,222	\$1,728	\$2,222	\$1,728
R-3 (RB43)	Restores the ability to construct a story of a dwelling using 12-foot-high bearing walls without requiring an engineered design.	R301.3 Story height	\$0	(\$1,481)	\$0	(\$1,481)	\$0	(\$1,481)	\$0	(\$1,481)
R-4 (RB46)	Separates the live load requirements for guards and handrails and only requires guards to resist a 200-pound load in the outward and downward directions.	R301.5 Live load; Table R301.5	\$394	(\$301)	\$394	(\$301)	\$394	(\$301)	\$394	(\$301)
R-5 (RB90)	For emergency escape and rescue openings, adds a requirement that window opening control devices shall not exceed 70 inches above the finished floor.	R310.1.1 Operational constraints - control devices	\$1,031	\$0	\$1,031	\$0	\$1,031	\$0	\$1,031	\$0
R-6 (RB152)	Requires a habitable attic to be considered a story above grade plan except where it meets specific criteria.	R326 Habitable attics	\$5,031	\$4,671	\$5,031	\$4,671	\$5,031	\$4,671	\$5,031	\$4,671

R-7 (RB154)	Replaces the term "Stationary Storage Battery Systems" with "Energy Storage Systems (ESS)" and expands requirements for ESS installations.	R202 Definitions; R328 Energy Storage Systems	\$1,919	\$667	\$3,548	\$1,919	\$3,548	NA	\$3,548	NA
R-13 (RB3)	Requires glazed areas in kitchens be openable unless a local exhaust system is installed.	R303.1 Habitable rooms	\$0	(\$222)	\$0	(\$222)	\$0	(\$222)	\$0	(\$222)
R-14 (RP10)	Limits the developed length of hot water piping to 100 feet.	P2905.3 Hot water supply to fixtures	\$784	\$0	\$784	\$0	\$784	\$0	\$784	\$0
IECC Provisions			\$1,401	\$0	\$4,045	\$0	\$4,164	\$0	\$4,105	\$0

APPENDIX A: COST DETAILS OF INDIVIDUAL CODE CHANGES

R-1 (G12.2)

IRC R202 Definitions

Summary of Code Change:

The code change modifies the definition of "windborne debris region" to include sites within one mile of the mean high water line of an Exposure D condition (defined by 5,000 feet or more of open water upwind of the site) instead of just one mile from a coastal mean high water line.

Cost Implication of Code Change:

This revision could require buildings adjacent to wide rivers or large inland lakes but not directly fronting on the Atlantic Ocean or Gulf of Mexico to provide windborne debris protection where not already required by code. Analysis is based on the additional cost to install impact resistant glass (Table R-1-A) or panel type hurricane shutters (Table R-1-D) for the Reference Houses.

Note that installing wood structural panels for protection is an option that is primarily used for existing homes. Table R-1-F shows the estimated cost of wood structural panels as a low cost option for reference, but this cost is not included in rollup Table 3.

Applicability of Code Change:

Applicable for areas within hurricane-prone regions, Exposure D condition, ultimate design wind speed of 140 mph or greater.

Table R-1-A. Incremental Cost of Impact Resistant Windows

Component	Reference House			
	1	2	3	4
Standard window, insulated	(5,133)	(4,525)	(5,133)	(4,728)
Impact resistant window	10,944	9,648	10,944	10,080
Total to Builder	5,811	5,123	5,811	5,352
Total to Consumer	7,174	6,324	7,174	6,607

Table R-1-B. Unit Cost of Windows

Component	Unit	Material	Labor	Total	w/O&P	Cost/SF
Vinyl double-hung, 101 u.i.	EA	197.00		197.00	216.70	13.51
Impact resistant vinyl double-hung, 101 u.i.	EA	420.00		420.00	462.00	28.80

Table R-1-C. Window and Glass Door Area, SF

Reference House	Window	Door	Total
1	360	20	380
2	315	20	335
3	360	20	380
4	330	20	350

Table R-1-D. Cost of Hurricane Panels, Clear Polycarbonate

Component	Reference House			
	1	2	3	4
Hurricane panel, clear polycarbonate	5,609	4,945	5,609	5,166
Total to Builder	5,609	4,945	5,609	5,166
Total to Consumer	6,925	6,105	6,925	6,378

Table R-1-E. Unit Cost of Polycarbonate Hurricane Panels

Component	Unit	Material	Labor	Total	w/O&P
Hurricane panels, clear polycarbonate	SF	10.00	2.28	12.28	14.76

Table R-1-F. Cost of Hurricane Panels, Wood Structural Panels

Component	Reference House			
	1	2	3	4
WSP, 1/2 CDX	2,737	2,395	2,737	2,509
Total to Builder	2,737	2,395	2,737	2,509
Total to Consumer	3,379	2,956	3,379	3,097

Table R-1-G. Unit Cost of Wood Structural Panel

Component	Unit	Material	Labor	Total	w/O&P	Quantity	Cost
4' x 8' x 1/2 CDX	EA	16.64		16.64	18.30	1	18
Storm panel screws	EA	2.34		2.34	2.58	16	41
Labor: cut, install, remove, store	HR				108.90	0.5	54
Total							114

R-2 (RB40)

IRC R301.2.2.6 Irregular buildings

Summary of Code Change:

The code change adds hillside light-frame construction houses as an irregular building type to be addressed by an engineered design, where all criteria apply for grade slope, cripple wall height, and living space below the lowest framed floor, with an exception for concrete or masonry foundations over the full length of all sides except the downhill side.

Cost Implication of Code Change:

This code change may increase the cost of hillside light-frame construction where applicable. Analysis is based on the estimated cost of an engineered design for an average size house. The analysis does not include the additional cost of foundation reinforcing, blocking within the lowest framed floor, tie-backs, and other structural elements as the design of such elements will be project-specific and depend on the seismic design category, grade slope, cripple wall height, foundation type and other features of the house.

Applicability of Code Change:

This code change is applicable to hillside light-frame construction (not applicable to the Reference Houses because those have either slab-on-grade or full basement foundations).

Table R-2-A. Cost of an engineered design for a hillside home: high estimate

Component	Unit	Material	Labor	Total	w/O&P	Quantity	Cost
Engineering fee	EA				1800.00	1	1,800
Total to Builder							1,800
Total to Consumer							2,222

Table R-2-B. Cost of an engineered design for a hillside home: low estimate

Component	Unit	Material	Labor	Total	w/O&P	Quantity	Cost
Engineering fee	EA				1400.00	1	1,400
Total to Builder							1,400
Total to Consumer							1,728

R-3 (RB43)

IRC R301.3 Story height

Summary of Code Change:

The code change adds an exception allowing a story of a dwelling to be constructed using 12-foot-high bearing walls provided the wall studs meet Exception 2 or 3 of Section R602.3.1 or are engineered for gravity and out-of-plane wind loads, and wall bracing amounts for the story in question are adjusted in accordance with Section R602.10.

Cost Implication of Code Change:

Analysis is based on the estimated cost savings where an engineered design is no longer required. The analysis does not include any additional cost savings associated with reduced wall bracing, hold-downs, and other structural elements as the design of such elements will be project-specific and depend on the seismic design category and other features of the house.

Applicability of Code Change:

Applicable for designs with bearing walls up to 12-feet-high.

Table R-3-B. Cost saving where an engineered design is no longer required: high estimate

Component	Unit	Material	Labor	Total	w/O&P	Quantity	Cost
Engineered design	EA				1200.00	(1)	(1,200)
Total to Builder							(1,200)
Total to Consumer							(1,481)

Table R-3-A. Cost saving where an engineered design is no longer required: low estimate

Component	Unit	Material	Labor	Total	w/O&P	Quantity	Cost
Engineered design	EA				600.00	(1)	(600)
Total to Builder							(600)
Total to Consumer							(741)

R-4 (RB46)

IRC Table R301.5

Summary of Code Change:

The code change separates the live load requirements for guards and handrails and only requires guards to resist a 200-pound load in the outward and downward directions, i.e., the guard system is intended to protect against a fall from a higher elevation to a lower elevation.

Cost Implication of the Code Change:

This change may increase or decrease the cost of construction. For 2021, IRC Section R507 Exterior Decks adds a new section R507.10 Exterior guards that requires guard loads be transferred to the deck framing with a continuous load path to the deck joists. Where guards are connected to the side of a deck joist, the joist must be connected to the adjacent joists to prevent rotation of the joist. Section R507.10 does not prescribe methods of attachment.

Analysis is based on two scenarios for a 20-foot wide by 14-foot deep deck, with 11 guard posts (based on maximum 6-foot spacing) installed inside the deck joists. The first scenario represents a cost increase, assuming the guard posts were previously only bolted to the rim joist or side joist with two ½" diameter bolts each post, and no blocking or other method of transferring loads to adjacent joists or deck framing is provided, and now blocking and longer bolts are required (Table R-4-A). The second scenario represents a cost savings, assuming loads from the guard posts were previously transferred to the deck framing using blocking and tension ties at both the top and bottom bolts, and now tension ties are only required for the top bolts (Table R-4-B).

Applicability of Code Change:

Applicable where outdoor decks are installed that require a guard.

Table R-4-A. Incremental Cost of Guard Post Connection Using Blocking & Commodity Fasteners

Component	Unit	Material	Labor	Total	w/O&P	Quantity	Cost
Blocking, 2x10 treated	LF	2.08	1.35	3.43	4.49	50	224
Blocking, 4x4 treated	LF	2.26	1.35	3.61	4.68	8	37
Drill hole for bolts	IN		0.65	0.65	1.06	33	35
1/2 galv bolts, 6"	EA	2.11	2.09	4.20	5.72	(22)	(126)
1/2 galv bolts, 10"	EA	2.77	2.26	5.03	6.73	22	148
Total to Builder							319
Total to Consumer							394

Table R-4-B. Cost Savings of Guard Post Connection Using Blocking and (1) Tension-Tie per post instead of (2)

Component	Unit	Material	Labor	Total	w/O&P	Quantity	Cost
Tension tie, with screws	EA	14.89	3.56	18.45	22.17	(11)	(244)
Total to Builder							(244)
Total to Consumer							(301)

R-5 (RB90)

IRC R310.1.1 Operational constraints and opening control devices (R310 Emergency Escape and Rescue Openings)

Summary of Code Change:

For emergency escape and rescue openings, the code change adds a requirement that window opening control devices shall be not more than 70 inches above the finished floor.

Cost Implication of the Code Change:

This change may increase the cost of construction in some cases. There is no cost impact for an example single-hung or double-hung window, 48-inches tall, installed in a 9-foot tall wall, with a 24-inch vertical opening, 44-inch sill height (maximum allowed), and 2-inch tall latch, where the latch height would be 70 inches.

For a casement window or sliding window with high and low latches, the height of the high latch could exceed 70 inches. For an example casement window, 60-inches tall, with a 32-inch sill height, low latch 20-inches above the sill, and high latch 40-inches above the sill, the height of the high latch above the floor would be 72 inches. The analysis is based on the cost to install a 24-inch tall casement above a 36-inch tall egress casement, in place of a 60-inch tall casement window, based on a quantity of two egress windows in the master bedroom and one egress window in the other three bedrooms. It is assumed that installing a compliant single-hung or double-hung window is not an acceptable choice where the house has all casement windows.

Applicability of Code Change:

Applicable where the latch height of an emergency escape window exceeds 70 inches.

Table R-5-A. Incremental Cost of Compliance for Example Casement Window

Component	Unit	Material	Labor	Total	w/O&P	Quantity	Cost
Vinyl-clad casement, insulated low-E, 2'x5'	EA	355.00	36.50	391.50	450.00	(5)	(2,250)
Vinyl-clad casement, insulated low-E, 2'x3'	EA	266.00	29.50	295.50	340.00	5	1,700
Vinyl-clad casement, insulated low-E, 2'x2'	EA	208.00	29.50	237.50	277.00	5	1,385
Total to Builder							835
Total to Consumer							1,031

R-6 (RB152)

IRC R326 Habitable attics (new)

Summary of Code Change:

The code change requires a habitable attic to be considered a story above grade plane except where it meets specific criteria. For a habitable attic not to be considered a story above grade plane, it must be no greater than 1/3 of the floor area below and can only be located over a first or second story above grade plane. A habitable attic can be up to 1/2 of the floor area below or located over a third story above grade plane if an automatic fire sprinkler system is installed.

Cost Implication of the Code Change:

This code change may increase the cost of construction in some cases. Analysis is based on the additional cost to install a fire sprinkler system for an example townhouse where a habitable attic is provided above the third story of the townhouse, effectively creating a four-story townhouse.⁶ The estimated cost of the sprinkler system is shown in Table R-6-A. The water source is assumed to be public (municipal); homes on well water commonly require a stored water source with pump and tank which can add significantly to the cost of a sprinkler system.

The National Fire Protection Agency (NFPA) reports that the average cost of a residential sprinkler system in 2013 was \$1.35 per “sprinklered” square foot.⁷ That cost rises to \$1.63 when adjusted for inflation through 2021.⁸ The estimated cost of a sprinkler system based on this value for the example townhouse is shown in Table R-6-C.

Applicability of Code Change:

Applicable where a space meeting the criteria to be considered a habitable attic is provided.

⁶ Example townhouse adapted from the Standard Reference Townhouse used by Home Innovation in a prior study: https://www.homeinnovation.com/trends_and_reports/featured_reports/2018_icc_cost_analysis_for_mf_buildings

⁷ Home Fire Sprinkler Cost Assessment – 2013: <https://www.nfpa.org/-/media/Files/News-and-Research/Fire-statistics-and-reports/Suppression/HomeFireSprinklerCostAssessment2013.ashx>

⁸ CPI Inflation Calculator: https://www.bls.gov/data/inflation_calculator.htm

Table R-6-A. Cost of Sprinkler System

Component	Unit	Material	Labor	Total	w/O&P	Quantity*	Cost
Flow alarm	EA	116.00	12.70	128.70	149.00	1	149
Flow switch (valve supervisory switch)	EA	267.00	20.50	287.50	330.00	1	330
Sprinkler head, fast response glass bulb, 135-155°F	EA	37.00	20.50	57.50	74.00	12	888
Sprinkler head escutcheons, standard, brass tone, 1"	EA	3.80	8.25	12.05	17.65	12	212
CPVC fire suppression pipe, 1"	LF	1.81	1.74	3.55	4.84	200	968
CPVC fire suppression tee, 1"	EA	5.05	21.50	26.55	41.00	14	574
CPVC fire suppression 90 elbow, 1"	EA	4.11	14.55	18.66	28.50	12	342
CPVC fire suppression cap, 1"	EA	1.55	7.35	8.90	13.70	4	55
CPVC fire suppression coupling, 1"	EA	2.38	14.55	19.93	26.50	2	53
CPVC fire suppression adapter, metal thread, 1"x1/2"	EA	5.25	7.35	12.60	17.75	12	213
Total to Builder							3,784
Total to Consumer							4,671

***Table R-6-B. Quantity of Sprinkler Heads, 4-story townhouse**

Room	Qty
Bedrooms (3)	4
Bedroom Hallway	1
Attic Loft	1
Living Room	1
Dining Room	1
Family Room	1
Kitchen	1
Garage, ground level	2
Total	12

Table R-6-C. Cost of Sprinkler System based on NFPA reported average cost

Component	Unit	Material	Labor	Total	w/O&P	Quantity	Cost
Reported Cost	SF				1.63	2,500	4,075
Total to Builder							4,075
Total to Consumer							5,031

R-7 (RB154)

IRC R328 Energy Storage Systems

Summary of Code Change:

The code change replaces the term “Stationary Storage Battery Systems” with “Energy Storage Systems (ESS)” and expands requirements for ESS installations. ESS can only be installed in garages, detached accessory structures, outdoors, or inside a dwelling in enclosed utility closets, basements, storage, or utility spaces with finished or noncombustible walls and ceilings. Depending on where an ESS is installed, smoke alarms (and in certain cases heat detectors), vehicle barriers, mechanical ventilation (where charging could produce hydrogen or other flammable gases), and/or an enclosed space with finished or noncombustible walls and ceilings must be provided.

Cost Implication of the Code Change:

Analysis is based on the additional cost for an ESS-ready space in a garage or basement. It is assumed that the ESS does not produce hydrogen or flammable gases and therefore does not require ventilation (otherwise, an explosion-proof ventilation fan would be required). For an ESS-ready space in a garage, it is assumed bollards for protection from vehicles and a smoke detector are provided (Table R-7-A). Alternatively, a cost is provided for protection from vehicles using a curb (Table R-7-B). For an ESS-ready space in a basement, it is assumed a 12-foot by 12-foot enclosed space with wood-frame walls finished with Type X gypsum is provided with a smoke detector for the enclosed space (Table R-7-C).

Applicability of Code Change:

Applicable where an indoor ESS or ESS-ready space is to be installed. Note that manufacturer instructions may limit ESS installation in garages to where the garage temperature will not fall below freezing.

Table R-7-A. ESS-Ready Garage Location: Bollards for Protection from Vehicles

Component	Unit	Material	Labor	Equipment	Total	w/O&P	Quantity	Cost
Impact protection: (3) Safety Bollards, steel, bolted, concrete filled, 5" dia.	LF	58.00	1.93	1.68	61.61	68.50	16	1,096
Footing for bollard	CY	208.00	140.00	0.96	348.96	460.00	0.5	230
Smoke detector, hardwired, ceiling	EA	126.00	55.00		181.00	228.00	1	228
Total to Builder								1,554
Total to Consumer								1,919

Table R-7-B. ESS-Ready Garage Location: Curbs for Protection from Vehicles

Component	Unit	Material	Labor	Equipment	Total	w/O&P	Quantity	Cost
Impact protection: precast concrete curb, 6" wide	LF	9.05	2.10	1.22	12.37	14.70	16	235
Drilling concrete floor for rebar	EA	0.05	5.85		5.90	9.65	8	77
Smoke detector, hardwired, ceiling	EA	126.00	55.00		181.00	228.00	1	228
Total to Builder								540
Total to Consumer								667

Table R-7-C. ESS-Ready Basement Location: 12' x 12' Room

Component	Unit	Material	Labor	Equipment	Total	w/O&P	Quantity	Cost
Partition wall, 2x4, 16oc, 8' tall	LF	6.35	4.89		11.24	15.00	48	720
Door, pre-hung interior, louvered	EA	216.00	34.50		250.50	294.00	1	294
Door, lockset	EA	14.23	24.50		38.73	56.08	1	56
Electrical, duplex outlet, 120V	EA	7.30	23.50		30.80	46.00	4	184
Electrical, lighting switch & outlet	EA	6.85	20.00		26.85	40.00	1	40
Electrical, porcelain lamp holder	EA	2.75	8.55		11.30	16.95	1	17
Electrical, exhaust fan hook-up	EA	5.90	10.70		16.60	24.00	1	24
Smoke detector, hardwired, ceiling	EA	126.00	55.00		181.00	228.00	1	228
HVAC supply branch duct	LF	1.94	2.05		3.99	5.50	15	83
HVAC supply branch register	EA	61.50	21.50		83.00	103.00	1	103
Drywall, 5/8" Type X, finished	SF	0.43	0.61		1.04	1.46	576	841
Paint, latex, spray primer & 1 coat	SF	0.15	0.15		0.30	0.41	576	236
Paint, door	EA	10.70	22.50		33.20	48.00	1	48
Total to Builder								2,874
Total to Consumer								3,548

R-8 (RB164)

IRC R403.1 General (R403 Footings); Tables R403.1(1-3)

Summary of Code Change:

The code change revises the minimum footing width in the footing tables to correct errors in applying structural load combinations and revise the dead and live load assumptions to reflect the most common framing and finishes used in houses. The revisions generally result in smaller footing widths due to the less conservative loading assumptions, though footings for one- and two-story slab-on-grade homes may increase due to correcting the errors in the engineering calculations.

Cost Implication of the Code Change:

The cost analysis compares footing requirements for the Reference Houses using a soil bearing capacity of 2,000 psf, and live/snow loads of 30 psf and 70 psf. The difference in the amount of concrete required for the footings in cubic yards (CY) is used to calculate the cost impact. It is assumed that excavation costs remain the same.

Applicability of Code Change:

Applicable for all Reference Houses.

Table R-8-A. Incremental Cost of Footing, 30 psf snow load

Component	Reference House			
	1	2	3	4
Concrete, 3000 psi, over 5 CY			(280)	(322)
Concrete, 3000 psi, 1-5 CY	0	266		
Total to Builder	0	266	(280)	(322)
Total to Consumer	0	329	(346)	(398)

Table R-8-B. Incremental Cost of Footing, 70 psf snow load

Component	Reference House			
	1	2	3	4
Concrete, 3000 psi, over 5 CY			(561)	(859)
Concrete, 3000 psi, 1-5 CY	0	133		
Total to Builder	0	133	(561)	(859)
Total to Consumer	0	164	(693)	(1,061)

Table R-8-C. Unit Cost of Footing

Component	Unit	Material	Labor	Equip	Total	w/O&P
Concrete, 3000 psi, over 5 CY	CY	245.00	52.50	0.36	297.86	355.00
Concrete, 3000 psi, 1-5 CY	CY	266.00	91.00	0.63	357.63	440.00

Table R-8-D. Quantity of Additional Concrete based on Minimum Footing Size, for Brick Veneer/Stucco, 2,000 psf soil

		Snow	2018 IRC			2021 IRC			Additional
Reference House	LF	Load	Width	Thickness	CY	Width	Thickness	CY	CY
1 (1-story slab)	256	30 psf	12	6	4.7	12	6	4.7	0.0
2 (2-story slab)	196		12	6	3.6	14	6	4.2	0.6
3 (1-story basement)	256		16	6	6.3	14	6	5.5	(0.8)
4 (2-story basement)	196		21	6	6.4	18	6	5.4	(0.9)
1 (1-story slab)	256	70 psf	12	6	4.7	12	6	4.7	0.0
2 (2-story slab)	196		15	6	4.5	16	6	4.8	0.3
3 (1-story basement)	256		20	6	7.9	16	6	6.3	(1.6)
4 (2-story basement)	196		24	7	8.5	20	6	6.0	(2.4)

R-9 (RB183)

IRC R506.2.3 Vapor retarder

Summary of Code Change:

The code change requires vapor retarders for slab-on-ground floors to be minimum 10-mil and conform to ASTM D1743 Class A requirements (formerly required minimum 6-mil construction-grade sheet polyethylene).

Cost Implication of the Code Change:

This code change will increase the cost of construction. Analysis is based on the additional cost of slab-on-ground floors for the Reference Houses, including basements and garages. Note that the vapor barrier is not required for garages, but garages are included as conventional practice and so the contractor need not stock two types of vapor barrier.

Applicability of Code Change:

Applicable for all Reference Houses.

Table R-9-A. Incremental Cost of Vapor Retarder

Component	Reference House			
	1	2	3	4
Vapor retarder, 6-mil poly	(498)	(247)	(502)	(247)
10-mil, ASTM E1745 Class A	1,383	687	1,393	687
Total to Builder	885	440	891	440
Total to Consumer	1,093	543	1,100	543

Table R-9-B. Unit Cost of Vapor Retarder

Component	Unit	Material	Labor	Total	w/O&P
Vapor retarder, 6-mil poly	SF	0.04	0.08	0.12	0.17
10-mil, ASTM E1745 Class A	SF	0.31	0.08	0.39	0.46

Table R-9-C. Slab-on-ground floor area, SF

Reference House	First floor	Garage	Basement	Total
1 (1-story slab)	2,600	380		2,980
2 (2-story slab)	1,080	400		1,480
3 (1-story basement)		400	2,600	3,000
4 (2-story basement)		400	1,080	1,480

R-10 (RB238)

IRC R703.4.1 Flashing installation

Summary of Code Change:

The code change requires air sealing be installed around exterior window and door openings, on the interior side of the rough opening gap, to allow for drainage of water.

Cost Implication of the Code Change:

This code change will increase the cost of construction. Analysis is based on the additional cost to install backer rod, to maintain the rough opening gap for drainage, and seal the backer rod from the interior.

Applicability of Code Change:

Applicable for all Reference Houses.

Table R-10-A. Incremental Cost of Backer Rod and Sealant

Component	Reference House			
	1	2	3	4
Backer rod, polyethylene, 1/4" dia.	443	393	443	410
Sealant, latex acrylic, 1/4" x 1/4" bead	706	627	706	653
Total to Builder	1,150	1,020	1,150	1,063
Total to Consumer	1,419	1,259	1,419	1,312

Table R-10-B. Unit Cost of Backer Rod and Sealant

Component	Unit	Material	Labor	Total	w/O&P
Backer rod, polyethylene, 1/4" dia.	LF	0.03	0.63	0.65	1.06
Sealant, latex acrylic, 1/4" x 1/4" bead	LF	0.10	0.96	1.06	1.69

Table R-10-C. Total Perimeter of Windows and Doors, LF

Reference House	Window Area	Window Perimeter	Door Area	Door Perimeter	Total Perimeter
1	360	378	42	40	418
2	315	331	42	40	371
3	360	378	42	40	418
4	330	347	42	40	387

R-11 (RB242)

IRC R703.7.3 Water-resistive barriers (R703.7 Stucco)

Summary of Code Change:

The code change divides the water-resistive barrier requirements behind stucco into sections for dry climates and moist or marine climates, and for moist or marine climates requires a 3/16-inch air space or material with high drainage efficiency.

Cost Implication of the Code Change:

This code change will increase the cost of construction where applicable. Analysis is based on the incremental cost to install a drainage mat product in addition to the required two layers of water resistive barrier, as shown in Table R-11-A; this cost represents the “high” cost. The low cost would be zero where the code change is not applicable. A cost was also developed for an alternative approach: a drainable house wrap (e.g., Tyvek StuccoWrap) applied as the second layer of water resistive barrier instead of Grade D building paper (Table R-11-D); this cost represents an intermediate cost and therefore is not included in Table 2.

Applicability of Code Change:

Applicable for houses with stucco exterior wall cladding in moist and marine climates.

Table R-11-A. Incremental Cost of Drainage Mat

Component	Reference House			
	1	2	3	4
Drainage Mat (Rainscreen)	1,585	2,150	1,761	2,269
Total to Builder	1,585	2,150	1,761	2,269
Total to Consumer	1,957	2,654	2,174	2,802

Table R-11-B. Unit Cost of Water Resistive Barrier & Drainage Mat Products

Component	Unit	Material	Labor	Total	w/O&P
Drainage Mat (Rainscreen)	SF	0.58	0.08	0.66	0.77
House wrap, drainable	SF	0.24	0.08	0.32	0.39
Building Paper	SF	0.06	0.08	0.14	0.19

Table R-11-C. Gross Wall Area, SF

Reference House	SF
1 (1-story slab)	2,070
2 (2-story slab)	2,808
3 (1-story basement)	2,300
4 (2-story basement)	2,964

Table R-11-D. Incremental Cost of Drainable House Wrap as the Second Layer of Water Resistive Barrier

Component	Reference House			
	1	2	3	4
House wrap, drainable	811	1,100	901	1,161
Building paper	(393)	(534)	(437)	(563)
Total to Builder	417	566	464	598
Total to Consumer	515	699	572	738

R-12 (RB289)

IRC AF104 Testing (Radon)

Summary of Code Change:

The code change adds testing requirements to Appendix AF Radon Control Methods. Testing may be performed by the contractor, a registered design profession (engineer or architect), or an independent third party (i.e., a radon tester certified by the National Radon Proficiency Program or National Radon Safety Board), and the code change includes detailed testing instructions.

Cost Implication of the Code Change:

Analysis is based on the additional cost of radon testing by a certified third party professional.

Applicability of Code Change:

Applicable where radon-resistant construction is required.

Table R-12-A. Cost of Radon Testing

Component	Unit	Material	Labor	Total	w/O&P	Quantity	Cost
Radon testing, third party	EA				225.00	1	225
Total to Builder							225
Total to Consumer							278

R-13 (RB3)

IRC R303.1 Habitable rooms

Summary of Code Change:

The code change requires the glazed areas in the kitchen be openable unless a local exhaust system is installed in accordance with section M1505.

Cost Implication of the Code Change:

Since now the kitchen window need not be openable where an exhaust hood is installed in accordance with M1505 (required), the analysis is based on a potential cost saving to install a non-openable kitchen window.

Applicability of Code Change:

Applicable where the house design includes a kitchen with a window.

Table R-13-A. Cost Savings for Non-Openable Kitchen Window

Component	Unit	Material	Labor	Total	w/O&P	Quantity	Cost
47" x 47" vinyl 2-lite casement window	EA	500.00	34.50	534.50	605.00	(1)	(605)
47" x 47" vinyl picture (fixed pane) window	EA	315.00	49.00	364.00	425.00	1	425
Total to Builder							(180)
Total to Consumer							(222)

R-14 (RP10)

IRC P2905.3

Summary of Code Change:

The code change adds a new section that limits the maximum length of hot water piping, from the source of hot water to the fixtures that require hot water, to 100 feet. Where more than 100 feet of piping is required, either an additional water heater or a recirculation system would need to be installed.

Cost Implication of the Code Change:

This code change will increase the cost of construction where applicable. Analysis is based on the additional cost to install a hot water circulation system.

Applicability of Code Change:

Applicable where the developed length of hot water piping exceeds 100 feet (most likely not applicable at the Reference Houses).

Table R-14-A. Cost of Domestic Hot Water (DHW) Recirculation System

Component	Unit	Material	Labor	Total	w/O&P	Quantity	Cost
DHW recirculation pump, mechanical timer	HR	205.19		205.19	225.71	1	226
Electrical outlet, 120V	EA	7.30	23.50	30.80	46.00	1	46
Check valve, 3/4	EA	7.79	11.90	19.69	28.20	1	28
Shutoff valve, ball valve, 3/4	EA	13.99	11.90	25.89	35.02	2	70
Dedicated return pipe, PEX, 3/4	LF	1.05		1.05	1.16	125	145
PEX piping labor (25% of fittings labor)	EA		20.83	20.83	34.36	1	34
PEX coupling, 3/4 x 3/4 NPT	EA	1.78	11.90	13.68	21.50	4	86
Total to Builder							635
Total to Consumer							784

APPENDIX B: LOCATION ADJUSTMENT FACTORS

State	City	Cost Adjustment Factor	State	City	Cost Adjustment Factor
Alabama	Birmingham	0.84	Montana	Billings	0.89
Alabama	Mobile	0.83	Nebraska	Omaha	0.90
Alaska	Fairbanks	1.21	Nevada	Las Vegas	1.03
Arizona	Phoenix	0.84	New Hampshire	Portsmouth	0.95
Arizona	Tucson	0.84	New Jersey	Jersey City	1.18
Arkansas	Little Rock	0.83	New Mexico	Albuquerque	0.86
California	Alhambra	1.15	New York	Long Island City	1.36
California	Los Angeles	1.15	New York	Syracuse	0.99
California	Riverside	1.13	North Carolina	Charlotte	0.99
California	Stockton	1.20	North Carolina	Hickory	0.93
Colorado	Boulder	0.90	North Carolina	Raleigh	0.94
Colorado	Colorado Springs	0.87	North Dakota	Fargo	0.87
Colorado	Denver	0.91	Ohio	Columbus	0.91
Connecticut	New Haven	1.10	Oklahoma	Oklahoma City	0.84
Delaware	Dover	1.02	Oklahoma	Tulsa	0.83
District of Columbia	Washington, D.C.	0.92	Oregon	Bend	1.02
Florida	Fort Meyers	0.79	Pennsylvania	Norristown	1.05
Florida	Miami	0.83	Pennsylvania	State College	0.94
Florida	Orlando	0.82	Rhode Island	Providence	1.09
Florida	Tampa	0.81	South Carolina	Greenville	0.97
Georgia	Atlanta	0.90	South Dakota	Sioux Falls	0.92
Hawaii	Honolulu	1.22	Tennessee	Memphis	0.87
Idaho	Boise	0.89	Texas	Austin	0.80
Illinois	Chicago	1.25	Texas	Dallas	0.84
Indiana	Indianapolis	0.92	Texas	Houston	0.84
Iowa	Des Moines	0.92	Texas	San Antonio	0.83
Kansas	Wichita	0.81	Utah	Ogden	0.84
Kentucky	Louisville	0.89	Utah	Provo	0.85
Louisiana	Baton Rouge	0.85	Utah	Salt Lake City	0.85
Maine	Portland	0.94	Vermont	Burlington	0.95
Maryland	Baltimore	0.93	Virginia	Fairfax	1.00
Massachusetts	Boston	1.18	Virginia	Winchester	0.99
Michigan	Ann Arbor	0.99	Washington	Tacoma	1.05
Minnesota	Minneapolis	1.09	West Virginia	Charleston	0.94
Mississippi	Biloxi	0.83	Wisconsin	La Crosse	0.95
Missouri	Springfield	0.86	Wyoming	Casper	0.85

Source: RSMeans *Residential Cost Data 2021*. Sample cities are listed in this table; check RSMeans for additional locations.

APPENDIX C: REFERENCE HOUSES

Reference House Configurations

The four Reference House designs used in this analysis are based on the data contained in the Census Bureau report, *Characteristics of New Single-Family Construction Completed*.⁹ The report provides information about building foundation type (Table 1) and number of stories for new single-family detached construction over the previous nine-year period. (Table 2).

Table 1. New Construction Foundation Types

Slab	54%
Crawlspace	17%
Basement	30%

Table 2. New Construction Number of Stories

One-story	53%
Two-story	43%
Three-story	3%

The Census data supports defining the four Reference Houses as follows to encompass approximately 85% of the last decade's new single-family construction:

- One-story on slab foundation
- Two-story on slab foundation
- One-story on basement foundation
- Two-story on basement foundation

Table 3 covers the locations where each type of Reference House foundation would be pragmatically constructed. All these selected cities, except Chicago, lie within the top ten states for construction starts in 2013.¹⁰ Chicago was selected to represent a Climate Zone 5 house.

Table 3. Sites for Reference Houses

Reference House	Climate Zone	1	2	3	4
		Slab	Slab	Basement	Basement
Miami	1	X	X		
Dallas	2	X	X		
Los Angeles	3	X	X		
Seattle	4	X	X	X	X
New York	4	X	X	X	X
Chicago	5			X	X
Fairbanks	8			X	X

⁹ Characteristics of New Housing, U.S. Census Bureau, www.census.gov/construction/charts/completed.html

¹⁰ Housing Construction Starts, www.census.gov/construction/bps/pdf/2013statepiechart.pdf

Based on data from Home Innovation's 2013 Annual Builder Practices Survey¹¹(ABPS), the typical Heating, Ventilation, and Air Conditioning (HVAC) systems used in new houses are summarized in Table 4. According to the ABPS, 44% of new homes are cooled with a central air conditioner. These results influenced the selection of a gas furnace with a central (electric) air conditioner as the HVAC system in each of the Reference Houses.

Table 4. Typical HVAC Systems Supplied with New Houses

Feature	% of Stock
Furnace or Boiler, natural gas or propane	48%
Central Air Conditioner, electric	44%
Standard Heat Pump with Backup Heat	41%
Geothermal Heat Pump	4%
Electric furnace, baseboard, or radiant	4%
Furnace or Boiler, oil	2%

The furnace location has been designated as a platform in the attic for both slab Reference Houses, a practice that is common in Florida and Texas, where the weather is temperate year-round, and thus, the location is practical. A house built on a slab foundation in a cold climate zone would have the HVAC and water heating equipment located within conditioned space.

Reference House Features

The statistics presented in the foregoing tables support Reference House features that are detailed in Table 1.

Table 1. Features of the Reference Houses

Feature	Reference House			
	1	2	3	4
Square Feet	2,607	2,607	2,607	2,607
Foundation	Slab	Slab	Basement	Basement
Number of Stories	1	2	1	2
Number of Bedrooms	3	4	3	4
Number of Bathrooms	2	2.5	2	3
Garage, attached	2-car	2-car	2-car	2-car
Heat, Gas Furnace	Yes	Yes	Yes	Yes
Cooling, (Electric) central air	Yes	Yes	Yes	Yes
Hot Water, Gas 50 gallon tank	Yes	Yes	Yes	Yes
9 ft. Ceilings, 1 st	Yes	Yes	Yes	Yes
8 ft. Ceilings, 2 nd	n/a	n/a	Yes	Yes
Energy Star appliances	Yes	Yes	Yes	Yes
Laundry Room	Yes	Yes	Yes	Yes
Walls, 2x4 (Climate Zones 1 & 2)	Yes	Yes	n/a	n/a
Walls, 2x6 (Climate Zones 3 thru 8)	n/a	n/a	Yes	Yes
Basement, Conditioned, Unfinished	n/a	n/a	Yes	Yes
Furnace Location	Attic	Attic	Basement	Basement
Water Heater Location	Interior	Garage	Basement	Basement
Window SF/% gross wall	360/18%	315/12%	360/18%	330/12%
Cladding	Brick, 4 sides	Brick, 4 sides	Brick, 4 sides	Stucco
Roof Pitch	12/12	6/12	9/12	4/12

¹¹ Annual Builder Practices Survey, www.homeinnovation.com/trends_and_reports/data/new_construction

APPENDIX D: REFERENCE HOUSE 1

One-Story with Slab Foundation



Courtesy: LionsGate Homes at The Creekside

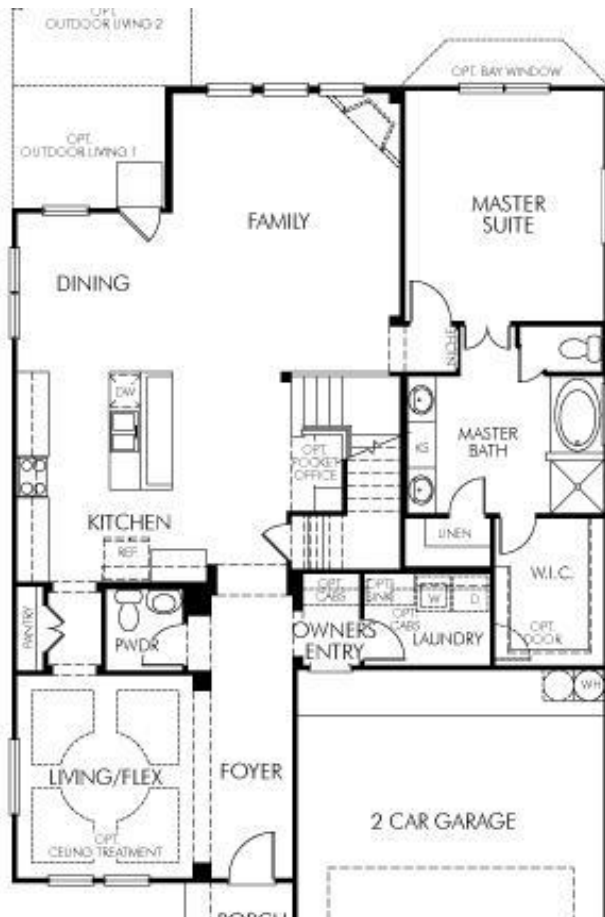


APPENDIX E: REFERENCE HOUSE 2

Two-Story with Slab Foundation



Courtesy: Meritage Homes at Riverstone

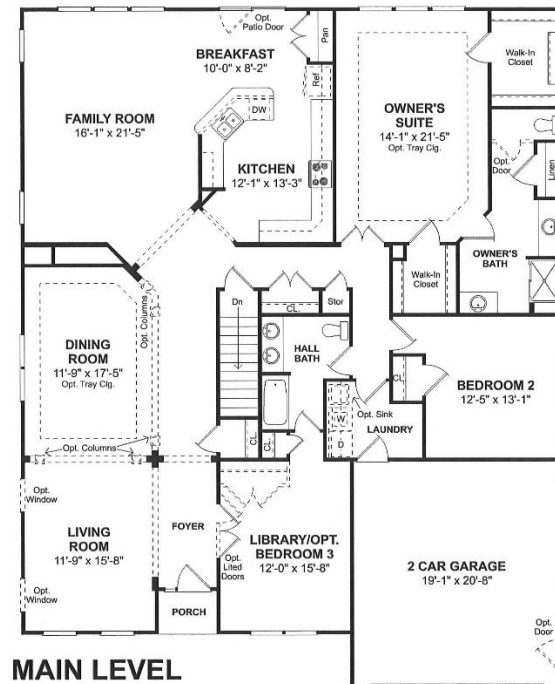
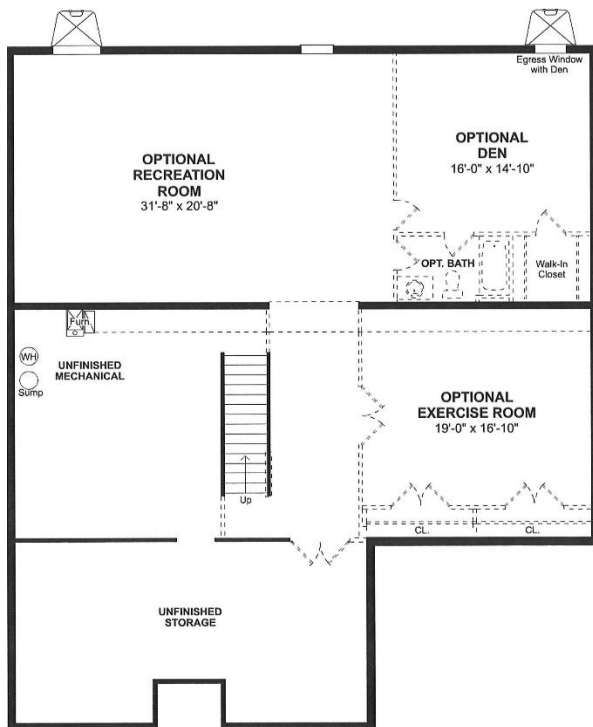


APPENDIX F: REFERENCE HOUSE 3

One-Story with Basement Foundation



Courtesy: K Hovnanian Four Seasons at New Kent Vineyards



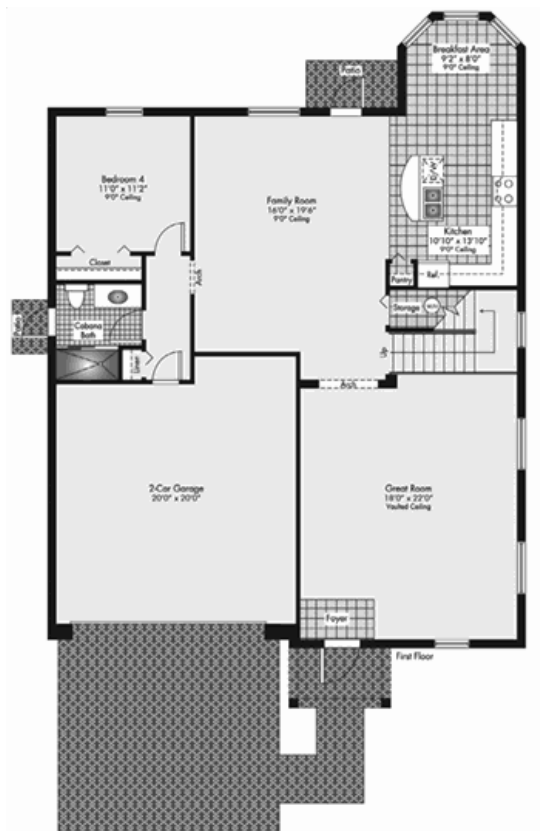
MAIN LEVEL

APPENDIX G: REFERENCE HOUSE 4

Two-Story with Basement Foundation



Courtesy: Lennar at Sorento Estates





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ESTIMATED COSTS OF THE 2024 IRC CODE CHANGES

Prepared For
National Association of Home Builders

July 2, 2024

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ACRONYMS, ABBREVIATIONS, AND DEFINITIONS

ASTM	American Society for Testing and Materials
CY	Cubic yard
EA	Each
FT	Feet
HR	Hour
HVAC	Heating, ventilation, and air conditioning
ICC	International Code Council
IECC	International Energy Conservation Code
IN	Inch
IRC	International Residential Code
LB	Pound
LF	Linear feet
PSF	Pounds per square foot
SF	Square feet

BACKGROUND

The 2024 International Residential Code (IRC) includes several changes which impact construction costs for residential construction.¹ The objective of this analysis was to quantify the incremental construction cost associated with constructing a house compliant with the 2024 IRC relative to a 2021 IRC baseline. Home Innovation Research Labs (Home Innovation) estimated the expected cost impacts of selected code changes provided by the National Association of Home Builders (NAHB) using four single-family, detached reference houses. Cost estimates are aggregated in ranges of high to low based on various methods or components that might be used to comply with the code. Results are relative to the reference house characteristics and configurations; costs may vary substantially for other house designs.

This report does not address any code changes associated with energy efficiency. The energy efficiency requirements in the IRC (Chapter 11) are the same as the residential provisions in the International Energy Conservation Code (IECC). These 2024 IRC Chapter 11 code changes will be assessed separately in an upcoming report by Home Innovation.

METHODOLOGY

The characteristics of the reference houses used for this analysis are summarized below in Table 1. The reference houses and their site locations were initially defined in a report titled *Estimated Costs of the 2015 IRC Code Changes*.² The houses were selected for their similarity to new home offerings in the six metropolitan areas selected as site locations – Miami, FL, Dallas, TX, Los Angeles, CA, Seattle, WA, New York, NY, and Chicago, IL – and their size proximity to a national average of 2,607 SF. Subsequent reports added three site locations for assessing energy use: Helena, MT, Duluth, MN, and Fairbanks, AK. Additional information on the basis for the reference house configurations is provided in Appendix C. Elevations and floor plans for these reference houses are provided in Appendices D through G. These reference houses provided the basis to estimate the incremental costs or savings of the code changes for the 2024 IRC relative to the 2021 IRC.

For this study, construction costs were developed primarily based on RSMeans 2024 Residential Cost Data, using national average costs for labor and materials.³ For specific locations, the national average costs could be modified by applying the appropriate adjustment factor from RSMeans; selected location adjustment factors from RSMeans are provided in Appendix B. In some cases, costs were sourced from material suppliers, online distributor websites, or other relevant sources as applicable to the specific measure. Costs associated with testing or fees provided by an energy rater, engineer, or other third party were estimated based on an internet search of associated web sites. Cost details for individual code changes are provided in Appendix A.

Costs in the results section are reported as cost to consumer. The cost to consumer is calculated by applying a markup to the builder cost to account for builder overhead and profit. For this analysis, the cost to consumer is calculated by applying a markup of 1.182 to the builder cost.⁴

¹ International Code Council, www.iccsafe.org/Pages/default.aspx

² Estimated Costs of the 2015 Code Changes, Home Innovation Research Labs, www.homeinnovation.com/trends_and_reports/featured_reports/estimated_costs_of_the_2015_irc_code_changes

³ RSMeans, <https://www.rsmeans.com/>

⁴ Average Builder gross margin of 18.2% in 2020 as reported by NAHB in The Cost of Doing Business Study, 2022 Edition

The cost to builder represents the cost charged by the subcontractor. RSMeans provides a unit cost which includes materials, labor, installation equipment (if needed to install materials, i.e., not permanently installed equipment), subcontractor overhead (overhead burden is applied to labor cost as a markup of approximately 1.5 although this markup varies by trade) and subcontractor profit (using a 10% markup applied to all costs). For this study, where materials are sourced from national distributor websites (not RSMeans), a 10% subcontractor profit is added for consistency.

The cost details for individual code changes provided in Appendix A are reported as both cost to builder and cost to consumer.

Table 1. Features of the Reference Houses

Feature	Reference House			
	1	2	3	4
Square Feet	2,607	2,607	2,607	2,607
Foundation	Slab	Slab	Basement	Basement
Number of Stories	1	2	1	2
Number of Bedrooms	3	4	3	4
Number of Bathrooms	2	2.5	2	3
Garage, attached	2-car	2-car	2-car	2-car
Heat, Gas Furnace	Yes	Yes	Yes	Yes
Cooling, (Electric) central air	Yes	Yes	Yes	Yes
Hot Water, Gas 50 gallon tank	Yes	Yes	Yes	Yes
9 ft. Ceilings, 1 st	Yes	Yes	Yes	Yes
8 ft. Ceilings, 2 nd	n/a	n/a	Yes	Yes
Energy Star appliances	Yes	Yes	Yes	Yes
Laundry Room	Yes	Yes	Yes	Yes
Walls, 2x4 (Climate Zones 1 & 2)	Yes	Yes	n/a	n/a
Walls, 2x6 (Climate Zones 3 thru 8)	n/a	n/a	Yes	Yes
Basement, Conditioned, Unfinished	n/a	n/a	Yes	Yes
Furnace Location	Attic	Attic	Basement	Basement
Water Heater Location	Interior	Garage	Basement	Basement
Window SF/% gross wall	360/18%	315/12%	360/18%	330/12%
Roof Pitch	12/12	6/12	9/12	4/12

RESULTS

The estimated incremental construction costs of the selected code changes attributed to the reference houses are summarized in Table 2. The costs are aggregated by location and house configuration. The results are reported in ranges of “High” and “Low” based on the code changes that would typically be applicable to the reference houses in those locations. Note that where a code change results in a cost savings, the smallest savings is shown as “high” cost, and the largest savings is shown as “low” cost.

Table 3 summarizes the estimated construction costs of selected code changes that are not attributed to the reference houses and are not included in the aggregated summary. These code changes typically apply only in specific locations (e.g., hurricane-prone areas or flood zones), to items that would be an optional feature for most homes (e.g., decks), or to alternative methods of compliance. Those costs can be added to or subtracted from the aggregated costs in Table 2 as applicable to a particular location or a specific building.

The overwhelming majority of changes in the 2024 IRC not related to energy efficiency or existing buildings, identified by NAHB as significant, and provided to Home Innovation for analysis were deemed to be additional options for compliance with the code, only applicable in specific locations or cases (e.g., if a deck is constructed), or only triggered if a product or system requires the use of alternate means and methods code provisions or a registered design professional. Three significant changes were deemed applicable to most dwellings constructed under the IRC and are shown in Table 2.

Table 3 includes one code change for existing buildings. Other changes for existing buildings will be addressed in an addendum to this report.

This report does not address any code changes associated with energy efficiency. The energy efficiency requirements in the IRC (Chapter 11) are the same as the residential provisions in the International Energy Conservation Code (IECC). These 2024 IRC Chapter 11 code changes will be assessed separately in an upcoming report by Home Innovation.

Cost details for individual code changes are provided in Appendix A.

Table 2. Estimated Incremental Cost of Selected 2024 IRC Changes attributed to the Reference Houses

		Selected Cities	Miami, Dallas		LA, Seattle, New York		Chicago, Helena		Duluth, Fairbanks	
		Climate Zone	1 & 2		3 & 4		5 & 6		7 & 8	
		Reference House	1 & 2		1, 2, 3, & 4		3 & 4		3 & 4	
			Cost Range							
Ref #	Description of Change	2024 IRC Section	High	Low	High	Low	High	Low	High	Low
R-10 (RB173)	Adds requirements for framing at an open floor edge to support a guard assembly & resist rotation.	R502.11	\$459	\$0	\$459	\$0	\$156	\$0	\$156	\$0
R-11 (RB175)	Allows a 6-mil polyethylene vapor retarder under a slab-on-ground floors instead of a 10-mil vapor retarder conforming to ASTM E1745 Class A reqs.	R506.3.3	(\$472)	(\$951)	(\$472)	(\$957)	(\$472)	(\$957)	(\$472)	(\$957)
R-20 (S241.2)	Modifies the water-resistive barrier requirements for stucco in dry climates	R703.7.3	\$0	(\$1,203)	\$0	(\$1,270)	\$0	(\$1,270)	\$0	(\$1,270)
Total			(\$13)	(\$2,154)	(\$13)	(\$2,227)	(\$316)	(\$2,227)	(\$316)	(\$2,227)

Table 3. Estimated Incremental Cost of Selected 2024 IRC Changes not attributed to the Reference Houses

		Selected Cities	Miami, Dallas		LA, Seattle, New York		Chicago, Helena		Duluth, Fairbanks	
		Climate Zone	1 & 2		3 & 4		5 & 6		7 & 8	
		Reference House	1 & 2		1, 2, 3, & 4		3 & 4		3 & 4	
			Cost Range							
Ref #	Description of Change	2024 IRC Section	High	Low	High	Low	High	Low	High	Low
R-1 (ADM 13.2)	Reorganizes and expands the duties and powers of the Building Official.	R104	\$597	\$74	\$597	\$74	\$597	\$74	\$597	\$74
R-2 (RB7)	Reorganizes and updates the appendix for existing buildings; a few items are substantive.	Appendix BO	\$1,304	(\$1,332)	\$1,304	(\$1,720)	\$875	(\$1,720)	\$875	(\$1,720)
R-3 (RB44)	Modifies the table for allowable deflection under live load to exclude guards & handrails.	Table R301.7	\$0	(\$402)	\$0	(\$402)	\$0	(\$402)	\$0	(\$402)
R-4 (RB45)	Requires splices in floor, ceiling, or roof framing members not occurring over a bearing point to be designed by a registered design professional.	R502.3, R802.4.1, R802.5	\$804	\$0	\$891	\$0	\$891	\$0	\$891	\$0

R-5 (RB108)	Provides an exception that exterior stairways to grade with three or fewer risers may have a 36" wide landing provided the stairway is not serving the required egress door.	R318.7.6	\$0	(\$798)	\$0	(\$798)	\$0	(\$798)	\$0	(\$798)
R-6 (RB149)	Requires markings where BIPV systems create hidden electrical hazards.	R329.6.4	\$246	\$190	\$246	\$190	\$246	\$190	\$246	\$190
R-9 (RB165)	Adds a new column with the USDA Textural Soil Classification and indicates which soil types are unsuitable for backfill.	R401.4.1	\$0	(\$946)	\$0	(\$946)	\$0	(\$946)	\$0	(\$946)
R-12 (RB190)	Adds prescriptive requirements for deck ledger flashing and requires the water-resistive barrier to run behind the ledger.	R507.2.4, R507.9, R703.2, R703.4	\$36	\$28	\$36	\$28	\$36	\$28	\$36	\$28
R-13 (RB226)	Provides an additional method to support masonry veneer at a roof-wall intersection.	R703.8.2.2	\$0	(\$328)	\$0	(\$328)	\$0	\$0	\$0	\$0
R-15 (RM13)	Adds a compliance option for location of exhaust openings above windows and doors.	M1504.3	\$0	(\$262)	\$0	(\$262)	\$0	(\$262)	\$0	(\$262)
R-16 (RM18)	Allows taking return air for HVAC systems from bathrooms	M1602.2	\$435	\$198	\$435	\$198	\$435	\$198	\$435	\$198
R-17 (RM19)	Allows taking return air for HVAC systems from closets	M1602.2	\$1,843	\$0	\$1,843	\$0	\$1,843	\$0	\$1,843	\$0
R-18 (RM20)	Allows taking return air for HVAC systems from mechanical rooms.	M1602.2	\$0	\$0	\$244	\$0	\$244	\$0	\$244	\$0
R-19 (S240.2)	Modifies the water-resistive barrier requirements for stucco to apply to all exterior sheathing.	R703.7.3	\$684	\$369	\$750	\$369	\$750	\$394	\$750	\$394

APPENDIX A: COST DETAILS OF INDIVIDUAL CODE CHANGES

R-1: Proposal ADM13.2

IRC R104 Duties and Powers of the Building Official

Summary of Code Change:

The code change replaces the existing Section R104 with a reorganized and expanded set of duties and powers of the building official, especially regarding the alternative materials and methods provisions. While it's difficult to assess the full cost impact, two items stand out: (1) R104.2.1 allows the building official to compel the builder to provide them with a copy of the standard governing a listed product; (2) R104.2.2.6.2 allows the building official to require a signed and sealed engineering report or engineered design for an alternative product where an ICC-ES or other evaluation report is not provided.

Cost Implication of Code Change:

This code change may increase the cost of construction where applicable. Analysis is based on the cost to purchase two example standards and an estimated fee for a structural engineer to provide a report or engineered design. Costs could be higher where additional standards or engineering time are required.

Applicability of Code Change:

This code change is applicable where the building official requires a copy of a standard or an engineering report previously not required.

Table A1-1. Estimated Cost Impact of ADM 13.2: example low cost

Component	Unit	Unit Cost	Quantity, by Reference House				Cost, by Reference House			
			1	2	3	4	1	2	3	4
ASTM E1886-19*	EA	63.00	1	1	1	1	63	63	63	63
Total to builder							63	63	63	63
Total to consumer							74	74	74	74

*ASTM E1886-19 Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems

Table A1-2. Estimated Cost Impact of ADM 13.2: example high cost

Component	Unit	Unit Cost	Quantity, by Reference House				Cost, by Reference House			
			1	2	3	4	1	2	3	4
UL 723*	EA	505.00	1	1	1	1	505	505	505	505
Total to builder							505	505	505	505
Total to consumer							597	597	597	597

*UL 723 Test for surface burning characteristics of building materials

Table A1-3. Estimated Cost Impact of ADM 13.2: example engineer's fee

Component	Unit	Unit Cost	Quantity, by Reference House				Cost, by Reference House			
			1	2	3	4	1	2	3	4
Structural Engineer, fee	HR	170.00	2	2	2	2	340	340	340	340
Total to builder							340	340	340	340
Total to consumer							402	402	402	402

R-2: Proposal RB7

IRC Appendix BO Existing buildings and structures

Summary of Code Change:

This code change reorganizes and updates the appendix for existing buildings. Many portions of the code change update terminology and delete provisions and pointers to requirements that are already found in the body of the code.

Cost Implication of Code Change:

The code change may increase or decrease the cost of construction. A few items in the code change are substantive. Analysis is based on the cost impact of the following items: (1) Adding a requirement to provide CO alarms where required by IRC R315.2.2; (2) Removing the requirement for a preliminary meeting with the building official and permit applicant; (3) Removing the provision allowing a building official to require an evaluation by a registered design professional for a house undergoing reconstruction; (4) Adding requirements to provide stairway illumination as well as code-compliant handrails and guards when stairs are altered; (5) Adding a requirement for a wall-mounted switch controlling lighting outlets when a room is altered; (6) Removing the requirement for wall and ceiling finishes in areas being reconstructed to comply with the flame spread and smoke development requirements of R302.9 and for area separation walls between attached dwelling units to meet R302.

Applicability of Code Change:

Individual items within this code change may be applicable for existing buildings. The total cost would only apply if all aspects of the work are required as part of the project, but in the more likely scenario where all items don't apply, the total provides a range of costs for this code change.

Table A2-1. Estimated Cost Impact of RB7

Component, by item #	Unit	Unit Cost	Quantity, by Reference House				Cost, by Reference House			
			1	2	3	4	1	2	3	4
1. Carbon monoxide detector, hardwired	EA	167.00	3	2	2	2	501	334	334	334
2. Builder/Carpenter*	HR	66.40	(1)	(1)	(1)	(1)	(66)	(66)	(66)	(66)
3. Structural Engineer fee	HR	170.00	(4)	(4)	(4)	(4)	(680)	(680)	(680)	(680)
4. Stairway lighting, handrail, guards (see details in Table A2-2 below)	EA	2,155.16	0	1	0	1	0	2,155	0	2,155
5. Switch assembly for outlet	EA	86.00	1	1	1	1	86	86	86	86
6. Cover existing interior wall paneling with 1/2" drywall (see details in Table A2-3)	SF	2.24	(432)	(324)	(504)	(486)	(968)	(726)	(1,129)	(1,089)
Total to builder							(1,127)	1,103	(1,455)	740
Total to consumer							(1,332)	1,304	(1,720)	875
*Note that a jurisdiction may charge a fee for consultation.										

Table A2-2. Estimated Cost Impact of RB7 item 4

Component	Unit	Unit Cost	Quantity	Cost
Lighting electrical circuit, 3-way switch	EA	104.50	2	209
Lighting outlet	EA	50.00	1	50
Lighting fixture	EA	85.50	1	86
Demo existing stair railing, 2 laborer crew, est.	HR	52.83	2	106
Wood stair railing*	LF	34.90	14	489
Wood stair newels	EA	239.00	2	478
Wood stair balusters	EA	28.40	26	738
Total to builder				2,155

*Based on the top of the guard is the handrail; costs could be higher if installing a handrail as a separate component.

Table A2-3. Estimated Unit Cost of RB7 item 6

Component	Unit	Unit Cost
1/2 gypsum	SF	1.69
Paint, 2 coats	SF	0.55
Total to Builder		2.24

Table A2-4. Estimated area of interior wood wall for item 6, using a Family Room, Study, Library, or Flex Room, by Reference House

Area	Unit	1	2	3	4
Wall area with interior wood paneling	SF	432	324	504	486

R-3: Proposal RB44

IRC Table R301.7 Allowable deflection of structural members

Summary of Code Change:

This code change modifies the table for allowable deflection of any structural member under live load to exclude guards and handrails.

Cost Implication of Code Change:

This code change may decrease the cost of construction where applicable. Analysis is based on a builder no longer needing to hire an engineer to calculate the deflection of wood guards for an outdoor deck and second-story guards for balconies overlooking the first floor for two-story house designs. The high cost is assumed to be zero.

Applicability of Code Change:

This code change may be applicable for houses with an outdoor deck or second-story balcony.

Table A3. Estimated Cost Impact of RB44

Component	Unit	Unit Cost	Quantity by Reference House				Cost by Reference House			
			1	2	3	4	1	2	3	4
Structural Engineer fee	HR	170.00	(2)	(2)	(2)	(2)	(340)	(340)	(340)	(340)
Total to builder							(340)	(340)	(340)	(340)
Total to consumer							(402)	(402)	(402)	(402)

R-4: Proposal RB45

IRC R502.3 Allowable joist spans, R802.4.1 Rafter size, and R802.5 Ceiling joists

Summary of Code Change:

This proposal requires splices in floor, ceiling, or roof framing members not occurring over a vertical support (bearing point) to be designed by a registered design professional.

Cost Implication of the Code Change:

This proposal may increase the cost of construction where applicable, e.g., because a framer cut one set of joists or rafters too short and field-framed a splice, for which the builder ends up needing to hire an engineer to run numbers and sketch a repair detail. Analysis is based on the estimated fee for a structural engineer to provide an engineered design and detail, plus an additional estimated cost to install a floor joist “sister”. The “low” cost is assumed to be zero.

Applicability of Code Change:

This code change is applicable where there are splices in floor, ceiling, or roof framing that do not occur over vertical supports.

Table A4. Estimated Cost Impact of RB45

Component	Unit	Unit Cost	Quantity, by Reference House				Cost, by Reference House			
			1	2	3	4	1	2	3	4
Structural Engineer, fee	HR	170.00	4	4	4	4	680	680	680	680
2x10 blocking, joist sister	LF	5.89	0	6	6	6	0	35	35	35
Bolt, w/nut, washer, 3/4 dia, 4" long	EA	4.84	0	8	8	8	0	39	39	39
Total to builder							680	754	754	754
Total to consumer							804	891	891	891

R-5: Proposal RB108

IRC R318.7.6 Landings for stairways

Summary of Code Change:

This code change provides an exception that exterior stairways to grade with three or fewer risers serving a deck, porch, or patio shall have a bottom landing of not less than 36 inches, provided that the stairway is not the required access to grade serving the required egress door, i.e., instead of a landing width for the entire stair

Cost Implication of the Code Change:

This code change could decrease the cost of construction where applicable. This change may save the cost to provide concrete, pavers, or other hardscapes across the entire width of the deck, porch, or patio where it steps down to grade. Analysis is based on a 20'x14' deck with steps along one 14' side; the cost savings are estimated using a 3'x3' concrete landing instead of a 14'x3' concrete landing.

Applicability of Code Change:

This code change is applicable to exterior stairways to grade, serving deck, porch or patio, with a maximum of three risers and not serving the required egress door.

Table A5. Estimated Cost Impact of RB108

Component	Unit	Unit Cost	Quantity by Reference House				Cost by Reference House			
			1	2	3	4	1	2	3	4
Excavate, by hand, heavy soil	CY	99.50	(1.2)	(1.2)	(1.2)	(1.2)	(122)	(122)	(122)	(122)
Forms, slab on grade	LF	5.55	(22)	(22)	(22)	(22)	(122)	(122)	(122)	(122)
Concrete, stair landing, cast on ground	SF	13.07	(33)	(33)	(33)	(33)	(431)	(431)	(431)	(431)
Total to builder							(675)	(675)	(675)	(675)
Total to consumer							(798)	(798)	(798)	(798)

R-6: Proposal RB149

IRC R329.6.4 Building-integrated photovoltaic (BIPV) systems

Summary of Code Change:

This code change requires that markings be provided where BIPV systems (PV systems that also function as a roof covering) are installed in a manner creating areas with electrical hazards that are hidden from view. The markings must identify hazardous areas to avoid ladder placement. The markings must be visible from grade beneath the eaves. There is an exception for BIPV systems listed in accordance with UL 3741 where the removal or cutting away of portions of the BIPV system during firefighting operations have been determined to not expose a firefighter to electrical shock hazards.

Cost Implication of the Code Change:

This code change will increase the cost of construction where applicable. Analysis is based on the cost to install BIPV warning labels every 10 feet along roof eaves and rakes.

Applicability of Code Change:

This code change is applicable where BIPV systems are installed.

Table A6. Estimated Cost Impact of RB149

Component	Unit	Unit Cost	Quantity, by Reference House				Cost, by Reference House			
			1	2	3	4	1	2	3	4
"Caution Solar Circuit" reflective label	EA	1.40	30	20	30	20	42	28	42	28
Labor to install labels	HR	66.40	2.5	2	2.5	2	166	133	166	133
Total to builder							208	161	208	161
Total to consumer							246	190	246	190

R-9: Proposal RB165

IRC R401.4.1 Geotechnical Evaluation

Summary of Code Change:

This code change relocates Table R405.1 to R401.4.1(2), adds a new column with the USDA Textural Soil Classification, and indicates which soil types are unsuitable for backfill.

Cost Implication of the Code Change:

The code change may decrease the cost of construction. This change enables the use of USDA data and textural descriptions to ensure builders select a proper soil classification where geotechnical investigation is not done, so it may save the cost of a soil test report since the USDA information is available at no cost. Analysis is based on the estimated cost savings of not needing a soil test report.

Applicability of Code Change:

This change is applicable where a soil test is no longer required.

Table A9. Estimated Cost Impact of RB165

Component	Unit	Unit Cost	Quantity, by Reference House				Cost, by Reference House			
			1	2	3	4	1	2	3	4
Soil test report	EA	800	(1)	(1)	(1)	(1)	(800)	(800)	(800)	(800)
Total to builder							(800)	(800)	(800)	(800)
Total to consumer							(946)	(946)	(946)	(946)

R-10: Proposal RB173

IRC R502.11 Floor framing supporting guards

Summary of Code Change:

This code change adds requirements for framing at an open floor edge to support a guard assembly and resist rotation where guards are required.

Cost Implication of the Code Change:

This code change may increase the cost of construction where applicable. Analysis is based on installing one additional 2x10 at the floor edge of second floor interior openings that overlook the first floor for the reference houses, additional 2x10 blocking at guard post locations, and additional nailing of the floor sheathing. Quantities are estimates based on a review of the floors plans of the reference houses. The “low” cost will be zero for the one-story reference houses.

Applicability of Code Change:

This code change is applicable where a guard assembly is required to protect an interior opening overlooking the floor below.

Table A10-1. Estimated Cost Impact of RB173: additional 2x10, blocking, and nailing

Component	Unit	Unit Cost	Quantity, by Reference House				Cost, by Reference House			
			1	2	3	4	1	2	3	4
Edge framing, additional 2x10	LF	3.95	0	24	0	6	0	95	0	24
Blocking, 2x10, 6' per post (posts 4' o.c.)	LF	5.27	0	48	0	18	0	253	0	95
Additional nailing of sheathing at roll brace (see details in Table A10-2)	EA	3.54	0	8		3	0	28	0	11
Total to builder							0	376	0	129
Total to consumer							0	445	0	153

Table A10-2. Estimated additional nailing of sheathing per roll brace

Component	Unit	Unit Cost	Quantity	Cost
Additional nails, 10d common bright (12 per roll brace, plus 12 at edge, approx. 58 nails/pound)	LB	5.00	0.5	2.50
Additional labor, 3/4 OSB sheathing	SF	0.52	2.0	1.04
Total to builder				3.54

Table A10-3. Estimated Cost Impact of RB173: double 2x10 vs single composite rim joist for I-joist system

Component	Unit	Unit Cost	Quantity, by Ref House				Cost, by Reference House			
			1	2	3	4	1	2	3	4
Double 2x10 joist	LF	7.90	0	24	0	6	0	190	0	47
Composite rim joist, 1.25 x 9.5	LF	3.43		(24)		(6)		(82)		(21)
Blocking, 2x10, 6' per post (posts 4' o.c.)	LF	5.27	0	48	0	18	0	253	0	95
Additional nailing of sheathing at roll brace (see details in Table A10-2)	EA	3.54	0	8		3	0	28	0	11
Total to builder							0	389	0	132
Total to consumer							0	459	0	156

R-11: Proposal RB175

IRC R506.2.3 Vapor Retarder

Summary of Code Change:

This code change requires a minimum 6-mil polyethylene vapor retarder to be placed under slab-on-ground floors. This change reverses the change from last cycle that required a 10-mil vapor retarder conforming to ASTM E1745 Class A requirements.

Cost Implication of the Code Change:

This code change will decrease the cost of construction for all reference houses. Analysis is based on the cost savings for the reference houses including basements and garages. Note that the vapor barrier is not required for garages, but garages are included as conventional practice.

Applicability of Code Change:

This code change is applicable for all reference houses.

Table A11-1. Estimated Cost Impact of RB175

Component	Unit	Unit Cost	Quantity, by Reference House				Cost, by Reference House			
			1	2	3	4	1	2	3	4
6-mil polyethylene sheeting	SF	0.06	2,980	1,480	3,000	1,480	179	89	180	89
10-mil, ASTM E1745 Class A	SF	0.33	(2,980)	(1,480)	(3,000)	(1,480)	(983)	(488)	(990)	(488)
Total to builder							(805)	(400)	(810)	(400)
Total to consumer							(951)	(472)	(957)	(472)

Table A11-2. Slab-on-ground floor area by Reference House

Area	Unit	1	2	3	4
First floor	SF	2,600	1,080		
Garage	SF	380	400	400	400
Basement	SF			2,600	1,080
Total	SF	2,980	1,480	3,000	1,480

R-12: Proposal RB190

IRC R507.9.1.5 Ledger Flashing, R507.9.1.6 Water-resistive barrier; R703.2 Water-resistive barrier

Summary of Code Change:

This code change adds prescriptive requirements for deck ledger flashing (R507) and requires the water-resistive barrier to run behind the ledger (R507 and R703). For a deck addition, the code change may require portions of the existing siding to be removed.

Cost Implication of the Code Change:

The code change may increase the cost of construction where decks are installed. Analysis is based on the associated cost of providing a seam in the WRB just above the level of the deck ledger that will allow lapping the upper layer of the WRB over the vertical leg of the ledger flashing; the lower layer of the WRB needs to extend up far enough past the ledger to create the proper lap between upper and lower layers of the WRB. The added cost is estimated for the 20-foot long ledger of a 20' x 14' deck. A second cost is developed for an exception that permits the ledger flashing to be placed against the face of the WRB where a self-adhering membrane counterflashing is installed not less than 2 inches over the vertical leg of the flashing and not less than 2 inches onto the WRB. The costs do not address where there is a need to remove and reinstall all types of wall cladding.

Applicability of Code Change:

This code change is applicable to houses with decks.

Table A12-1. Estimated Cost Impact of RB190

Component	Unit	Unit Cost	Quantity by Reference House				Cost by Reference House			
			1	2	3	4	1	2	3	4
Additional house wrap	SF	0.32	42	42	42	42	13	13	13	13
Additional labor, est.	HR	66.40	0.25	0.25	0.25	0.25	17	17	17	17
Total to builder							30	30	30	30
Total to consumer							36	36	36	36

Table A12-2. Estimated Cost Impact of RB190: counterflashing exception

Component	Unit	Unit Cost	Quantity by Reference House				Cost by Reference House			
			1	2	3	4	1	2	3	4
Counter flashing, 6" self-adhered, 25-mil HDPE	LF	1.12	21	21	21	21	24	24	24	24
Total to builder							24	24	24	24
Total to consumer							28	28	28	28

R-13: Proposal RB226

IRC R703.8.2.2, Figure R703.8.2.2, Figure R703.8.2.2(2) (New)

Summary of Code Change:

This code change provides an additional method to support exterior masonry veneer at a roof-wall intersection. The change allows a ledger consisting of not fewer than three 2" x 6" sawn lumber members to be installed above the roof sheathing to support the steel angle and brick (formerly the only option was to install the wood ledger below the roof sheathing). This option allows using one continuous piece of flashing installed over the steel angle and ledger instead of multiple pieces of step flashing over the brick that follow the slope of the roof.

Cost Implication of the Code Change:

The code change may decrease the cost of construction where applicable. Analysis is based on the cost savings of installing continuous flashing relative to step flashing, plus some additional savings for the amount of brick veneer displaced by the wood ledger that is now above the roof deck (the size of the wood ledger is the same for either option).

Applicability of Code Change:

This code change is applicable for house designs with masonry brick veneer and any roof-wall intersections.

Table A13. Estimated Cost Impact of RB226

Component	Unit	Unit Cost	Quantity by Reference House				Cost by Reference House			
			1	2	3	4	1	2	3	4
Flashing, 0.019" aluminum	SF	11.29		47			0	531	0	0
Step Flashing, 0.019" aluminum	SF	14.46		(47)			0	(680)	0	0
Brick veneer, standard	SF	17.95		(16)			0	(281)	0	0
Ledger, 2x6, below roof deck	LF	3.24		47			0	152	0	0
Total to builder							0	(278)	0	0
Total to consumer							0	(328)	0	0

R-15: Proposal RM13

IRC M1504.3

Summary of Code Change:

This code change adds a compliance option for location of exhaust openings above windows and doors. The exhaust opening must be located at least 1 foot above a gravity air intake, operable window, and door (formerly the minimum separation was 3 feet).

Cost Implication of the Code Change:

The code change could decrease construction costs in some cases by reducing exhaust duct length and number of duct bends. Analysis is based on an estimated reduction in the length of kitchen and bathroom exhaust ducts. The high cost is assumed to be zero.

Applicability of Code Change:

This code change is applicable for house designs where exhaust openings no longer need to be located away from windows and doors.

Table A15. Estimated Cost Impact of RM13

Component	Unit	Unit Cost	Quantity by Reference House				Cost by Reference House			
			1	2	3	4	1	2	3	4
Bathroom exhaust duct, 6" flexible insulated; save 4 LF per bathroom	LF	9.28	(8)	(8)	(8)	(8)	(74)	(74)	(74)	(74)
Kitchen exhaust duct, 3.25" x 10" metal, 22 ga, 3.3 lbs/ft, save 6 LF	LB	7.45	(20)	(20)	(20)	(20)	(148)	(148)	(148)	(148)
Total to builder							(222)	(222)	(222)	(222)
Total to consumer							(262)	(262)	(262)	(262)

R-16: Proposal RM18

IRC M1602.2 Return Air Openings

Summary of Code Change:

This code change allows taking return air for HVAC systems from bathrooms (formerly prohibited).

Cost Implication of the Code Change:

This code change would increase construction costs where this option is implemented. Analysis is based on installing a ducted return in each of two bathrooms to represent the high cost. The low cost is based on installing a transfer grille in each bathroom.

Applicability of Code Change:

This code change is applicable, as an option, to all reference houses.

Table A16-1. Estimated Cost Impact of RM18: High Cost

Component	Unit	Unit Cost	Quantity by Reference House				Cost by Reference House			
			1	2	3	4	1	2	3	4
Return branch duct, 5" flexible insulated, 15 LF per bathroom (2 bathrooms)	LF	8.77	30	30	30	30	263	263	263	263
Return grille, 10x6	EA	52.50	2	2	2	2	105	105	105	105
Total to builder							368	368	368	368
Total to consumer							435	435	435	435

Table A16-2. Estimated Cost Impact of RM18: Low Cost

Component	Unit	Unit Cost	Quantity by Reference House				Cost by Reference House			
			1	2	3	4	1	2	3	4
Transfer Grille, 12"x4" Return Air Pathway	EA	83.93	2	2	2	2	168	168	168	168
Total to builder							168	168	168	168
Total to consumer							198	198	198	198

R-17: Proposal RM19

IRC M1602.2 Return Air Openings

Summary of Code Change:

This code change allows taking return air for HVAC systems from closets (formerly prohibited).

Cost Implication of the Code Change:

This code change would increase construction costs where this option is implemented. Analysis is based on installing a ducted return and a transfer grille for each closet, 5 closets per reference house.

Applicability of Code Change:

This code change is applicable, as an option, to all reference houses.

Table A17. Estimated Cost Impact of RM19

Component	Unit	Unit Cost	Quantity by Reference House				Cost by Reference House			
			1	2	3	4	1	2	3	4
Return branch duct, 5" flexible insulated, 20 LF per closet (5 closets)	LF	8.77	100	100	100	100	877	877	877	877
Return grille, 10x6	EA	52.50	5	5	5	5	263	263	263	263
Transfer Grille, 12"x4" Return Air Pathway	EA	83.93	5	5	5	5	420	420	420	420
Total to builder							1,559	1,559	1,559	1,559
Total to consumer							1,843	1,843	1,843	1,843

R-18: Proposal RM20

IRC M1602.3 Return Air Openings

Summary of Code Change:

This code change allows taking return air for HVAC systems from mechanical rooms (formerly prohibited).

Cost Implication of the Code Change:

This code change could increase construction costs if this option is implemented. Analysis is based on the cost to install a ducted return and a transfer grille for a mechanical room or closet, for reference houses 3 and 4 (the air handler for reference houses 1 and 2 is defined as being located in the vented attic).

Applicability of Code Change:

This code change is applicable, as an option, to houses with mechanical rooms or closets in conditioned space.

Table A18. Estimated Cost Impact of RM20

Component	Unit	Unit Cost	Quantity by Reference House				Cost by Reference House			
			1	2	3	4	1	2	3	4
Return branch duct, 5" flexible insulated	LF	8.77			8	8			70	70
Return grille, 10x6	EA	52.50			1	1			53	53
Transfer Grille, 12"x4" Return Air Pathway	EA	83.93			1	1			84	84
Total to builder									207	207
Total to consumer									244	244

R-19: Proposal S240.2

IRC R703.7.3 Exterior plaster (stucco)

Summary of Code Change:

This proposal modifies the water-resistive barrier requirements for stucco to apply to all exterior sheathing for stucco (formerly limited to wood-based sheathing for stucco).

Cost Implication of the Code Change:

The code change may increase the cost of construction where applicable. Analysis is based on an example case for a dwelling on a tight lot where a fire-rated wall with gypsum board sheathing is required along one side of the house. The cost is based on one additional WRB layer using drainable housewrap in dry climates (B) and a drainable layer using a drainage mat (rainscreen) in moist climates (A and C).

Applicability of Code Change:

The code change is applicable for dwellings with stucco assemblies containing non-wood-based exterior sheathing.

Table A19-1. Estimated Cost Impact of S240.2 in Dry Climates (B)

Component	Unit	Unit Cost	Quantity by Reference House				Cost by Reference House			
			1	2	3	4	1	2	3	4
Housewrap, drainable	SF	0.46	675	684	750	722	312	316	346	334
Total to builder							312	316	346	334
Total to consumer							369	374	410	394

Table A19-2. Estimated Cost Impact of S240.2 in Moist Climates (A and C)

Component	Unit	Unit Cost	Quantity by Reference House				Cost by Reference House			
			1	2	3	4	1	2	3	4
Drainage Mat (Rainscreen), 3/16"	SF	0.85	675	684	750	722	571	579	635	611
Total to builder							571	579	635	611
Total to consumer							675	684	750	722

R-20: Proposal S241.2

IRC R703.7.3 Water-resistive barriers (Stucco), R703.7.3.1 Dry climates

Summary of Code Change:

This code change modifies the second option for water-resistive barriers for stucco in dry climates. The second option now specifically allows a means of drainage complying with Section R703.7.3.2 Moist or marine climates.

Cost Implication of the Code Change:

The code change may decrease construction costs in some cases. Analysis is based on the case where the water-resistive barrier is separated from the stucco using a drainable house wrap product with a drainage efficiency of not less than 90% (in accordance with R703.7.3.2 option 2) instead of a designed drainage space using $\frac{3}{4}$ " vertical furring.

Applicability of Code Change:

This code change is applicable for houses in dry climates with stucco exterior wall cladding.

Table A20. Estimated Cost Impact of S240.2 in Dry Climates (B)

Component	Unit	Unit Cost	Quantity by Reference House				Cost by Reference House			
			1	2	3	4	1	2	3	4
WRB, second layer, >90% drainage efficiency (e.g., Tyvek StuccoWrap)	SF	0.44	2,070	2,808	2,300	2,964	911	1,236	1,012	1,304
Furring, wood 1" x 2"	SF	0.80	(2,070)	(2,808)	(2,300)	(2,964)	(1,661)	(2,253)	(1,846)	(2,379)
Total to builder							(750)	(1,018)	(834)	(1,074)
Total to consumer							(887)	(1,203)	(985)	(1,270)

APPENDIX B: LOCATION ADJUSTMENT FACTORS

Table B1. Cost Adjustment Factor by Location*

State	City	Factor	State	City	Factor
Alabama	Birmingham	0.892	Montana	Billings	0.919
Alabama	Mobile	0.871	Nebraska	Omaha	0.922
Alaska	Fairbanks	1.163	Nevada	Las Vegas	1.067
Arizona	Phoenix	0.908	New Hampshire	Portsmouth	0.947
Arizona	Tucson	0.883	New Jersey	Jersey City	1.110
Arkansas	Little Rock	0.846	New Mexico	Albuquerque	0.898
California	San Diego	1.096	New York	Long Island City	1.279
California	Los Angeles	1.125	New York	Syracuse	0.993
California	Riverside	1.101	North Carolina	Charlotte	0.886
California	San Francisco	1.260	North Carolina	Hickory	0.853
Colorado	Boulder	0.873	North Carolina	Raleigh	0.850
Colorado	Colorado Springs	0.876	North Dakota	Fargo	0.896
Colorado	Denver	0.918	Ohio	Columbus	0.931
Connecticut	New Haven	1.062	Oklahoma	Oklahoma City	0.881
Delaware	Dover	1.051	Oklahoma	Tulsa	0.852
District of Columbia	Washington, D.C.	0.980	Oregon	Bend	0.984
Florida	Fort Meyers	0.866	Pennsylvania	Norristown	1.038
Florida	Miami	0.887	Pennsylvania	State College	0.959
Florida	Orlando	0.888	Rhode Island	Providence	1.058
Florida	Tampa	0.880	South Carolina	Greenville	0.878
Georgia	Atlanta	0.912	South Dakota	Sioux Falls	0.925
Hawaii	Honolulu	1.220	Tennessee	Memphis	0.896
Idaho	Boise	0.935	Texas	Austin	0.863
Illinois	Chicago	1.172	Texas	Dallas	0.852
Indiana	Indianapolis	0.920	Texas	Houston	0.866
Iowa	Des Moines	0.960	Texas	San Antonio	0.854
Kansas	Wichita	0.874	Utah	Ogden	0.886
Kentucky	Louisville	0.913	Utah	Provo	0.899
Louisiana	Baton Rouge	0.879	Utah	Salt Lake City	0.914
Maine	Portland	0.971	Vermont	Burlington	0.947
Maryland	Baltimore	0.959	Virginia	Fairfax	0.926
Massachusetts	Boston	1.124	Virginia	Winchester	0.883
Michigan	Ann Arbor	0.971	Washington	Tacoma	1.040
Minnesota	Minneapolis	1.067	West Virginia	Charleston	0.949
Mississippi	Biloxi	0.848	Wisconsin	La Crosse	0.950
Missouri	Springfield	0.895	Wyoming	Casper	0.905

*Source: RSMeans *Residential Cost Data 2024*. Sample cities are listed in this table; check RSMeans for additional locations.

APPENDIX C: REFERENCE HOUSES

The reference houses used for this analysis and their site locations were initially defined in a report titled *Estimated Costs of the 2015 IRC Code Changes*.⁵ The houses were selected for their similarity to new home offerings in the six metropolitan areas selected as site locations – Miami, FL, Dallas, TX, Los Angeles, CA, Seattle, WA, New York, NY, and Chicago, IL – and their size proximity to a national average of 2,607 SF. Subsequent reports added three site locations for assessing energy use: Helena, MT, Duluth, MN, and Fairbanks, AK. Additional information on the basis for the reference house configurations is provided below. Elevations and floor plans are provided in Appendices D through G.

[Estimated Costs of the 2015 IRC Code Changes](#)

Reference House Configurations

The four Reference House designs used in this analysis are based on the data contained in the Census Bureau report, *Characteristics of New Single-Family Construction Completed*.⁶ The report provides information about building foundation type (Table C1) and number of stories for new single-family detached construction over the previous nine-year period. (Table).

Table C1. New Construction Foundation Types

Slab	54%
Crawlspace	17%
Basement	30%

Table C2. New Construction Number of Stories

One-story	53%
Two-story	43%
Three-story	3%

The Census data supports defining the four reference houses as follows to encompass approximately 85% of the last decade's new single-family construction:

- One-story on slab foundation
- Two-story on slab foundation
- One-story on basement foundation
- Two-story on basement foundation

Table C3 covers the locations where each type of Reference House foundation would be pragmatically constructed. All these selected cities, except Chicago, lie within the top ten states for construction starts in 2013.⁷ Chicago was selected to represent a Climate Zone 5 house.

⁵ Estimated Costs of the 2015 Code Changes, Home Innovation Research Labs, www.homeinnovation.com/trends_and_reports/featured_reports/estimated_costs_of_the_2015_irc_code_changes

⁶ Characteristics of New Housing, U.S. Census Bureau, www.census.gov/construction/charts/completed.html

⁷ Housing Construction Starts, www.census.gov/construction/bps/pdf/2013statepiechart.pdf

Table C3. Sites for Reference Houses

Reference House	Climate Zone	1	2	3	4
Foundation		Slab	Slab	Basement	Basement
Miami	1	X	X		
Dallas	2	X	X		
Los Angeles	3	X	X		
Seattle	4	X	X	X	X
New York	4	X	X	X	X
Chicago	5			X	X
Fairbanks	8			X	X

Based on data from Home Innovation's 2013 Annual Builder Practices Survey⁸(ABPS), the typical Heating, Ventilation, and Air Conditioning (HVAC) systems used in new houses are summarized in Table C4. According to the ABPS, 44% of new homes are cooled with a central air conditioner. These results influenced the selection of a gas furnace with a central (electric) air conditioner as the HVAC system in each of the reference houses.

Table C4. Typical HVAC Systems Supplied with New Houses

Feature	% of Stock
Furnace or Boiler, natural gas or propane	48%
Central Air Conditioner, electric	44%
Standard Heat Pump with Backup Heat	41%
Geothermal Heat Pump	4%
Electric furnace, baseboard, or radiant	4%
Furnace or Boiler, oil	2%

The furnace location has been designated as a platform in the attic for both slab reference houses, a practice that is common in Florida and Texas, where the weather is temperate year-round, and thus, the location is practical. A house built on a slab foundation in a cold climate zone would have the HVAC and water heating equipment located within conditioned space.

Reference House Features

The statistics presented in the foregoing tables support Reference House features that are detailed in Table C5.

Table C5. Features of the Reference Houses

Feature	Reference House			
	1	2	3	4
Square Feet	2,607	2,607	2,607	2,607
Foundation	Slab	Slab	Basement	Basement
Number of Stories	1	2	1	2
Number of Bedrooms	3	4	3	4
Number of Bathrooms	2	2.5	2	3
Garage, attached	2-car	2-car	2-car	2-car
Heat, Gas Furnace	Yes	Yes	Yes	Yes
Cooling, (Electric) central air	Yes	Yes	Yes	Yes
Hot Water, Gas 50 gallon tank	Yes	Yes	Yes	Yes
9 ft. Ceilings, 1 st	Yes	Yes	Yes	Yes
8 ft. Ceilings, 2 nd	n/a	n/a	Yes	Yes
Energy Star appliances	Yes	Yes	Yes	Yes

⁸ Annual Builder Practices Survey, www.homeinnovation.com/trends_and_reports/data/new_construction

Laundry Room	Yes	Yes	Yes	Yes
Walls, 2x4 (Climate Zones 1 & 2)	Yes	Yes	n/a	n/a
Walls, 2x6 (Climate Zones 3 thru 8)	n/a	n/a	Yes	Yes
Basement, Conditioned, Unfinished	n/a	n/a	Yes	Yes
Furnace Location	Attic	Attic	Basement	Basement
Water Heater Location	Interior	Garage	Basement	Basement
Window SF/% gross wall	360/18%	315/12%	360/18%	330/12%
Cladding [removed for 2024 study]	Brick, 4 sides	Brick, 4 sides	Brick, 4 sides	Stucco
Roof Pitch	12/12	6/12	9/12	4/12

APPENDIX D REFERENCE HOUSE 1: ONE-STORY SLAB FOUNDATION



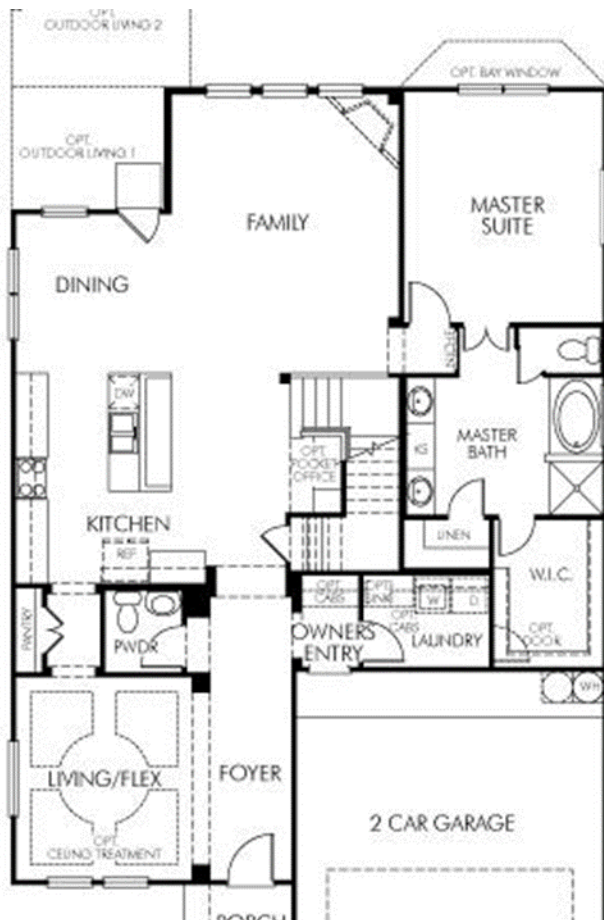
Courtesy: LionsGate Homes at The Creekside



APPENDIX E REFERENCE HOUSE 2: TWO-STORY SLAB FOUNDATION



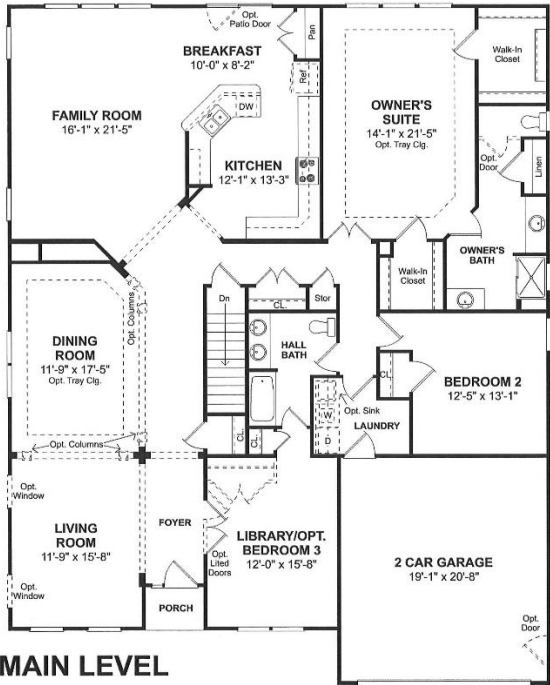
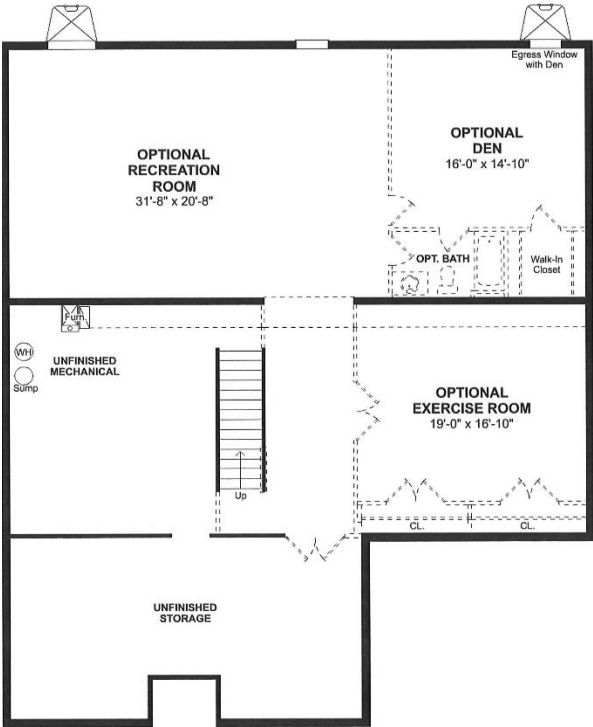
Courtesy: Meritage Homes at Riverstone



APPENDIX F REFERENCE HOUSE 3: ONE-STORY BASEMENT FOUNDATION



Courtesy: K Hovnanian Four Seasons at New Kent Vineyards

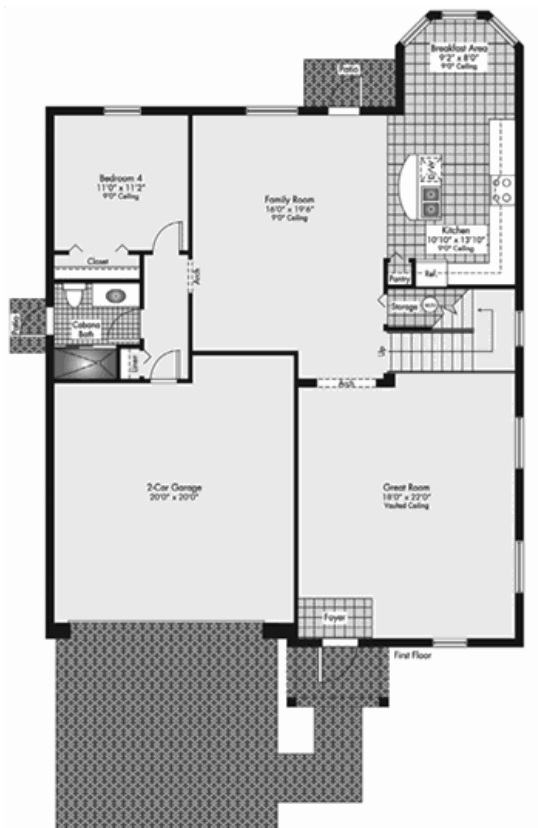


MAIN LEVEL

APPENDIX G REFERENCE HOUSE 4: TWO-STORY BASEMENT FOUNDATION



Courtesy: Lennar at Sorento Estates





Home Innovation
RESEARCH LABS™

Sustainability Code Recommendations and Evaluation

Sedona, AZ



**Prepared for the City of Sedona, AZ
Submitted by Sustainable Investment Group (SIG)**

November 2025



A company of 

ENERGY

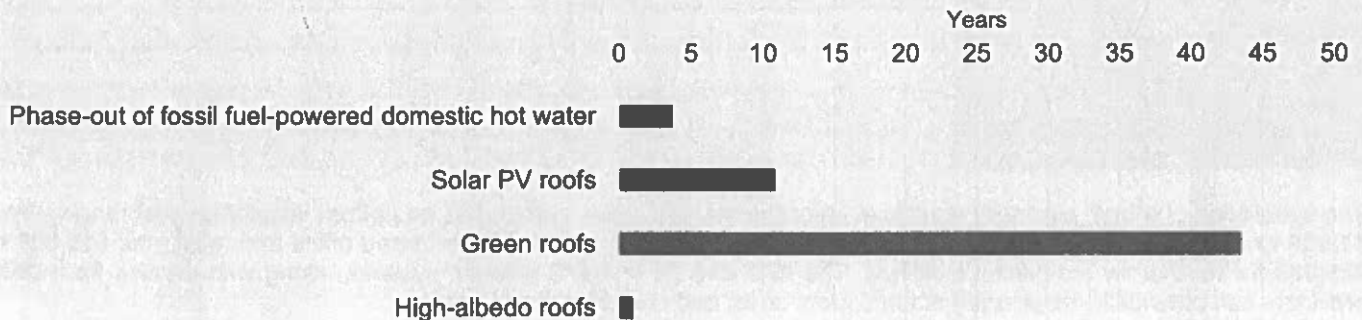
Guiding Goals for Energy

1. Ensure long-term access to clean energy while reducing the fiscal and environmental impacts of consumption
2. Reduce energy use and increase energy efficiency at commercial, residential, and public facilities
3. Reduce buildings' contribution to the urban heat island effect
4. Utilize energy efficiency as a tool for equity and opportunity for co-benefits
5. Ensure access to cooling

Summary: Energy

	Approximate Average Simple Payback
1. Phase-out of fossil fuel-powered domestic hot water	4 years
2. Battery-ready new construction	Intangible savings
3a. Solar PV roofs	11 years
3b. Green roofs	44 years
3c. High-albedo roofs	<1 year

Approximate Average Simple Payback



Energy 1: Phase-out of fossil fuel-powered domestic hot water

Recommendation

Prohibit the installation in new construction of new domestic hot water systems that are powered by fossil fuel after 2029 and provide a financial incentive for domestic hot water systems installed in new construction that have an efficiency greater than 100%.

Suggested Code Language

- (a) Effective January 1, 2030, the installation of domestic hot water systems powered by fossil fuels shall be prohibited in all new construction.
- (b) All domestic hot water systems installed in new construction shall utilize electric or renewable energy technologies.
- (c) A financial incentive shall be provided for domestic hot water systems installed in new construction that demonstrate a rated efficiency greater than one hundred percent (100%), as determined under applicable federal test procedures.
- (d) Eligible systems shall include, but not be limited to, heat pump water heaters and other technologies certified by the Building Official as exceeding one hundred percent (100%) efficiency.
- (e) Incentive amounts, eligibility requirements, and application procedures shall be established by administrative rule, provided that the incentive shall not be less than ten percent (10%) of the documented incremental cost between baseline systems and qualifying systems.

Impact Assessment¹

	Low	Medium	High	Not Applicable
Policy Impact			X	
Benefit to Public		X		
Benefit to Property Owner			X	
Benefit to Developer	X			
Cost to Public	X			
Cost to Property Owner	X			
Cost to Developer		X		

The installation of a high efficiency electric or solar thermal hot water system has an upfront installation cost ranging from **\$1,000 to \$1,500** for Single Family Residential buildings, **\$10,000 to \$12,000** for mixed office and retail, and **\$15,000 to \$25,000** for multifamily residential buildings. The incentive for > 100% efficient systems, along with rebates from utility providers can potentially offset some of the upfront costs and reduce operating costs.

- **Economic Benefits (2-4 years):** Electric heat pump systems use up to **75%** less energy than fossil fueled heat systems. This provides a reduction in monthly utility bills for property owners and/or tenants.
- **Public Health Benefits (3-6 years):** The elimination of on-site fossil fuel combustion can improve indoor air quality.
- **Environmental Benefits (10+ years):** The prohibition of fossil fueled systems and prioritization of electric/solar systems will provide a significant reduction in GHG emissions. Water heating can account for up to **18%** of household energy consumption. This prohibition and transition can eliminate thousands of metric tons of CO₂ from Sedona's building stock.

Estimated Cost Recovery Period:

- **2-4 years:** Economic and incentive-based payback
- **10+ years:** Cumulative environmental and climate impact

Energy 2: Battery-ready new construction

Recommendation

Require that all new construction is battery-ready in addition to being solar-ready and EV-ready; adopt NFPA 855 and UL 9540 for battery storage requirements.

Suggested Code Language

- (a) All new construction shall be designed and constructed to be battery-ready, solar-ready, and electric vehicle (EV)-ready.
- (b) Battery-ready construction shall include dedicated space for future battery energy storage system installation, provision of electrical panel capacity, and installation of conduit and raceways necessary to accommodate future system interconnection.
- (c) All battery energy storage systems installed shall comply with NFPA 855 and UL 9540, as amended from time to time.
- (d) Solar-ready construction shall comply with the requirements of Section [X.X – Solar-Ready Construction].
- (e) EV-ready construction shall comply with the requirements of Section [X.X – Electric Vehicle Infrastructure].
- (f) The Building Official shall adopt administrative rules establishing standards for battery-ready space allocation, conduit sizing, electrical capacity requirements, and submittal documentation.

Impact Assessment^{II}

	Low	Medium	High	Not Applicable
Policy Impact		X		
Benefit to Public		X		
Benefit to Property Owner	X			
Benefit to Developer	X			
Cost to Public	X			
Cost to Property Owner	X			
Cost to Developer	X			

This policy encourages future participation in demand-response programs, time-of-use rate optimization, and reduces peak demand for utilities. Battery-readiness includes electrical panel space, conduit placement, load-management systems, wall clearances, and predesign for battery weight/support. Compliance with **NFPA 855** (standard for installation of stationary energy storage) and **UL 9540** (battery system safety testing) adds minimal cost when designed upfront.

- **Economic Benefits (3–5 years):** Battery-ready buildings reduce potential future retrofit costs for post-construction installations, and increase property values.
- **Public Health Benefits (4–7 years):** Battery-readiness supports power availability during grid outages caused by extreme weather or wildfires. Public and private buildings with battery backup can reduce vulnerability for residents and emergency responders.
- **Environmental Benefits (10+ years):** Battery storage encourages the increased use of solar by shifting energy use during non-peak hours, grid stability, and long-term decarbonization.

Estimated Cost Recovery Period:

- **3–5 years:** Financial resilience and avoided retrofit cost
- **10+ years:** Grid integration and environmental value

Energy 3: Solar PV, green, or reflective roofs

Recommendation

All new commercial construction must have a roof that is or includes either (1) solar PV, (2) a green roof, or (3) a high albedo roof, or some combination thereof.

Suggested Code Language

- (a) All new commercial buildings shall be constructed with a roof that incorporates one or more of the following:
- (1) Solar photovoltaic (PV) systems covering not less than fifty percent (50%) of the roof area;
 - (2) A green roof system designed and installed in accordance with standards adopted by the Building Official; or
 - (3) A high-albedo (cool) roof meeting a minimum solar reflectance index (SRI) of 82 for low-sloped roofs and 39 for steep-sloped roofs, as tested under ASTM standards.
- (b) A combination of the measures in subsection (a) may be used, provided that the combined coverage equals at least one hundred percent (100%) of the roof area.
- (c) The applicant shall submit construction documents demonstrating compliance, including roof plans, specifications, and certifications from qualified professionals.
- (d) Exemptions may be granted by the Building Official for roof areas occupied by mechanical equipment, skylights, or other features that preclude installation of the required systems, provided that the remaining available roof area complies with subsection (a).

Impact Assessmentⁱⁱⁱ

	Low	Medium	High	Not Applicable
Policy Impact			X	
Benefit to Public			X	
Benefit to Property Owner			X	
Benefit to Developer	X			
Cost to Public	X			
Cost to Property Owner	X			
Cost to Developer		X		

This policy mandates that at least one high-performance roofing strategy be implemented. Cost estimates include: **Solar PV: \$50,000** for single-family residential, **\$400,000** for multifamily residential, **\$675,000** for mixed office/retail; **Green Roof: \$8,000** for single-family residential, **\$60,000** for multifamily residential, **\$100,000** for mixed office/retail; **Cool Roof (High-Albedo): \$0** cost difference over conventional roofs.

- **Economic Benefits (3–6 years):** Solar PV systems, Green roofs, and Cool Roofs can offset electricity usage and reduce stormwater runoff fees, reduce maintenance and operating costs. For Solar/PV roofs, costs savings can range from **\$5,000 to \$70,000** annually, depending on building size, utility rates and net metering policies.
- **Public Health Benefits (5–8 years):** Green and reflective roofs reduce surface temperatures, improve worker comfort, reduce heat-related illnesses, and enhance livability in urban heat zones. Green roofs also improve air quality and provide limited carbon sequestration and habitat value.
- **Environmental Benefits (10+ years):** Cool and Green roofs reduce stormwater runoff and reduce the urban heat island effect.

Estimated Cost Recovery Period:

- **3–6 years:** Operational and energy savings payback
- **10+ years:** Environmental, public health, and infrastructure resilience returns

Mobility 9. EV charging for multifamily buildings

Recommendation

Require new multifamily construction to have Level 2 EV chargers installed at a rate of at least one charger per three units.

Suggested Code Language

- (a) All new electric vehicle charging stations installed on multifamily properties, with a ratio of at least one charger per three units, after the effective date of this section shall provide charging capacity of Level 2 or higher, as defined by the National Electrical Code (NEC) and applicable industry standards.
- (b) Level 1 chargers shall not be permitted to satisfy any requirement of this Code for electric vehicle infrastructure on commercial properties.
- (c) Chargers shall be certified under UL 2594 or an equivalent standard approved by the Building Official and shall comply with all applicable electrical and safety codes.
- (d) Installation shall include adequate electrical capacity, conduit, and overcurrent protection sized to accommodate the installed chargers, subject to inspection and approval by the Building Official.
- (e) Signage, accessibility, and installation location shall conform to standards adopted by the City and consistent with the Americans with Disabilities Act (ADA).

Impact Assessment^{xii}

	Low	Medium	High	Not Applicable
Policy Impact		X		
Benefit to Public			X	
Benefit to Property Owner			X	
Benefit to Developer	X			
Cost to Public		X		
Cost to Property Owner		X		
Cost to Developer			X	

Based on the model of a 30-unit building, the estimated installation costs of Level 2 chargers range from (10 chargers) total **\$20,000 - \$75,000**. Incentives and tax credits can offset the **high** upfront cost for developers. Benefits emerge through utility savings, resident satisfaction, and alignment with statewide EV mandates.

- **Economic Benefits (4-6 years):** Property owners can recover costs through EV charging fees and rent premiums.
- **Public Health Benefits (5-8 years):** Reduced emissions in heavy populated areas, improved local air quality, and reduced the risk of respiratory illnesses.
- **Environmental Benefits (10+ years):** EV adoption reduces GHG emissions and aligns with Sedona's Climate Action Plan.

Estimated Cost Recovery Period:

- 4–6 years for operational and maintenance returns
- 10+ years for emissions and air quality improvement

Mobility 10. Minimum EV charging capacity for commercial properties

Recommendation

Require that new EV chargers on commercial properties be at least Level 2.

Suggested Code Language

- (a) All new electric vehicle charging stations installed on commercial properties after the effective date of this section shall provide charging capacity of Level 2 or higher, as defined by the National Electrical Code (NEC) and applicable industry standards.
- (b) Level 1 chargers shall not be permitted to satisfy any requirement of this Code for electric vehicle infrastructure on commercial properties.
- (c) Chargers shall be certified under UL 2594 or an equivalent standard approved by the Building Official and shall comply with all applicable electrical and safety codes.
- (d) Installation shall include adequate electrical capacity, conduit, and overcurrent protection sized to accommodate the installed chargers, subject to inspection and approval by the Building Official.
- (e) Signage, accessibility, and installation location shall conform to standards adopted by the City and consistent with the Americans with Disabilities Act (ADA).

Impact Assessment^{xiii}

	Low	Medium	High	Not Applicable
Policy Impact		X		
Benefit to Public			X	
Benefit to Property Owner			X	
Benefit to Developer	X			
Cost to Public		X		
Cost to Property Owner		X		
Cost to Developer			X	

The installation of Level 2 EV chargers on commercial properties presents a high upfront cost to developers and a moderate upfront cost to property owners. The estimated installation costs of Level 2 chargers range from \$2,000-\$7,000 per charger with \$100-\$500 in annual maintenance costs. Incentives and tax credits can offset the high upfront cost for developers.

- **Economic Benefits (3–6 years):** Property owners may charge usage fees, increase lease renewals, increase occupancy rates, and commercial property value.
- **Public Health Savings (5–8 years):** Reduced emissions around commercial zones resulting in improved air quality.
- **Environmental Benefits (10+ years):** Electrification of transportation reduces greenhouse gas emissions and reduces dependency on fossil fuels.

Estimated Cost Recovery Period:

- 3–6 years for financial return
- 10+ years for environmental and air quality improvements

WASTE

Guiding Goals for Waste

- 1. Increase the diversion of waste from the landfill and reduce GHG emissions associated with the consumption of goods and services
- 2. Ecosystem health
- 3. The transport, treatment, and reuse of wastewater is an important component to ensuring a sustainable water supply and healthy ecosystem

Summary: Waste

	Approximate Average Simple Payback
1. Construction & demolition waste management plan	Intangible savings
2. Recycling bins for commercial properties	Intangible savings

Waste 1. Construction & demolition waste management plan

Recommendation

Require that new construction greater than 1,000 ft² provide a construction and demolition waste management plan to be filed.

Suggested Code Language

- (a) All new construction projects exceeding one thousand (1,000) square feet of gross floor area shall prepare and submit a Construction and Demolition Waste Management Plan as part of the building permit application.
- (b) The plan shall identify the types and estimated quantities of construction and demolition waste to be generated, and shall describe measures for reuse, recycling, and proper disposal.
- (c) The plan shall include the name and location of facilities or services to be used for the collection, processing, recycling, or disposal of construction and demolition materials.
- (d) A final report documenting implementation of the plan, including actual quantities of materials reused, recycled, and disposed, shall be submitted prior to issuance of a certificate of occupancy.
- (e) The Building Official may adopt administrative rules establishing plan format, reporting requirements, and minimum diversion thresholds.

Impact Assessment^{xv}

	Low	Medium	High	Not Applicable
Policy Impact	X			
Benefit to Public		X		
Benefit to Property Owner	X			
Benefit to Developer	X			
Cost to Public	X			
Cost to Property Owner	X			
Cost to Developer	X			

Waste management plans outline how debris will be diverted from landfill via recycling, salvage, or reuse. Based on regional construction data, the cost of preparing a waste management plan is estimated at **\$2000** per project, depending on project complexity. Additional costs may be incurred from on-site labor or disposal fees from recycling centers.

- **Economic Benefits (1–2 years):** The diversion of recyclable materials such as concrete, wood, drywall, and metals, can significantly reduce hauling and landfill disposal costs. For large construction projects generating hundreds of tons of debris, diversion can yield **\$ 70 - \$80** per cubic yard in avoided fees.
- **Public Health and Safety Benefits (2–4 years):** The recycling and reuse of construction materials reduces illegal dumping. Proper Waste management plans can improve worker safety and reduce particulate matter in surrounding neighborhoods.
- **Environmental Benefits (5–10 years):** Landfill diversion reduces methane emissions from organic construction debris. Material reuse also decreases the carbon footprint of buildings and supports Sedona's zero-waste goals.

Estimated Cost Recovery Period:

- **1–2 years:** Direct savings from landfill diversion
- **5–10 years:** Environmental and public safety outcomes

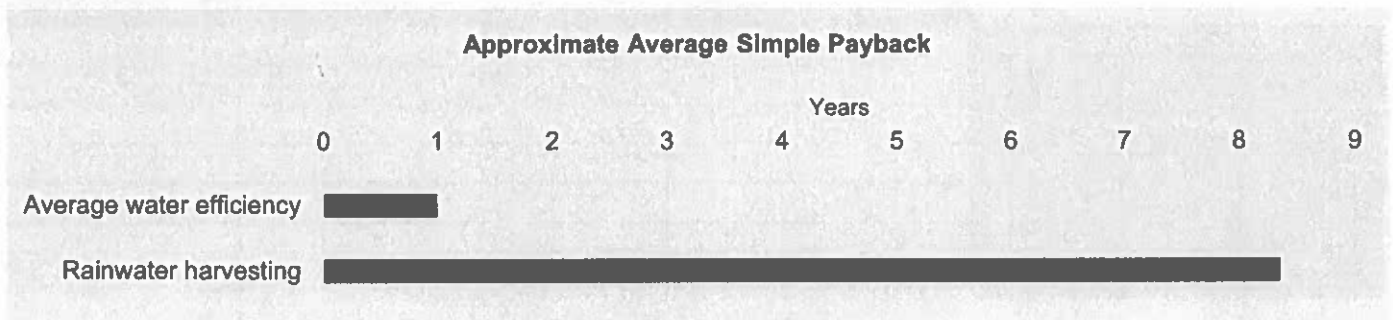
WATER

Guiding Goals for Water

1. Conserve community water resources by maximizing water efficiency technologies while ensuring a secure and sustainable water supply in the face of climate change impacts
2. Manage, restore, and foster resilient ecosystems, landscapes, and resources
3. As responsible stewards of the natural environment, Sedona maintains a lasting water supply, healthy ecosystems, and the ability to adapt to changing conditions
4. Utilize green infrastructure and blue-green infrastructure to reduce heat island effects

Summary: Water

	Approximate Average Simple Payback
1. Minimum water efficiency in new construction	<1 year
2. Rainwater harvesting on commercial sites	8 years
3. Greywater reuse in new commercial buildings	Negligible cost & savings
4. Greywater readiness in new construction	Negligible cost & intangible savings
5. Stormwater runoff on hardscapes	Intangible savings
6. Sustainability checklist at design review	Negligible cost & intangible savings



Water 1. Minimum water efficiency in new construction

Recommendation

Require an average water efficiency of 1.8 gpm across all fixtures in new construction.

Suggested Code Language

- (a) All new construction shall be designed and constructed to achieve an average maximum water use of one and eight-tenths (1.8) gallons per minute (gpm) across all installed water closets, urinals, and other fixtures.
- (b) The average shall be calculated based on the rated flush volume of each installed fixture, as certified by the manufacturer, divided by the total number of such fixtures within the building.
- (c) Dual-flush fixtures shall be evaluated using the average of the full-flush and reduced-flush volumes.
- (d) The applicant shall submit manufacturer specifications and a compliance calculation worksheet as part of the plumbing plan review.
- (e) Fixtures installed to satisfy this section shall be WaterSense certified or shall otherwise be approved by the Building Official as meeting the required efficiency.

Impact Assessment^{xvii}

	Low	Medium	High	Not Applicable
Policy Impact		X		
Benefit to Public		X		
Benefit to Property Owner		X		
Benefit to Developer		X		
Cost to Public	X			
Cost to Property Owner	X			
Cost to Developer	X			

The cost of complying with a 1.8 gallons-per-minute (GPM) efficiency standard is low and often negligible, especially when incorporated into new construction. Installation and maintenance procedures are identical to standard fixtures, making the integration seamless for developers and contractors.

- **Economic Benefits (1–2 years):**
Water-efficient fixtures can reduce indoor water use by 15–30%, saving **\$100–\$500 annually per unit**, depending on local water rates and occupancy. In commercial buildings, savings can exceed **\$1,000 annually** with high usage.
- **Public Health Benefits (3–5 years):**
Lower indoor water use reduces stress on aging water infrastructure, mitigating potential disruptions or service failures. In drought-prone regions, conserving potable water supports broader community health and resilience.
- **Environmental Benefits (5–10 years):**
Water conservation reduces energy used in pumping, heating, and treating water—decreasing both greenhouse gas emissions and demand on freshwater sources. It also aligns with Arizona's long-term drought response and water allocation goals.

Estimated Cost Recovery Period:

- **1–2 years:** Utility cost savings from reduced water and energy use
- **5–10 years:** Environmental conservation and infrastructure resilience

Water 3. Greywater reuse in new commercial buildings

Recommendation

Require greywater reuse in newly constructed commercial buildings greater than 5,000 ft².

Suggested Code Language

- (a) All new commercial buildings with a gross floor area greater than five thousand (5,000) square feet shall be designed and constructed to capture, treat, and reuse greywater for non-potable applications, including but not limited to landscape irrigation, cooling, and toilet flushing.
- (b) Greywater systems shall be designed in accordance with Arizona Department of Environmental Quality (ADEQ) regulations, the Arizona Plumbing Code, and all other applicable state and local requirements.
- (c) Systems shall include clearly identified greywater piping, filtration, disinfection (where required), storage, and distribution infrastructure sized to meet anticipated non-potable demand.
- (d) A greywater reuse plan, including design drawings, calculations, and maintenance provisions, shall be submitted as part of the building permit application and approved by the Building Official prior to permit issuance.
- (e) Greywater systems shall be maintained in good working order for the life of the building. Failure to operate and maintain the system as approved shall constitute a violation of this Code.

Impact Assessment^{xix}

	Low	Medium	High	Not Applicable
Policy Impact		X		
Benefit to Public		X		
Benefit to Property Owner	X			
Benefit to Developer	X			
Cost to Public	X			
Cost to Property Owner	X			
Cost to Developer	X			

Installation costs for commercial greywater systems range from **\$16,316**, depending on building size, plumbing complexity, and treatment level required.

- **Economic Benefits (5–7 years):** Greywater systems can offset non-potable water use, providing savings from utility costs. Additional savings may be available through rebates or tax credits.
- **Public Health Benefits (5–8 years):** Reusing greywater for non-potable applications reduces demand on potable water systems and helps maintain landscaping during periods of drought, and reduces heat related illnesses.
- **Environmental Benefits (10+ years):** Greywater reuse reduces wastewater volumes, reduces the burdens and demands on treatment facilities.

Estimated Cost Recovery Period:

- **5–7 years:** Water bill savings and operational efficiency
- **10+ years:** Environmental and infrastructure benefits

Water 4. Greywater readiness in new construction

Recommendation

Require greywater readiness in new construction.

Suggested Code Language

- (a) All new buildings shall be designed and constructed to be greywater-ready, providing the necessary plumbing infrastructure to enable future installation of a greywater reuse system.
- (b) Greywater-ready construction shall include:
- (1) Separate drainage piping for showers, bathtubs, clothes washers, and other approved greywater sources;
 - (2) Installation of a diverter valve or stub-out connection accessible for future system connection; and
 - (3) Adequate space allocation for future filtration, storage, and distribution equipment.
- (c) Greywater-ready systems shall be designed in accordance with the Arizona Plumbing Code, Arizona Department of Environmental Quality (ADEQ) regulations, and all other applicable state and local requirements.
- (d) Construction documents shall include plumbing layouts and specifications demonstrating compliance with this section and shall be reviewed and approved by the Building Official prior to permit issuance.

Impact Assessment

	Low	Medium	High	Not Applicable
Policy Impact	X			
Benefit to Public	X			
Benefit to Property Owner	X			
Benefit to Developer	X			
Cost to Public	X			
Cost to Property Owner	X			
Cost to Developer	X			

The upfront costs of greywater readiness in new construction are significantly lower than later retrofits, depending on design and labor costs.

- **Economic Benefits (3–5 years):** Avoiding costly retrofits which makes this a low-cost, high-benefit strategy. Readiness allows owners to install greywater systems in the future when cost or policy pressures rise.
- **Public Health Benefits (4–6 years):** Greywater readiness improves community resilience during droughts and supports long-term water independence and grid flexibility.
- **Environmental Benefits (10+ years):** Supports groundwater recharge and reduces stormwater runoff.

Estimated Cost Recovery Period:

- **3–5 years:** Avoided retrofit costs and installation flexibility
- **10+ years:** Environmental infrastructure benefits

Water 6. Sustainability checklist at design review

Recommendation

Require resilience and sustainability checklist at design review.

Suggested Code Language

- (a) All new development and substantial redevelopment projects subject to design review shall submit a completed Resilience and Sustainability Checklist with the design review application.
- (b) The checklist shall address, at a minimum, energy efficiency, renewable energy readiness, water conservation, waste reduction, transportation access, climate resilience, and ecological impacts.
- (c) The checklist shall be prepared on a form provided by the City and shall be reviewed by staff as part of the design review process.
- (d) Completion of the checklist is required for application completeness; however, individual measures identified in the checklist shall not be mandatory unless separately required under this Code.
- (e) The Planning Director may adopt administrative rules to establish the content, format, and scoring methodology of the checklist and may update the checklist from time to time to reflect best practices and community priorities.

Impact Assessment^{xxii}

	Low	Medium	High	Not Applicable
Policy Impact	X			
Benefit to Public	X			
Benefit to Property Owner	X			
Benefit to Developer	X			
Cost to Public	X			
Cost to Property Owner	X			
Cost to Developer	X			

This policy requires developers to complete a standardized checklist covering energy, water, health, and climate resilience criteria during design review. Development of the checklist and training staff may incur a one-time cost depending on labor cost. Developer costs are negligible considering the contractual/professional time to complete forms.

- **Economic Benefits (1–2 years):** Guides developers in identifying long-term cost-saving measures during pre-construction, avoiding missed opportunities and credits for green infrastructure and sustainable development.
- **Public Health and Resilience Benefits (2–5 years):** Encourages incorporation of passive cooling, green space, air filtration, and heat adaptation features that improve occupant health, reduce energy bills, and buffer against extreme weather.
- **Environmental Benefits (5–10 years):**
Improves consistency of sustainable design across projects, contributing to cumulative emissions reductions, water conservation, and biodiversity enhancement.

Estimated Cost Recovery Period:

- **1–2 years:** Operational efficiencies and planning benefits
- **5–10 years:** Regional sustainability and resilience outcomes

CLIMATE RESILIENCE

Guiding Goals for Climate Resilience

1. Ensure Sedona and its residents, businesses, visitors, facilities, and services are prepared for climate impacts, especially those at the highest risk
2. Sedona's unique sense of place and stewardship of the natural environment is reflected in the design and development of the built environment
3. Ensure heat mitigation and adaptation measures are incorporated as part of climate resilience planning

Summary: Climate Resilience

	Approximate Average Simple Payback
1. Tree canopy for new construction	Intangible savings
2. Promote native vegetation	Intangible savings
3. Shade trees for commercial properties	Intangible savings
4. Cultural impact statements	Negligible cost & intangible savings
5. Fire-resilient materials and infrastructure	Intangible savings
6. Require native vegetation near storm drains	Intangible savings
7. Fire-preparedness for short-term rentals	Negligible cost & intangible savings
8. Fire mitigation for vacant lots	Intangible savings
9. Accessible restrooms	Intangible savings
10. Property efficiency information	Negligible cost & intangible savings

Climate Resilience 5. Fire-resilient materials and infrastructure

Recommendation

Wildland-urban interface developments must include defensible space, emergency access, fire-resilient materials.

Suggested Code Language

- (a) All new developments located within designated wildland-urban interface (WUI) areas shall incorporate defensible space, emergency access, and fire-resilient construction materials as required by this section.
- (b) Defensible Space. A minimum defensible space of thirty (30) feet shall be maintained around all structures, consisting of cleared, irrigated, or fire-resistant landscaping, in accordance with standards adopted by the Fire Marshal.
- (c) Emergency Access. Developments shall provide emergency vehicle access routes with a minimum unobstructed width of twenty (20) feet, vertical clearance of thirteen feet six inches (13'6"), and all-weather surfacing capable of supporting fire apparatus.
- (d) Fire-Resilient Materials. All structures shall utilize non-combustible or ignition-resistant materials for roofing, siding, decks, and other exterior elements, consistent with the International Wildland-Urban Interface Code (IWUIC) as adopted by the City.
- (e) Landscape plantings within the defensible space shall be limited to drought-tolerant, fire-resistant species approved by the Fire Marshal.
- (f) Compliance shall be demonstrated through site plans, construction documents, and material specifications submitted with the development application, and shall be verified prior to issuance of a certificate of occupancy.

Impact Assessment^{xxvii}

	Low	Medium	High	Not Applicable
Policy Impact			X	
Benefit to Public			X	
Benefit to Property Owner			X	
Benefit to Developer		X		
Cost to Public		X		
Cost to Property Owner	X			
Cost to Developer	X			

This policy introduces wildfire mitigation requirements, depending on site conditions and building type, these measures are increasingly becoming standard in regions with higher risk of wildfires. The **Incremental cost is considered negligible**, when weighed against avoided losses and insurance savings. **Economic Benefits (3–6 years):** Potential reduction in insurance premiums for properties meeting WUI codes. Wildfire-resistant buildings experience less damage, resulting in fewer reconstruction costs after events.

- **Public Health Benefits (Immediate–5 years):** Improved access, reduced evacuation times, firefighter risk, and structure losses during wildfires.
- **Environmental Benefits (10+ years):** Defensible space and resilient design limit ecosystem destruction and air quality degradation during wildfire and preserve surrounding wildlife habitats.

Estimated Cost Recovery Period:

- **3–6 years:** Insurance savings and reduced post-disaster recovery
- **10+ years:** Environmental protection and climate resilience

Climate Resilience 9. Accessible restrooms

Recommendation

Require that new commercial developments of 1,000 ft² or more have a publicly accessible restroom.

Suggested Code Language

- (a) All new commercial developments with a gross floor area of one thousand (1,000) square feet or more shall provide at least one (1) publicly accessible restroom.
- (b) Public restrooms required under this section shall be clearly signed, located in an accessible area, and made available during all hours of business operation.
- (c) Restrooms shall comply with all applicable provisions of the Americans with Disabilities Act (ADA), the Arizona Plumbing Code, and other relevant state and local health and safety regulations.
- (d) Maintenance of public restrooms shall be the responsibility of the property owner or operator and shall be carried out in a manner that ensures cleanliness, safety, and continuous operability.
- (e) Failure to provide or maintain a required public restroom shall constitute a violation of this Code and may be subject to enforcement action.

Impact Assessment

	Low	Medium	High	Not Applicable
Policy Impact		X		
Benefit to Public			X	
Benefit to Property Owner	X			
Benefit to Developer	X			
Cost to Public	X			
Cost to Property Owner		X		
Cost to Developer	X			

Incorporating public restrooms into commercial designs adds **\$5,000–\$20,000** in construction costs, including plumbing, ventilation, ADA compliance, and signage.

- **Economic Benefits (4–6 years):** Attracts more foot traffic to commercial areas, supporting tourism and local businesses. It can also increase new tenants and tenant retention.
- **Public Health Benefits (Immediate–3 years):** Improves sanitation access and provides equitable access for vulnerable populations and outdoor workers.
- **Environmental Benefits (5+ years):** Reduces pollution and health risks associated with lack of access to sanitation in urban areas.

Estimated Cost Recovery Period:

- **4–6 years:** Business growth and tourism access
- **5+ years:** Public sanitation and urban health

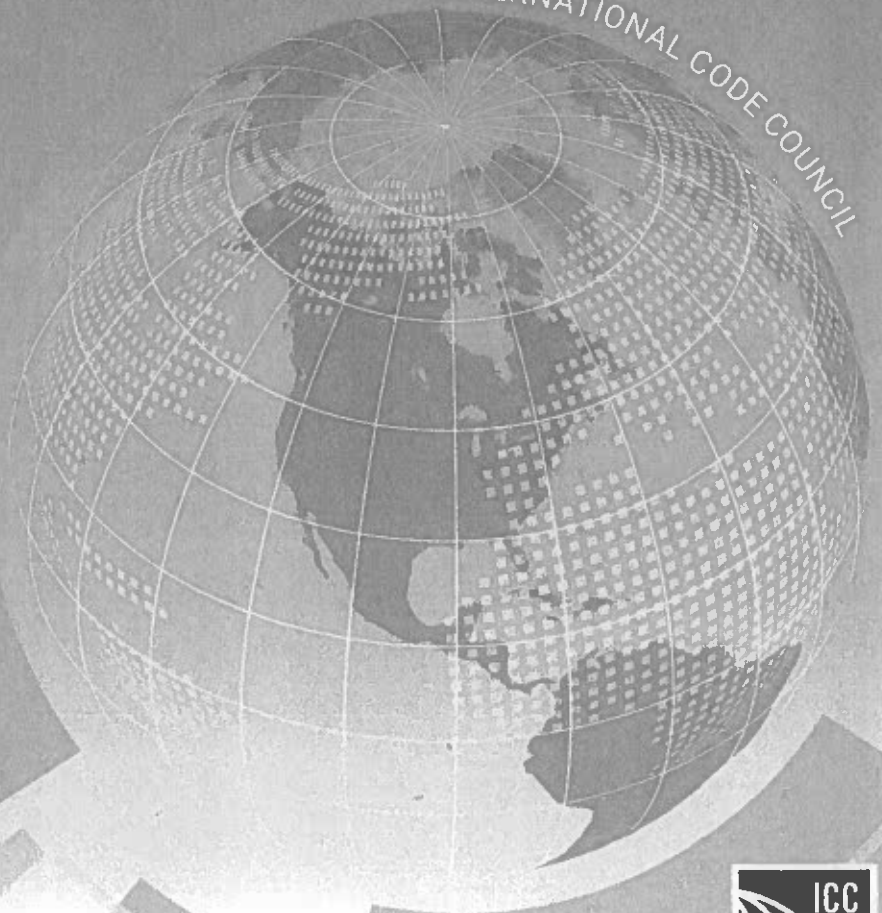
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503.2.4.3.2 Wood-plastic composite materials. Wood-plastic composite materials shall also demonstrate acceptable fire performance after weathering by the following procedure: first testing in accordance with ASTM E1354 at an incident heat flux of 50 kW/m² in the horizontal orientation, then weathering in accordance with ASTM D7032 and then retesting in accordance with ASTM E1354 and exhibiting an increase of no more than 10 percent in peak rate of heat release when compared to the peak heat release rate of the nonweathered material.

503.2.4.3.3 Plastic lumber materials. Plastic lumber materials shall also demonstrate acceptable fire performance after weathering by the following procedure: first testing in accordance with ASTM E1354 at an incident heat flux of 50 kW/m² in the horizontal orientation, then weathering in accordance with ASTM D6662 and then retesting in accordance with ASTM E1354 and exhibiting an increase of no more than 10 percent in peak rate of heat release when compared to the peak heat release rate of the nonweathered material.

SECTION 504—CLASS 1 IGNITION-RESISTANT CONSTRUCTION

504.1 General. Class 1 ignition-resistant construction shall be in accordance with Sections 504.2 through 504.11.

504.2 Roof assembly. Roofs shall have a *roof assembly* that complies with a Class A rating when tested in accordance with ASTM E108 or UL 790. For *roof assemblies* where the profile allows a space between the *roof covering* and *roof deck*, the space at the eave ends shall be firestopped to preclude entry of flames or embers or have one layer of 72-pound (32.4 kg) mineral-surfaced, nonperforated cap sheet complying with ASTM D3909 installed over the combustible *roof deck*.

Exceptions:

1. Class A *roof assemblies* include those with coverings of brick, masonry or an exposed concrete *roof deck*.
2. Class A *roof assemblies* also include ferrous or copper shingles or sheets, metal sheets and shingles, clay or concrete roof tile or slate installed on noncombustible decks or ferrous, copper or metal sheets installed without a *roof deck* on noncombustible framing.
3. Class A *roof assemblies* include minimum 16 oz/sq ft (0.0416 kg/m²) copper sheets installed over combustible *roof decks*.

504.2.1 Roof valleys. Where provided, valley flashings shall be not less than 0.019 inch (0.48 mm) (No. 26 galvanized sheet gage) corrosion-resistant metal installed over a minimum 36-inch-wide (914 mm) underlayment consisting of one layer of 72-pound (32.4 kg) mineral-surfaced, nonperforated cap sheet complying with ASTM D3909 running the full length of the valley.

504.3 Protection of eaves. Eaves and soffits shall be protected on the exposed underside by ignition-resistant materials or by materials *approved* for not less than 1-hour *fire-resistance-rated construction*, 2-inch (51 mm) nominal dimension lumber, or 1-inch (25 mm) nominal fire-retardant-treated lumber or ³/₄-inch (19.1 mm) nominal fire-retardant-treated plywood, identified for exterior use and meeting the requirements of Section 2303.2 of the *International Building Code*. Fascias are required and shall be protected on the backside by ignition-resistant materials or by materials *approved* for not less than 1-hour *fire-resistance-rated construction* or 2-inch (51 mm) nominal dimension lumber.

504.4 Gutters and downspouts. Gutters and downspouts shall be constructed of *noncombustible* material. Gutters shall be provided with an *approved* means to prevent the accumulation of leaves and debris in the gutter.

504.5 Exterior walls. Exterior walls of buildings or structures shall be constructed with one of the following methods:

1. Materials *approved* for not less than 1-hour *fire-resistance-rated construction* on the exterior side.
2. *Approved noncombustible* materials.
3. Heavy timber or *log wall construction*.
4. Fire-retardant-treated wood on the exterior side. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the *International Building Code*.
5. Ignition-resistant materials complying with Section 503.2 on the exterior side.

Such material shall extend from the top of the foundation to the underside of the roof sheathing.

504.5.1 Flashing. A minimum of 6 inches (152 mm) of metal flashing or noncombustible material applied vertically on the exterior of the wall shall be installed at the ground, decking and roof intersections.

504.6 Underfloor enclosure. Buildings or structures shall have underfloor areas enclosed to the ground with exterior walls in accordance with Section 504.5.

Exception: Complete enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are protected as required for exterior 1-hour *fire-resistance-rated construction* or *heavy timber construction* or fire-retardant-treated wood. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the *International Building Code*.

504.7 Appendages and projections. *Unenclosed accessory structures* attached to buildings with habitable spaces and projections, such as decks, shall be not less than 1-hour *fire-resistance-rated construction*, *heavy timber construction* or constructed of one of the following:

1. *Approved noncombustible* materials.
2. Fire-retardant-treated wood identified for exterior use and meeting the requirements of Section 2303.2 of the *International Building Code*.



3. Ignition-resistant building materials in accordance with Section 503.2.

Exception: Coated materials shall not be used as the walking surface of decks.

504.7.1 Underfloor areas. Where the attached structure is located and constructed so that the structure or any portion thereof projects over a descending slope surface greater than 10 percent, the area below the structure shall have underfloor areas enclosed to within 6 inches (152 mm) of the ground, with exterior wall construction in accordance with Section 504.5.

504.8 Exterior glazing. Exterior windows, window walls and glazed doors, windows within exterior doors, and skylights shall be tempered glass, *multilayered glazed panels*, glass block or have a fire protection rating of not less than 20 minutes.

504.9 Exterior doors. Exterior doors shall be *approved noncombustible* construction, solid-core wood not less than 1³/₄ inches thick (44 mm), or have a fire protection rating of not less than 20 minutes. Windows within doors and glazed doors shall be in accordance with Section 504.8.

Exception: Vehicle access doors.

504.10 Vents. Where provided, ventilation openings for enclosed attics, gable ends, ridge ends, under eaves and cornices, enclosed eave soffit spaces, enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters, underfloor ventilation, foundations and crawl spaces, or any other opening intended to permit ventilation, either in a horizontal or vertical surface, shall be in accordance with Section 504.10.1 or Section 504.10.2 to resist building ignition from the intrusion of burning embers and flame through the ventilation openings.

504.10.1 Performance requirements. Ventilation openings shall be fully covered with listed vents, tested in accordance with ASTM E2886, to demonstrate compliance with all the following requirements:

1. There shall be no flaming ignition of the cotton material during the Ember Intrusion Test.
2. There shall be no flaming ignition during the Integrity Test portion of the Flame Intrusion Test.
3. The maximum temperature of the unexposed side of the vent shall not exceed 662°F (350°C).

504.10.2 Prescriptive requirements. Where provided, attic ventilation openings, foundation or underfloor vents, or other ventilation openings in vertical or horizontal surfaces and vents through roofs shall not exceed 144 square inches (0.0929 m²) each. Such vents shall be covered with noncombustible corrosion-resistant mesh with openings not to exceed 1/₈ inch (3.2 mm) or shall be designed and approved to prevent flame or ember penetration into the structure.

504.10.3 Vent locations. Attic ventilation openings shall not be located in soffits, in eave overhangs, between rafters at eaves or in other overhang areas. Gable-end and dormer vents shall be located not less than 10 feet (3048 mm) from lot lines. Underfloor ventilation openings shall be located as close to grade as practical.

504.11 Detached accessory structures. Detached accessory structures located less than 50 feet (15 240 mm) from a building containing habitable space shall have exterior walls constructed with materials *approved* for not less than 1-hour *fire-resistance-rated construction*, heavy timber, *log wall construction*, or constructed with *approved noncombustible* materials or fire-retardant-treated wood on the exterior side. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the *International Building Code*.

504.11.1 Underfloor areas. Where the detached structure is located and constructed so that the structure or any portion thereof projects over a descending slope surface greater than 10 percent, the area below the structure shall have underfloor areas enclosed to within 6 inches (152 mm) of the ground, with exterior wall construction in accordance with Section 504.5 or underfloor protection in accordance with Section 504.6.

Exception: The enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are protected as required for exterior 1-hour *fire-resistance-rated construction* or *heavy timber construction* or fire-retardant-treated wood on the exterior side. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the *International Building Code*.

SECTION 505 CLASS 2 IGNITION-RESISTANT CONSTRUCTION



505.1 General. Class 2 ignition-resistant construction shall be in accordance with Sections 505.2 through 505.11.

505.2 Roof assembly. Roofs shall have a *roof assembly* that complies with not less than a Class A rating when tested in accordance with ASTM E108 or UL 790, or an *approved noncombustible roof covering*. For *roof assemblies* where the profile allows a space between the *roof covering* and *roof deck*, the space at the eave ends shall be firestopped to preclude entry of flames or embers, or have one layer of cap sheet complying with ASTM D3909 installed over the combustible *roof deck*.

505.2.1 Roof valleys. Where provided, valley flashings shall be not less than 0.019-inch (0.48 mm) (No. 26 galvanized sheet gage) corrosion-resistant metal installed over a minimum 36-inch-wide (914 mm) underlayment consisting of one layer of 72-pound (32.4 kg) mineral surfaced, nonperforated cap sheet complying with ASTM D3909 running the full length of the valley.

505.3 Protection of eaves. Combustible eaves, fascias and soffits shall be enclosed with solid materials with a minimum thickness of 3/₄ inch (19 mm). Exposed rafter tails shall not be permitted unless constructed of heavy timber materials.

505.4 Gutters and downspouts. Gutters and downspouts shall be constructed of *noncombustible* material. Gutters shall be provided with an *approved* means to prevent the accumulation of leaves and debris in the gutter.